Reading Instruction Provided to Children with Intellectual Disability:
An Observation Study

By

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To my parents, for everything

and

To Ned, for everything else.

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CHAPTER I

INTRODUCTION

As in the general population, individuals with intellectual disability (ID) can enjoy many benefits from learning how to read. Literacy abilities are linked with positive outcomes in academics, employment, independent living, and quality of life (Chhabra & McCardle, 2004; Browder et al., 2008b). Being able to access and decipher information in academics, the workplace, and daily life increases opportunities for meaningful living in inclusive community environments (see Brown, Nieptuski, & Hamre-Nieptuski, 1976). Benefits of increased independence and meaningful participation extend beyond individuals to their families and communities. In this way, teaching reading to students with ID can have impacts beyond individual learners.

Despite strong arguments for teaching students with ID to read, reading and academic outcomes for this population are poor. As compared with other disability categories, students with ID consistently test lower on measures of word reading and fluency (Lemons et al., 2013) and experience lower rates of reading growth (Wei, Blackorby, & Schiller, 2011). Of all disability categories, students with ID designations are among the least likely to receive a regular diploma or be engaged in post-secondary education, job training, and/or employment (Wagner, Newman, Cameto, Garza, & Levine, 2005).

Recent Developments in Policy and Research

Developments in policy and research have contributed to shifts in expectations and practices for individuals with ID. Historically, students in this population were not expected to learn how to read. Instructional goals generally focused on life skills and adaptive behavior

(Spooner & Browder, 2006). However, the introduction of PL 94-142 marked a turning point in expectations for students with ID. Since that time, expectations for this population have increased steadily. For example, the alternate assessments based on academic achievement standards (AA-AAS) established in No Child Left Behind (NCLB; 2002) included students with severe cognitive disabilities in measures of accountability. This development signaled a newfound priority for educators to improve academic outcomes in this population. Higher academic standards were addressed with increased research on effective reading instruction and subsequent research-based instructional recommendations.

The National Reading Panel's (2000) federally commissioned report on effective reading instruction cited rigorous research on struggling readers and those with learning disabilities (LD). The report outlined five areas of focus in effective reading instruction: PA, phonics, fluency, vocabulary, and comprehension. Additionally, the report recommended increasing opportunities for reading connected text in the eventual goal of fluent, independent reading with comprehension. These guidelines, however, generally excluded students with disabilities, especially those with severe cognitive disabilities. This exclusion of students with ID from reading research raised questions regarding the effectiveness and applicability of research-based practices for this population. In contrast to abundant research on students with RD and high-incidence disabilities, teachers of students with ID had very little guidance on best practices for meeting their students' academic needs.

Until recently, reading instruction for students with developmental disabilities has emphasized sight word instruction (Browder, Wakeman, Spooner, Ahlgrim-Delzell, & Algozzine, 2006; Bruni & Hixson, 2017). Curricula such as the Edmark Reading Program (*Edmark*; Austin & Boekman, 1990) and PCI Reading Program (*PCI*; Haugen-McLane, Hohlt, &

Haney, 2007) are designed to teach sight words individually, as separate units. In contrast to phonics-based approaches that break words into combinations of letters and sounds, sight word curricula emphasize learning high-frequency words via repeated exposures, time delay, picture prompts, and fading strategies (Bruni & Hixson, 2017). Although there is evidence of effectiveness for teaching the words within the curriculum, research suggests that students are not likely to generalize word reading to novel items (Browder & Xin, 1998). Given this limitation, sight word instruction alone may not adequately contribute to reading independence. Multi-component reading programs that offer explicit decoding instruction may help students with ID build skills that generalize to independent reading.

Findings from Experimental Research

To address the concerns raised in Browder's (2006) review, recent intervention studies have examined whether phonics-based approaches, aligned with NRP, are applicable for students with ID and other developmental disabilities. Results from experimental studies support use of phonics-based multicomponent practices for this population, testing them systematically against traditional sight word control conditions. Findings from several randomized control trials (e.g., Allor, Mathes, Roberts, Cheatham, & Al Otaiba, 2014; Browder, Ahlgrim-Delzell, Flowers, & Baker, 2012; Browder et al., 2008a) suggest favorable outcomes for students with severe developmental disabilities receiving systematic instruction in phonics and reading foundational skills, as compared with peers in a sight word focused curriculum. From controlled research settings to existing special education classrooms, more research-based tools are becoming available for teachers of students with ID.

Browder and colleagues (2008a) evaluated effectiveness of their Early Literacy Skills Builder (ELSB) curriculum, in which objectives were based on adaptations to the NRP

guidelines on print awareness, PA, word reading, vocabulary, and comprehension. Students who were taught ELSB by their trained teachers in self-contained classrooms achieved moderate effect sizes (.46-.66) across multiple literacy measures, as compared with peers in a business-as-usual control group (.02-.41). In a later study by Browder and colleagues (2012), elementary students with developmental disabilities who received a multicomponent early literacy intervention demonstrated higher mean achievement on post-test literacy assessments than peers receiving Edmark sight word instruction. Effect sizes in this study ranged between .30-.49, suggesting small to moderate effects of the treatment. In their longitudinal intervention study, Allor and colleagues (2014) trained teachers to provide daily systematic, small group reading instruction to randomly selected elementary students with low IQs (i.e., 40-80). The multicomponent reading intervention (*Early Interventions in Reading*; Mathes & Torgesen, 2005a, 2005b) incorporated brief word level activities, fluency through repeated reading, and longer comprehension activities in each lesson, increasing in intensity over time. Findings revealed superior outcomes on almost all language and literacy measures (e.g., decoding, oral reading fluency, vocabulary, reading comprehension) among students with ID and other developmental disabilities.

Similarly, findings from single-case designs (e.g., Ahlgrim-Delzell, Browder, & Wood, 2014; Bradford, Shippen, Alberto, Houchins, & Flores, 2006; Lemons, Mrachko, Kostewicz, & Paterra, 2012; Lemons et al., 2015) indicate growth in phonics and PA for students with ID receiving systematic, adapted instruction in these foundational areas. Lemons and colleagues (2015) found increased growth in PA, letter sounds, and word reading when an evidence-based PA program (i.e., Road to the Code; Blachman et al., 2000) was adapted to reflect the needs of students with Down syndrome. Adaptations tied to positive outcomes in the study included

increased intensity, opportunities for practice, most-to-least prompting, limited verbal language, decreased working memory load, and providing positive reinforcement. Likewise, middle schoolers with moderate ID (i.e., IQ ≤ 55) in a study made gains in vocabulary and comprehension after participating in a vocabulary intervention using graphic organizers and time delay (Browder, Hudson, & Wood, 2013). These findings hold when single-case studies are implemented by teachers. Ahlgrim-Delzell and colleagues' (2014) study demonstrated that teachers can support phonics growth for students with ID who communicate unconventionally. Three elementary students with moderate ID and limited vocal expression exhibited growth in foundational skills following rigorous phonics intervention delivered by trained special education teachers. The intervention systematically combined explicit instruction in phonics, reading connected text, and comprehension through activities accessible by AAC device. Across disability categories, IQ ranges, and grade levels, multicomponent reading interventions demonstrate growing evidence in the research base for students with intellectual and developmental disabilities.

As multicomponent reading interventions gain a research base for this population, recent practitioner-oriented articles (e.g., Allor, Mathes, Jones, Champlin, & Cheatham, 2010; Bruni & Hixson, 2017; Lemons, Allor, Al Otaiba, & LeJeune, 2016) have aimed to translate findings for classroom teachers and ease implementation. These guides synthesize findings from experimental studies and literature reviews to connect teachers with tools, resources, and tips for implementing research-based reading instruction for students with ID. By suggesting ways to combine research-based reading instructional content with modifications for students with ID, these practice guides may help to alleviate a potential research-to-practice gap (Cook & Cook,

2013). Despite the availability of these resources, the degree to which research-based practices are being implemented in schools is unknown.

Recommendations for Students with ID

Building on these advances in research, Browder and colleagues (2008b) propose a conceptual foundation for teach reading to students with severe disabilities. The framework emphasizes two primary goals: increased independence and enhanced quality of life. The focus on independence aligns with findings from the NRP (2000) and extends experimental studies described in previous sections to support use of multicomponent reading programs. Browder and colleagues propose that through systematic instruction in reading foundational skills, supplemented by oral language-driven exposure to literature, individuals with severe disabilities (including ID and other developmental disabilities) can build skills and tools necessary for functional and enriching literacy experiences.

To promote independence in reading, Browder and colleagues urge practitioners to provide explicit instruction in NRP-recommended (2000) foundational reading skills such as PA, phonics, print awareness, fluency, vocabulary, and comprehension. As a supplement to NRP recommendations on content, Browder and colleagues (2008b) suggest modifications to meet needs specific to this population. For example, challenges due to limited speech and language development, processing delays, and/or motor difficulties are addressed with use of flashcards, augmentative and alternative communication (AAC) devices, picture supports, non-verbal responses, repeated exposures, and constant time delay.

In particular, Browder and colleagues encourage instruction in listening comprehension and language development via shared reading or teacher read-alouds. Teachers providing exposure and immersion in high-quality literature can help students to strengthen oral language

and background knowledge necessary for comprehension and knowledge building. For these activities, Browder and colleagues urge teachers to select texts with social validity in mind, rather than limiting content by decodability level. Specifically, the authors suggest that choosing advanced, age-appropriate texts may provide linguistic and social/emotional benefits not available in simpler texts chosen solely for readability.

Examining Typical Classroom Practices

Given the importance of reading to academic and post-secondary outcomes, as well as higher academic standards for students with disabilities, recent guidelines for special educators have shifted considerably. As teachers are expected to build academic competencies in students with ID and meet these standards, their instructional practices may reflect these shifting expectations. However, we do not have a clear understanding of the degree to which these research-based recommendations are being implemented in classrooms. In order to examine current instructional practices, observations studies are needed. Together with data on reading instructional content and methods provided to students with ID, rigorous observation studies can examine potential barriers to be addressed in future research, technical assistance, and/or policy.

Little is known about instruction occurring in classrooms serving students with ID. Systematic observation studies of typical instruction offer one potentially valuable approach to learning more about classroom practices. When conducted with high-quality instruments and procedures, classroom observations can yield meaningful data on business-as-usual instructional practices. Observable instructional characteristics in observation studies may include—but are not limited to—content, grouping, materials, instructional quality, and student engagement. Such advantages of observation data may be magnified with auxiliary data sources.

In addition to findings gleaned from classroom observations, supplementary data can help contextualize results and examine potential influences. Extending observation studies to include data on teacher perspectives and student achievement may allow a more comprehensive picture of instructional effectiveness and decision-making to emerge. Teacher surveys and interviews, for example, can illuminate the potential impact of various factors on instructional activities observed in the classroom. By examining classroom practices and learning more about reading instruction for student with ID, we may be able to improve outcomes for students and supports and training for their teachers.

Previous Observation Studies

Findings from a systematic review of observation studies in the last 20 years (Lindström et al., in preparation) revealed a lack of quantitative observation studies specifically addressing instructional practices for students with ID. Almost half of the studies included in the review observed students with learning disabilities (LD) and those at risk for high-incidence disabilities. Out of eleven eligible studies, one study included ninth-grade students with ID among other disability categories (Ko & Hughes, 2015), and three others (Donne, 2011; Donne & Zigmond, 2008; Kent et al., 2016) listed ID as a secondary category for elementary grade students with hearing impairments or reading difficulties (RD). The four studies were conducted in general education, resource rooms, and self-contained settings. Ko and Hughes's (2015) study of adolescents indicated large portions of instructional time allotted to comprehension and text reading, and a majority of time spent in whole class settings. However, none of the studies specifically focused on instructional practices for students with ID as their primary disability category. Studies observing reading instruction for students with severe disabilities (e.g., Ruppar, 2014; Ruppar, Gaffney, & Dymond, 2015) tended to report outcomes qualitatively.

Specifically, Ruppar's (2014) qualitative observation study indicated students with severe disabilities receiving most literacy instruction passively engaged in self-contained settings and one-on-one formats. Literacy topics included challenging behavior and life skills taught with worksheets and pictures. Reading instruction consisted predominantly of comprehension and vocabulary, with far less attention to PA, phonics, and print awareness, despite low achievement in these areas. Considered in conjunction with teacher interviews, observation results indicated low-quality instruction for this population. Additionally, Ruppar and colleagues' (2015) qualitative study extended findings from the observation study to examine influences on literacy instruction for this population. Findings from observations and interviews of the students' four special education teachers revealed varying experience, pedagogical knowledge, and priorities potentially impacting reading instruction. Across participants, instructional decisions and execution were owed to context, beliefs about students, expectations, and self-efficacy. Overall, findings from these two studies (2014, 2015) emphasize the need for further inquiry into instructional practices for students with ID, taking into account multiple data sources. That is, in order to better support the academic needs of students with ID and guide them toward independence, more precise information is needed on ongoing practices in their classrooms. By examining the instructional practices that are already occurring, we can better understand where more attention and resources are needed for this population and their teachers. Furthermore, supplementing classroom observations with teacher perspectives provides an opportunity to examine our findings with greater complexity and nuance.

The Present Study

The aims of this study were to document features of reading instruction that teachers were providing to students with ID and to explore teachers' rationale for their instruction. Data

from classroom observations, measures of student achievement, and teachers' descriptions of research-based reading instruction in their classrooms were used to answer the following research questions: (a) What is the instructional content emphasis of reading instruction provided by special education teachers to elementary students with ID?; (b) What are related features of instruction (i.e., grouping, materials, engagement, quality) during this time?; (c) What is the schools' intended reading instruction as outlined in students' IEPs?; (d) How do teachers think about their instruction and their rationale for planning?. In our study, we hypothesized that observed instruction would emphasize sight words over multicomponent reading. Additionally, we expected differences between teacher self-report of research-based instructional methods and observed methods, as well as limited knowledge on recommended practices.

CHAPTER II

METHOD

Participant Characteristics

Eligibility criteria. Special education teachers who provided reading instruction to students with ID were invited to participate in the study. Our aim was to observe participating teachers in all special education settings in which they provided reading instruction to their participating student(s) (e.g., resource rooms, and self-contained settings). In addition to the instruction provided by the special educator, we requested to observe any other reading instruction participating students received in special education settings (e.g., instruction provided by para-educators or other support personnel).

Teachers provided consent forms to the parents of students with significant cognitive disabilities to whom they provided reading instruction. Our aim was to recruit students with ID, however, many students in grades K-4 receive special education services under labels other than ID (i.e., autism spectrum disorders, other health impaired, developmental delay).

During the recruitment phase, we worked to identify students who: (a) were enrolled in grades K-4; (b) were identified by their teachers as having an intellectual disability, (i.e., having an IQ level below 70 with deficits in adaptive behavior); (c) used English as their primary language of instruction; (d) received reading instruction in a special education setting (i.e., resource room, self-contained classrooms) from special education teachers and/or para-educators. Student participants received small tokens (e.g., school supplies) for participating.

Teachers. Eight teachers consented to participate in the study. One teacher, the only teacher who provided reading instruction in a whole class (i.e., more than 7 students) setting,

withdrew due to staff challenges of video-recording only the student with consent and shared concerns about having non-consented students captured on video. Of the seven teachers included in the final sample, all were women. Six teachers were white, and one teacher was multiracial white/Latina.

Teachers varied in years of teaching experience, highest degree attained, and depth of professional development in reading instruction. Teachers reported managing caseloads of students from grades K-4. Of the seven participating teachers, all were certified to teach special education. Five teachers had their master's degrees, and two had undergraduate degrees in special education. Only one teacher had ABA certification. Table 1 presents further detail on professional experience of participating teachers. Teachers have been assigned pseudonyms to ensure confidentiality of responses.

Students. Seventeen students in grade K-3 participated in the study. Table 2 presents demographic information for the student participants in the study, as reported in their IEPs. Students varied by age, primary disability category, race/ethnicity, and other characteristics. On average, student participants were 7.73 years old at the beginning of the study ($SD = 1.43$). Students in the sample had primary diagnoses of ID ($n = 2$, 11.8% of sample), developmental delay (DD; $n = 7$; 41.2%), autism spectrum disorders ($n = 6$; 35.3%), and other health impairments (OHI; $n = 2$; 11.8%). Students' secondary eligibility categories included speech/language impairment ($n = 2$; 11.8%), ID, and DD ($n = 1$; 5.9% each).

As measured by the researcher-administered KBIT-2, full scale IQ scores ranged between 40-77 ($n = 13$; $M = 50.31$, $SD = 12.7$). Table 3 outlines descriptive statistics of student scores on researcher-administered measures. IQ scores were unable to be obtained for four students labeled as non-verbal. Although we aimed to include only students with IQ scores below 70, two

students in the sample scored above 70 on the KBIT. Both were identified by their teachers as having significant cognitive disabilities and received reading instruction similar to other students in their classroom with lower IQ scores. Although these two students did not meet the initially proposed inclusionary criteria, we opted to include them as we hypothesized that the reading instruction they would be receiving would not differ from that of students who met initial criteria. On researcher-administered measures of reading and literacy (see *Measures*), student participants all scored substantially below benchmarks for grade level. Despite variability across the sample, raw scores indicated overall low achievement in PA, word reading, vocabulary, comprehension, and print awareness. Although sample students were, on average, in the middle of first grade at the beginning of the study ($M = 1.65$, $SD = 1.1$), scores indicated mean performance at pre-kindergarten levels and below on all measures.

Teachers rated students' attention, inhibition, and self-control as compared with typically developing peers on the SWAN scale (See *Measures*; Swanson et al., 2004). Items mapped onto two domains: attention and hyperactivity/impulsivity. Potential scores on each subscale range between 9-63. On the attention subscale, scores ranged from 9-35 ($M = 21.18$; $SD = 6.6$) out of 63 possible points, suggesting lower attention abilities than typically developing peers. Hyperactivity/ impulsivity scores ranged from 9-48 ($M = 26.41$; $SD = 10.1$) out of 63 possible points, suggesting greater challenges in this domain than peers. Overall scores ranged from 18-74 ($M = 47.59$; $SD = 15.29$), indicating below-average to average behavior challenges.

Sampling Procedures

The university institutional review board and the school district research office both approved the study prior to the start of research activities. Participating teachers and parents of participating students provided informed consent prior to engaging with study activities.

Teachers and students were recruited from a large, urban school district in the southeastern United States. In the district, 53.9% of students were identified as economically disadvantaged, 17.6% were English Language Learners, and 12.8% received special education services. Table 4 outlines demographics for each participating school in the 2015-2016 academic year.

We used purposive sampling (Kuzel, 1992; Miles & Huberman, 1994) to recruit participants from elementary schools serving students with ID. The district administrators and research team emailed principals and teachers with study information and consent forms. Of the 35 elementary schools that were contacted by research and district staff, we received responses from approximately 29%. Students who met eligibility criteria and returned completed parental consent forms were eligible for participation. Teachers then scheduled assessment and observation sessions with research staff, and were paid an honorarium upon completion of the study.

Measures

Observation tool and teacher measures. To better understand reading instruction for students with ID, researchers collected data from multiple sources. In addition to observed classroom instruction, teachers shared their perspectives via surveys and interviews. Tools and procedures for data collection are outlined in the following sections.

Instructional Content Emphasis –Response to Intervention (ICE-RTI; Edmonds & Briggs, 2003). Observers used the ICE-RTI to code various dimensions of reading instruction. The ICE-RTI is an updated version of the ICE-R (Edmonds & Briggs, 2003). ICE-RTI coding allows for chronological analysis of curricular content and grouping, as well as instructional materials, student engagement, and quality. Observers take detailed field notes and then code each video recording of reading instruction along four dimensions (A, B, C, D). Dimension A

describes observed instructional content category (e.g., phonological awareness). Dimension B describes more precisely the activity within that category (e.g., blending and segmenting phonemes). Dimension C describes grouping structures (e.g., pairs, whole class). Dimension D describes materials used during instruction (e.g., white board, worksheets). Additionally, observers report on student engagement and quality for each instructional event.

The ICE-RTI also enables coding student engagement and instructional quality. Student Engagement is a Likert-type rating (1 = low, 2 = medium, 3 = high) of student on-task behavior (e.g., looking at materials, responding to teacher prompts) during a given instructional activity. In the present study, researchers adapted the ICE-RTI engagement rating to reflect engagement of individual target students, rather than a group of students receiving instruction. That is, in contrast to previous studies using the ICE-RTI, a rating of medium engagement referred not to the proportion of students engaged with an instructional activity, but rather to the degree to which the target student exhibited indicators of engagement, as defined in Appendix A, during reading instruction. Quality of Instruction Likert-type ratings (1 = weak, 2 = low average, 3 = high average, 4 = high) are assigned to individual instructional events depending on several predetermined criteria (e.g., explicit instruction, modeling of procedures). The ICE-RTI allows for coding of time allotted to non-instruction (e.g., behavior management, taking attendance) and instruction in other academics (e.g., mathematics). Because the measure is intended to describe observed reading instruction, dimensions such as grouping, student engagement, and quality of instruction were not coded for instructional time spent in non-instruction or other academics. Because the ICE-RTI was used to code instruction at the individual student level, quality ratings reflect instruction provided to the target student during observed instructional activities.

Observers assigned codes to each instructional event, defined by a period of time (≥ 1 min) in which dimension A, B, or C changes from the previous activity (e.g., partner vocabulary activity would be a separate event from an independent vocabulary activity). Activities lasting under one minute were coded with the preceding instructional event. Instructional events (i.e., activities > 1 min) are rounded to the nearest minute and summed by category, activity, and grouping structure for analysis.

Teacher survey and interview. Prior to observations, teachers completed a 32-item survey addressing demographics, experience, and pedagogical knowledge (see Appendix B). Pedagogy questions addressed perceived use of instructional time, knowledge of research-based practices, importance and feasibility of research-based reading instruction, and supports and hindrances to implementing high quality reading instruction for students with ID. Survey response formats included open-ended, multiple-choice, and Likert-type ratings. Three certified special education teachers who did not participate in the study reviewed survey questions prior to their distribution for clarity, fairness, and appropriateness (see Groves et al., 2011). Surveys were managed using REDCap (Harris et al., 2009), a secure online database and survey management tool. Findings from teachers' surveys were used to individualize interviews. Then, responses were summarized to identify average responses across the sample.

Following observations, research assistants (RAs) conducted interviews with teachers using the outline in Appendix D. RAs were assigned to interview teachers whose classrooms they had observed. These pairings were intended to increase validity and richness of findings, facilitate triangulation of data across sources, and promote respect and acceptance between teachers and researchers (Brantlinger et al., 2005). Interviews took approximately 30-45 minutes. First, RAs presented teachers with findings on content and grouping from their classroom

observations. They asked teachers to compare the findings with their experiences and reflect on the accuracy. Quality and engagement ratings were not shared with teachers. Next, teachers answered questions about their student's instructional goals. Then, teachers reflected on challenges to teaching reading to students with ID, existing resources for effective reading instruction, and suggestions for additional supports to enhance the quality of reading instruction for students with ID. For the five teachers with more than one participating student, one student was randomly selected to be the focus for the interview. RAs audio recorded and transcribed their interviews.

Student measures. Various data sources were used to describe student ability and achievement. Standardized measures of cognition, behavior, and literacy were collected to describe students' abilities and achievement. Additional student-level data were collected from IEPs including goals, services, and achievement from standardized and informal assessments, and teacher rating of behavior. Again, the research team used REDCap online software (Harris et al., 2009) for double entry, management, and IOA of IEP data.

IQ. The KBIT-2 (Kaufman Brief Intelligence Test, Second Edition; KBIT-2; Kaufman & Kaufman, 2004) is an individually administered intelligence test of verbal and nonverbal abilities, measured by three subtests. The Verbal Knowledge (selecting a picture to match a definition) and Riddles (selecting a picture that fits a description of function and/or form) subtests comprise the verbal IQ score. Performance on Matrices (selecting a picture that thematically aligns with a given item) determines the nonverbal IQ score. Together, these subtests form the composite *Full Scale IQ* score. The KBIT-2 is appropriate for students with ID who experience expressive language or speech difficulties, as many responses are provided non-verbally via pointing. The brief design is well suited for research projects in which a summary

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IQ measure is needed and students are unable to attend to a lengthy battery. The KBIT-2 has strong psychometric properties; an internal consistency coefficient of .93 suggests strong reliability across ages. Scoring and ceiling rules are applied according to the administration manual.

Reading. We administered a comprehensive assessment battery to evaluate students' foundational abilities in phonological awareness and reading. Timed and untimed measures used in the study are described in the following sections.

Curriculum-based measurement (CBM). CBM assessments were selected to efficiently evaluate participants' reading performance, on account of their brevity and intended purpose to inform teaching decisions about instructional content and methods (Hosp, Hosp, & Howell, 2007). In the present study, several CBM measures were drawn from the Dynamic Indicators of Basic Early Literacy Skills (DIBELS; Good & Kaminski, 2011). For each measure in this section, students completed as many items as possible within one minute. Raw scores are reported for all CBM measures; except where otherwise noted, raw scores reflect number of correct items provided in one minute.

First Sound Fluency (FSF; Good & Kaminski, 2011) was used to measure fluency in PA. Students heard a list of words and were asked to identify the initial sound of each word. In this measure, two points were awarded for segmenting the initial phoneme from the rest of the word, and 1 point is awarded for partial segmentation. *Letter Sound Fluency* (LSF; Good & Kaminski, 2011) is a phonics measure. In this task, students are given a list of letters and asked to identify the sound each letter makes. *Word Identification Fluency* (WIF; Fuchs, Compton, & Fuchs, n.d.) is a measure of word reading. Students were presented with a list of words and asked to read them aloud. An *Oral Reading Fluency* task (ORF; Good & Kaminski, 2011) was administered to

students who were able to identify words on the WIF task. In the ORF task, students were instructed to read a short passage aloud carefully and accurately for one minute. In the present study, the corresponding oral retell task was not administered with this measure. Raw scores reflect the number of words read correctly within one minute.

Standardized reading assessments. Comprehension tasks were drawn from two untimed subtests of the Woodcock Reading Mastery Test-Revised (*WRMT-R*; Woodcock, 1998). Reading comprehension was measured by the <u>*Passage Comprehension*</u> subtest. In this task, students looked at a series of written prompts and said the best word to complete each sentence. In the <u>*Listening Comprehension*</u> subtest of the *WRMT-R*, students listened to a series of oral prompts and are asked to provide the word that correctly completes the sentence. For both WRMT-R measures, items begin with illustrated supports and increase in difficulty throughout the measures. Scoring and ceiling rules were applied according to the administration manual. Raw scores reflect the number of items correct. Internal-consistency reliability for both WRMT-R tasks ranges between .87-.91. The *Test of Preschool Early Literacy* (TOPEL; Lonigan, Wagner, Torgesen, & Rashotte, 2007) was used to assess early literacy skills as measured by three subtests: <u>*Print Knowledge*</u> (distinguishing text from pictures), <u>*Definitional Vocabulary*</u> (single word spoken vocabulary), and <u>*Phonological Awareness*</u> (blending and segmenting words spoken aloud). An internal consistency coefficient of .96 suggests strong reliability across ages. As the measure was normed for preschool-aged children, raw scores were used in the present study to convey emerging literacy abilities of students with ID beyond that age range. Scoring and ceiling rules were applied according to the administration manual.

Behavior rating. Using the <u>*SWAN Rating Scale*</u> (SWAN, Swanson et al., 2004), teachers rated students on 18 items along two dimensions: attention and hyperactivity/impulsivity.

Teachers were asked to compare target students to typically developing peers on various behaviors using a Likert-type scale from 1 ("far below") to 7 ("far above") for nine items in each dimension. Items were worded so that higher scores reflect fewer problems related to impulsivity, hyperactivity, and inattention (e.g., for "Ignore extraneous stimuli," a teacher would consider whether the target student's tendency to ignore irrelevant behaviors and information were far below or far above peers, or somewhere in between). Possible scores for each dimension (i.e., attention and hyperactivity/impulsivity) range from 9-63 points, 126 combined. Assigning only 'average' ratings would result in a score of 36 in each subscale, or 72 combined. Ratings in each dimension are summed to form raw scores.

Individualized education program (IEP). Participating teachers submitted current IEPs for each student in the study. In addition to participant demographics, IEPs summarized goals in academics, behavior, adaptive behavior, and communication, as well as accommodations and related services to meet goals (see Appendix C). All IEP data was double entered into an online database management tool (REDCap; Harris et al., 2009) to facilitate descriptive analysis.

Data Collection Procedures

Training. RAs were trained observers of reading instruction for the present study. Observers participated in eight hours of training on observational methodology and coding reading instruction using the ICE-RTI prior to data collection. In the training phase, all coders met reliability standards of $\geq 90\%$ on two 30 min. practice videos prior to coding observation sessions. Any discrepancies were resolved to 100% consensus with the gold-standard key, as coded by the first author and documented to minimize error. Practice videos featured students with ID receiving reading instruction in various settings and activities. During the data collection phase, additional training was provided weekly and as needed to ensure fidelity and accuracy in

data collection and minimize coder drift. The first author led these meetings, addressing coding questions and documenting decisions to ensure consistency across the sample. Similarly, the first author led three 1-hour group sessions addressing building rapport with teachers, communicating findings appropriately and accurately, triangulating data from multiple sources, eliciting detailed responses from subjects, and transcribing interviews from audio recordings. RAs were given a mock interview kit (i.e., results, questions, survey) to familiarize themselves with procedures and materials prior to scheduled interviews. Other training sessions throughout the study period focused on administration and scoring of assessments, data entry, and management of video files.

Student assessment. Students were assessed in two waves: first, students completed screening measures prior to observations, and later, teachers scheduled CBM measures. RAs were graduate students trained on testing procedures prior to testing. Depending on behavior and availability, students completed testing during two to four sessions of 30 minutes each; assessment sessions were video recorded. Students provided assent and were awarded small prizes of school supplies for participation. When two consecutive testing sessions ended in non-compliant behaviors, assessment was discontinued. Students with limited verbal abilities did not complete tasks requiring speech (e.g., DIBELS subtests). All assessments were administered, scored, and blindly double-scored by trained graduate special education students.

Observations and coding. The research team asked each special education teacher to identify times during the day in which she provided reading instruction to each participating student. Responses varied from continuous blocks of reading instruction in the morning or afternoon to scattered instructional sessions occurring throughout the academic day. The researchers then scheduled observations on three consecutive school days during typical reading instruction time. Careful attention was paid during scheduling to avoid atypical programming

(e.g., field trips, IEP meetings) and anticipated absences (e.g., doctor appointments). In cases of unplanned absences or other scheduling disruptions, the next available day was observed. Three observation sessions were conducted for each student participant.

Researchers recorded all observations on video, and kept detailed field notes. Although video recording is not necessary for ICE-RTI coding, it was chosen for the present study due to advantages in precision over live coding through video review and simultaneous individual coding of multiple students in a shared setting. When multiple target students in the same classroom engaged in distinct instruction, individual cameras were used to focus on each student's activities and engagement. If multiple student participants received instruction together (e.g., in a small group), fewer cameras were used to minimize intrusiveness.

Following observation sessions, RAs coded observed instruction from video recordings using a Microsoft Excel version of the ICE-RTI. For cases in which multiple student participants were in the same class and receiving instruction simultaneously, a separate coding sheet was generated to reflect any potential differences in coded variables (e.g., breaks, engagement, etc.). When appropriate, questions regarding coding decisions were addressed with the first author and other coding team members.

Inter-observer agreement (IOA). This study used the gold standard method to determine percent agreement on observation and assessment data. The first author coded two 30-min practice videos of reading instruction provided to students with ID. After training, RAs watched each video and completed ICE-RTI coding sheets accordingly. The first author then calculated IOA for each RA's coding sheet. IOA was calculated using the following formula, defined by the number of agreements, divided by the combined number of agreements and disagreements:

$$\% \text{ of agreement} = \frac{\text{\# of intervals in agreement} - \text{\# of intervals in disagreement}}{\text{total \# of intervals observed}} \times 100.$$ For the

observation component of the study, training required all RAs to achieve $\geq$ 90% IOA with the

gold standard on both practice observation videos prior to data collection. All discrepancies were

recorded, addressed through further training and support, and resolved to consensus.

During data collection, IOA was also conducted on 20% of all observed sessions,

selected at random. This helped to ensure strong agreement beyond chance and prevent drift

(Landis & Koch, 1977). The first author resolved any discrepancies in the random sample and

discussed them with coders to ensure future agreement and consistency. IOA on the randomly

selected observations ranged from 79.6-100% ($M = 90.5\%$; $SD = 6.4\%$), suggesting overall high

agreement. IOA was also calculated by coding field: content ($M = 87.9\%$; $SD = 10.2\%$), activity

($M = 84.4\%$; $SD = 15.7\%$), grouping ($M = 87.2\%$; $SD = 19.9\%$), materials ($M = 92.4\%$; $SD =$

10.3%), quality ($M = 77.9\%$; $SD = 22.5\%$), engagement ($M = 93.9\%$; $SD = 6.3\%$), teacher text

reading ($M = 100\%$; $SD = 0$), and student text reading ($M = 97.0\%$; $SD = 7.4\%$). Potential drift

was addressed through further training and support, and disagreements were resolved to establish

consensus.

To ensure proper adherence to test administration and scoring procedures, we calculated

IOA on a randomly selected sample of videos recorded during testing sessions. Graduate RAs

reviewed the recordings, rescoring student measures on 30% of all videos. IOA was calculated at

over 95% for this sample, suggesting strong adherence to assessment protocol. Any

discrepancies in scoring were documented and resolved to consensus.

Teacher survey and interviews. Prior to observations, teachers completed a survey on

demographics, training and experience, pedagogical knowledge, and instructional emphasis

during reading instruction for students with ID. Teachers submitted the survey electronically into

a database management tool (REDCap; Harris, 2009). Researchers provided reminders and clarification as needed to ensure survey completion.

Following observations, teachers arranged a time to meet with a member of the research staff to review findings from observations and discuss instructional decisions. Interviewers and teachers reviewed observation findings pertaining to reading content and grouping structures. Interviewers then asked the teachers about their perceptions of time allotment and the degree to which observed data met their expectations. RAs then used the interview script to ask the teachers about instructional decisions, goal setting, supports, and challenges in implementing reading instruction for students with ID. All interviews were audio recorded, and teachers were given a copy of their observation data on content and grouping. Shortly after the interview, the research team transcribed teacher responses to the interview questions. A second trained RA reviewed the audio recording and transcript to verify accuracy.

The first author then coded interview transcripts for relevant themes, noted main ideas from each response, and compiled responses across teachers. Most themes were identified a priori using responses from surveys, observed instruction, findings from previous qualitative research (e.g., Ruppar, 2015), submissions from the research team, and informal communication with teachers. Additional themes were coded iteratively, as unanticipated responses arose in interviews and were identified across participants. A second trained coder reviewed the first authors' findings for reliability, determining the degree to which interview content mapped onto a given theme. Discrepancies were discussed and resolved to consensus. To further ensure credible and trustworthy findings, we conducted a first-level member check (see Brantlinger et al., 2005). In this process, we emailed interview transcripts to the teachers following the interviews and asked them to review the content and verify accuracy.

Research Design and Analyses

This mixed-methods study incorporated data from multiple sources to examine the nature and context of reading instruction provided to students with ID. Data were collected via classroom observations, teacher-reported perspectives from surveys and interviews, and student IEPs and assessments. Data collection and analysis procedures for the observational component of the study were informed by previous quantitative observation studies of reading instruction (e.g., Swanson & Vaughn, 2010). Observation data was supplemented by demographic and performance data from student IEPs and assessments. Guidelines by Brantlinger and colleagues (2005) on quality indicators for qualitative research informed procedures used for teacher interviews and surveys. Practices including triangulation across multiple sources, member check, and collaborative work helped to establish credibility and trustworthiness throughout data collection and analysis.

Stata 14 software (Statacorp, 2015) was used to calculate the following outcomes related to the research questions, across all observed classrooms: time allotted to reading instruction, time spent teaching reading, time spent in each content category and grouping structure, materials used, mean student engagement (1-3; overall and in each content area), and mean instructional quality (1-4; overall and in each content area). A paired samples T-test was conducted to calculate potential differences in scheduled and observed reading instructional time. Descriptive analyses summarized IEP, survey, and interview content: student and teacher demographics, perceived instructional emphasis, importance of research-based practices, and supports and barriers to implementing research-based reading instruction.

CHAPTER III

RESULTS

Classroom observations

  Observations were conducted in the spring semester of 2017. Across all seven participating teachers, 2,901 minutes of teaching were observed in 51 observation sessions. Observations were conducted in self-contained settings. Findings from observations are reported in the following sections.

  Reading instruction. Participating teachers provided instruction to students with ID in self-contained classrooms. Observations ranged from 11-148 min ($M = 58.02$; $SD = 31.2$). Seven of the 17 participating students (41.2%) received 30-60 min of additional reading instruction outside of their participating teachers' classrooms. Those sessions were not observed in the present study. Out of all observed instruction, 46.1% (1338 min) was spent on reading instruction. The remaining time (53.9%) was spent on non-instructional activities and instruction in other academic areas. Figure 1 depicts time allotment during all observed instruction.

  Instructional content emphasis. All reading instruction was coded for content at two levels: (A) category and (B) activity. Overall and activity-specific findings are presented in Table 5 and the following sections. For each category, findings are presented in proportion to total observed time and total reading instructional time. Within each observed content category, activities are listed from most commonly observed to least. Although the ICE-RTI allows for coding of fluency and oral language instruction, no instruction was observed in these categories. Figure 2 depicts content emphasis as observed for each teacher.

Concepts of print. Instruction on how books and print work was coded as concepts of print. In total, 16 min of instruction was observed in this category, comprising 0.6% of all observations and 1.2% of reading instruction. Examples of observed activities included teaching the title and author of a given book, how to handle books, and distinguishing between letters and words. Quality of instruction in this category varied from 1 (weak) to 3 (high average), with an average teacher quality rating of 2.14. A majority (56.3%) of instruction in concepts of print was coded as "high average," 25% of instruction was coded as "low average," and 18.8% as "weak." Student engagement in this category was 2.14, suggesting medium engagement.

Alphabetic knowledge. Activities teaching letter identification and recognition were coded as instruction in alphabetic knowledge. In total, 134 min of instruction was observed in this category, comprising 4.6% of all observations and 10% of reading instruction. Observed activities included using different sensory materials to make letters and identifying letter names from printed stimuli. Quality of instruction in this category varied from 1 (weak) to 3 (high average), with an average teacher quality rating of 2.06. Of all instruction in alphabetic knowledge, 29.1% was coded as "high average," 54.5% of instruction was coded as "low average," and 16.4% as "weak." Student engagement in this category was 2.15, suggesting medium engagement.

PA. Activities in which sounds were identified and manipulated absent of print were coded as PA. In total, 8 min of PA instruction was observed, comprising 0.3% of all observed time and 0.6% of reading instruction. The only observed PA activity was blending/segmenting of phonemes. Quality of instruction in this category was rated 2.0 ("low average"), and engagement was 2.0 (medium).

Word study/phonics. Activities pairing sounds and symbols or reading unconnected text were coded as word study/phonics. This was the most commonly observed instructional category (630 min), comprising 21.7% of total observed time and 41.7% of reading instruction. Activities included applying letter-sound knowledge, word reading, learning letter/sound relationships, learning irregular words, and integration of word study. Within this category, a majority of instructional time (59.2% of this category) focused on letter-sound relationships and their application (i.e., phonics), and the rest (40.8%) focused on word reading. Quality of instruction in word study/ phonics varied from 1 (weak) to 3 (high average), with an average teacher quality rating of 2.13. Of all instruction in word study/phonics, 18.3% was coded as "high average," 71.6% of instruction was coded as "low average," and 10.2% as "weak." Student engagement in this category was 2.04, suggesting medium engagement.

Vocabulary. Activities pairing words with their meanings through print, oral language, and/or visual cues were coded as vocabulary instruction. Across studies, 146 min of vocabulary instruction were observed. This comprised 5% of all observed time or 10.9% of reading instruction. A majority of observed vocabulary instruction was providing students with examples or non-examples of vocabulary words, whereas a smaller proportion focused on definitions. Quality of instruction in this category varied from 1 (weak) to 3 (high average), with an average teacher quality rating of 2.18. Of all observed vocabulary instruction, 28.1% was coded as "high average," 52.7% of instruction was coded as "low average," and 19.2% as "weak." Student engagement in this category was 1.95, suggesting overall medium engagement.

Comprehension. Activities targeting gaining meaning from connected text through reading or listening were coded as comprehension. In total, 212 min of instruction were observed in this category, comprising 7.3% of all observed instructional time, and 15.8% of reading

instruction. Examples of comprehension activities included listening comprehension monitoring while a teacher read, reading comprehension monitoring while students read, and activating prior knowledge/predicting story events. Of all observed comprehension instruction, 16.5% was coded as "high average," 68.4% of instruction was coded as "low average," and 15.1% as "weak." Student engagement in this category was 1.97, suggesting overall medium engagement.

Text reading. When reading connected text occurred outside from instruction in any of the other categories, instruction was coded as text reading. In total, 103 min of instruction were observed in this category, comprising 3.6% of all observed instructional time and 7.7% of reading instruction. Activities included supported oral reading, teacher reading with students listening and/or following along, and independent silent reading. Of all observed text reading instruction, 12.6% was coded as "high average," 78.6% of instruction was coded as "low average," and 8.7% as "weak." Average student engagement in this category was 1.97, suggesting overall medium engagement.

Spelling and writing. Activities focused on correct spelling patterns and encoding words were designated as spelling. In total, 3 min of spelling instruction were observed, comprising 0.1% of all observations and 0.2% of reading instructional time. Writing and language arts activities were coded as writing instruction. In total, 86 min of instruction were observed in this category, comprising 3% of all observations and 6.4% of reading instructional time. Observed activities in this category included shared writing, independent writing, and handwriting. Observed spelling instruction was of "low average" quality with medium ($M = 2$) student engagement. Writing/ELA instruction, on the other hand, varied in instructional quality from 1-3. Almost a third (32.6%) of observed instruction in this category was "high average," 52.3% was

"low average," and 15.1% was "low average." Student engagement during observed writing instruction was 2.0, suggesting overall medium engagement.

Non-instruction and other academics. In addition to observed instructional time spent on reading activities, codes were assigned to non-instructional activities and academics in areas other than reading. Across classrooms, 932 min of non-instructional activities were observed, or 32.1% of all observations. Examples of non-instruction included behavior management, sensory breaks, transition between instructional activities, and other events in which academic instruction was not the primary focus. Furthermore, academic activities focused on content other than reading or literacy were coded as other instruction. Across classrooms, 631 min of other instruction were observed, or 21.8% of all observations. Examples of other instruction occurring during observations included life skills, fine motor, and numeracy/mathematics. Grouping, engagement, instructional quality, and materials were not reported for these categories of observations.

Related features of reading instruction. In addition to content, all reading instructional events were also coded for delivery variables. Observed grouping structures, materials, student engagement, and instructional quality are summarized in the following sections. Overall and activity-specific findings are presented.

Grouping. For all observed reading instruction (1338 min), RAs coded the grouping structure using ICE-RTI guidelines. Possible structures included (a) whole class (i.e., ≥ 7 students taught together); (b) small group (2-6 students taught by teacher); (c) pairs (two students working together, minimal teacher interaction); (d) independent (student works alone, with minimal teacher interaction); (e) individual (student works one-on-one with teacher or para-educator). Figure 3 depicts results for grouping structures aggregated across teachers, and Figure

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4 presents findings by teacher. Overall, the most common grouping structure was individual instruction (611 min; 45.7%), followed by small group (527 min; 39.4%), independent (174 min; 13%), then pairing (26 min; 1.9%). No whole class instruction was observed in the study. On average, instructional quality and student engagement were rated highest in observations of individual instruction (2.23 and 2.06, respectively) and lowest for independent instruction (1.61 and 1.96, respectively).

Analyses of content by grouping structure revealed that of the categories observed, concepts of print (75% of observed instruction in this category), vocabulary (67.8%), and text reading (55.3%) were taught predominantly in individual settings. That is, during a majority of instructional time spent on this content, students received one-on-one instruction from a teacher or para-educator. On the other hand, PA (100%), comprehension (74.1%), and alphabetic knowledge (54.5%) were taught predominantly in small group settings. Instruction in word study/phonics and writing/ELA instruction were more evenly distributed among grouping structures. Paired instruction was only observed in word study/phonics activities and text reading. Other than the 3 minutes observed in spelling activities, independent instruction was not the predominant grouping structure for any of the reading content categories.

Instructional materials. For each observed instructional activity, RAs coded materials used by target students and/or teachers. Table 6 outlines the frequency of instructional materials during coded activities, including the relative emphasis on each material. In total, 429 materials were used across 314 observed instructional events. The number of materials exceeds the number of events, as approximately one-third (33.4%) of instructional activities featured two or more materials. The most commonly used material was workbooks/worksheets (27.4% of coded activities), followed by words/letters out of context (e.g., flashcards, word lists; 24.8%), and then

computers or tablets (21.3%). During reading activities in which tablets or computers were used, quality of instruction was rated slightly below low-average ($M = 1.95$, $SD = 0.37$), and student engagement was about average ($M = 2.06$, $SD = 0.52$). Among types of text used during instruction, the most common was trade books or authentic texts (9.9% of coded activities), followed by basal texts (5.1%), then decodable texts (0.6%).

Student engagement. For each instructional event, RAs coded student engagement demonstrated by the target student on a scale from 1 (low engagement) to 3 (high engagement). Behaviors indicative of high engagement included eye contact, using materials appropriately, and following teacher directives. Low engagement was signaled by elopement, tantrum behaviors, and visual focus on other stimuli. Across all observed instruction, the average engagement rating was 2.03 ($SD = 0.44$), suggesting overall medium engagement. By category, average engagement ratings ranged from 1.95 in vocabulary ($SD = 0.40$) to 2.15 in alphabetic knowledge ($SD = 0.36$).

Instructional quality. Coders rated quality of instruction for each reading activity observed on a 4-point scale (1 = weak; 2 = low average; 3 = high average; to 4 = excellent). Ratings reflected characteristics of both the curriculum and the instructor. Examples of high quality instruction included direct and explicit language, modeling and guided practice, and monitoring student performance. Examples of low quality instruction included minimal feedback, lack of behavior-specific praise, and poor pacing. Middle ratings were given for instruction featuring both high-and low-quality practices. Across all observed instruction, the instructional quality rating was 2.12 ($SD = 0.57$), suggesting overall low average quality. Post-hoc analyses revealed no significant correlation between student engagement and instructional quality ($p > .05$).

Individualized Education Plans (IEPs)

Teachers submitted current IEPs for all student participants. In addition to previously reported disability categories, IEPs also provided data on present levels of performance, goals, accommodations, and other information relevant to instruction for each student. Data from student IEPs is presented in the following sections.

Annual goals. Individualized education plans (IEPs) outlined annual academic and behavior goals for each student. Table 7 summarizes student goals across the sample. All students in the sample had individual goals in reading/literacy and mathematics/numeracy. On average, each student's IEP reported annual goals across 6.18 domains ($SD = 1.13$), including 3.06 goals specific to reading/literacy ($SD = 2.05$). In the reading domain, the most common goal among participants was reading sight words/high frequency words ($n = 13$; 76.5%). None of the students had individual goals in PA. Except for one student, all had goals in pre-vocational behavior ($n = 16$; 94.1%). Other goal domains included communication ($n = 14$; 82.4%), followed by fine motor ($n = 13$; 76.5%), adaptive behavior ($n = 11$; 64.7%), language ($n = 8$; 47.1%), and social/emotional ($n = 3$; 17.6%).

Accommodations and services. Student IEPs also documented accommodations for achieving annual goals that we expected to observe during instruction. Accommodations allowed for alternative formatting, pacing, and presentation of instructional content to maximize engagement and learning. Pacing accommodations included allowing breaks ($n = 12$; 70.6%) and flexible time limits ($n = 9$; 52.9%). Accommodations in presentation included use of manipulatives ($n = 5$; 29.4%), errorless learning strategies ($n = 5$; 29.4%); checking often for understanding ($n = 4$), and bodily/kinesthetic or hands-on strategies ($n = 1$; 5.9%).

All students received direct supports for academics in reading and math. On average, students were eligible for 7.03 hours per week ($SD = 3.89$) of ELA services, or 84.4 min daily. A majority of students were eligible for direct behavior services ($n = 14$; 82.4%). On average, students were eligible for 6.26 hours per week ($SD = 3.91$) of behavior services, or 75.1 min daily. Additionally, all student participants were eligible for related services beyond academic and behavior supports in various domains, including speech/language ($n = 16$; 94.1%; $M = 1.04$ hrs/wk; $SD = 0.25$); occupational therapy ($n = 13$; 76.5%; $M = 0.5$ hrs/wk; $SD = 0.12$); ancillary attendant ($n = 4$; 23.5%; $M = 32.5$ hrs/wk; $SD = 5.0$); special education aide in regular program ($n = 11$; 64.7%; $M = 13.86$ hrs/wk; $SD = 7.1$); and music therapy ($n = 1$; 5.9%). Overall, student participants were scheduled to receive 17.98 ($SD = 12.14$) hours per week of related services, in addition to academics and behavior.

Teacher Perspectives

Teacher surveys. Participating teachers completed surveys on the role of research-based practices in their reading instruction for students with ID. Participants were asked to rate the importance and feasibility of using research-based practices to teach reading in their classroom. The Likert-type scale ranged from 1-100 (1 = not important at all; 100 = necessary). Across teachers ($N=7$), ratings of the importance of research-based practices in reading instruction ranged from 54-100 ($M = 93.1$; $SD = 17.3$); and feasibility ranged from 38-100 ($M = 68.0$; $SD = 19.5$). When asked about potential obstacles to implementing research-based reading instruction, several teachers cited limited access to resources and/or funding for materials ($n = 3$), lack of knowledge on research ($n = 3$), and student behavior and/or communication challenges ($n = 3$). Other reported obstacles included inadequately trained para-educators ($n = 1$), insufficient guidance from administrators and coaches ($n = 1$), and time constraints ($n = 1$).

Survey questions also addressed instructional practices for students with ID. Teacher estimates of reading instruction time ranged between 30-90 minutes of reading instruction (M = 66.43; SD = 27.2) to participating students daily. A paired samples T-test was conducted to compare the length of observed reading instruction to teacher estimates of reading instruction from surveys. There was not a significant difference in the time observed (M = 58.02; SD = 31.2) and the time estimated; $t(16)$ = -3.85, p < .01. Six of the seven teachers (85.7%) reported using the PCI curriculum or some of its components with their students with ID, and the seventh teacher reported using Edmark due to insufficient PCI materials in the school. Four teachers (57.1%) reported supplementing with other curricula including Peer-Assisted Learning Strategies (PALS; Fuchs et al., 2000), Edmark (Austin & Boekman, 1990), Eden School Series (The Eden Press, 2012), and Orton-Gillingham (Gillingham & Stillman, 1997).

Finally, the survey asked participants about their time allotment for reading instruction. Participants estimated reading instructional time use by content focus and grouping structures. For example, content questions asked what percent of scheduled reading instructional time was spent on the following content: PA, phonics, vocabulary, fluency, comprehension, spelling, writing, or behavior management and housekeeping. Teachers reported most reading instructional time dedicated to phonics (M = 20.8%; SD = 13.2%), and least to spelling (M = 2.5%; SD = 2.7%). Grouping questions asked about time spent in the following formats: whole class, small groups, student pairs, individual, and independent. Teachers reported most reading instructional time spent in individual (one-on-one) settings (M = 50%; SD = 27.1%), and least in pairs (M = 7.1%; SD = 15.0%). Estimated time allotment in various content areas and grouping structures are outlined in Table 8; findings are presented by teacher and across the sample.

Teacher interviews. Following completion of surveys, classroom observations, and preliminary data analyses, trained research assistants conducted brief interviews with participating teachers. Interviews focused on reviewing results from observations and examining decision-making in planning reading instruction for students with ID. Findings are presented by topic.

Review of observational findings. Overall, teachers agreed that findings from classroom observations were representative of the reading instruction they provided to participating students. One teacher (Ms. Lewis) initially expressed that she thought her students had more paired instruction, but then reflected that students working alongside one another were often focused on different content and/or objectives. Despite overall disappointment with large amounts of behavioral management and transition time, teachers generally recognized this as a reality in their classrooms and reported wanting to provide more instruction in foundational skills. Teachers reported that the limited availability of support staff and the inconsistency with which students received medication contributed to their day-to-day ability to deliver intended instruction.

Instructional goals and decisions. When asked about how academic goals were set for their students, teachers discussed their students' abilities. Five teachers (71.4%) cited working from IEP goals; Ms. Lewis specifically expressed frustration at working with IEP goals written by the previous teacher. Despite this reported intention, responses indicated more collective perspectives in instructional planning; several teachers reported choosing activities and curricula that would meet most students' needs in their caseloads. Teachers varied in the degree to which data informed instructional decisions. None of the teachers specifically reported using curriculum-based measurement or standardized assessment data to make decisions, but three

teachers reported using data from instruction including discrete trial training (DTT) to track goal mastery and one collected comprehension and vocabulary data during group shared reading. Some reported assessing mastery informally and conferring with other teachers on what should be taught next.

Of the seven interviewed teachers, five (71.4%) reported that their students' reading goals were important and appropriate, despite obstacles in behavior or prerequisite skills (e.g., concepts of print, letter identification, speech/language) that may impede progress. Two teachers (at the same school) were especially supportive of reading instruction for students with ID; one cited its benefits for academic success and reducing problem behaviors attributed to boredom in her classroom, and the other reported feeling compelled to prepare students for middle school: "whatever you show up to middle school with really determines how those teachers will treat you and how hard they're going to push you," (Interview, May 17, 2017). However, two teachers (29.6%; Lewis and Browne) expressed concerns that life skills and behavior management may be more beneficial to their students than learning how to read at this time. In the teacher survey, Lewis was the teacher who assigned the lowest score to the importance and feasibility of implementing research based practices in her classroom, and her student was among the oldest and highest-performing in the sample. Conversely, Browne's student was a kindergartener with more severe problem behaviors and limited language abilities.

Choosing curricula. Although all seven teachers were from the same district, they reported varying levels of autonomy in choosing reading curricula for their students with ID. Some reported district mandates, while others cited resource lists provided from the district, and yet others expressed a lack of resources from the district. Ms. Francis reported being steered away from a training on a popular program, as her school deemed it a poor fit for her students.

This perceived curricular fit was another consideration for most teachers in the study. Responses were split among satisfaction with their current curricula; although three teachers reported a good fit for their student, four reported that there were likely better options "out there," preferring the structure and of one curriculum and the content of another. Two teachers (Francis, Wheatley) reported using curricula in which they found the students to be progressing more quickly—that is, students who experienced ongoing difficulties with phonics were moved away from phonics-based reading programs to curricula targeting sight word reading and background knowledge deficits. One teacher's quote summarized this trend: "I really had no experience . . . so I would rather be successful at something than unsuccessful" (interview, May 17, 2017). Teacher responses suggested informal assessment of fit and progress. Teachers most commonly reported using Edmark and PCI for students with ID, based on past experiences with other students and advice provided by other teachers.

Reports of limited materials were common across teachers. Several teachers in the study reported having inadequate materials for teaching reading to students with ID. Teachers addressed materials shortages by purchasing their own ($n = 2$), combining components from familiar programs ($n = 2$), sharing with others ($n = 2$), using general education materials ($n = 1$), and reproducing copyrighted materials from a previous placement ($n = 1$). One teacher remarked that although her school had other curricula (e.g., Wilson, SPIRE) available for use, proper training to use them was prohibitively expensive. Only one teacher reported knowledge of ways to find research-based practices (e.g., professional organizations, scholarly journals), but said school and district funds could not cover these.

Foundational skills. Among the teachers, several discussed the role of phonics and/or PA in reading instruction for students with ID. On one hand, some teachers wanted more information

about teaching these skills to their students, but it was not uncommon for the same teachers to later mention a training in one of these topics that was a poor fit for their students. Reasons for discontinuing phonics and turning to sight word instruction included minimal progress ($n = 4$; 57.1%) and mastery of letter sounds ($n = 1$). Likewise, teachers reported not knowing how to deal with non-response to phonics instruction. Rather than continuing or adapting a phonics curriculum, five teachers (71.4%) chose to focus on sight words and/or comprehension.

Adequacy of pre-service training. When asked whether their training programs adequately prepared them to teach students with ID, four teachers said "no," and three teachers said "yes and no." Three teachers (42.9%) reported receiving training only for high-incidence disabilities, and one teacher in the sample (14.3%) received credentials through an alternative certification program that had very little emphasis on reading. Teachers identified the following gaps in pre-service preparation: student behavior challenges, addressing non-responders, choosing a curriculum in the absence of school mandate, and incorporating AAC devices in reading instruction. Overall, teachers reported frustration due to inadequate preparation in reading, behavior, or both.

School/district resources. Teachers were asked about available resources for teaching reading to students with ID. Despite all being in the same district, responses varied regarding availability of resources and supports. For example, Clifton mentioned ongoing support stemming from a district-wide PCI training. Conversely, Lewis expressed that receiving one curriculum from the district would close off opportunities for others—that she chose the one that would fit most of her students, despite their diverse needs. She and Wyatt reported obtaining PCI in their school via grant applications and subsequent progress reports, which took more time away from instruction and were reliant upon anecdotal evidence of effectiveness. Overall,

teachers reported dissatisfaction with quality of professional development; either sessions were too short to get into detail, or topics for longer sessions were poorly matched to their particular student needs.

Several teachers mentioned special education coaches in their interviews, reporting varying accounts of accessibility. Some teachers were more pro-active, reaching out to coaches readily with questions. Others remarked on the inaccessibility of coaches due to IEP meetings and other administrative responsibilities, opting instead for information from other teachers ($n = 4$). Teachers reported receiving compartmentalized supports from different coaches, with little overlap or coordination in expertise. That is, when teachers had access to both behavioral and instructional coaches, the guidance provided often did not align to meet the needs of the particular students. For several teachers, interview responses reflected a reluctant role in seeking and managing multiple sources of expertise.

Challenges and supports for teaching reading to students with ID. Responses in this category echoed earlier portions of the interview. Teachers identified student challenges including attention-seeking problem behavior, speech and language deficits, cognitive processing delays, unpredictable medication schedules, excessive absences, and limited background knowledge (e.g., being able to identify animals). Teachers also identified training and employment challenges including lack of resources, expensive trainings, limited knowledge of research-based programs, poor fit between background and job description (i.e., licensed for high-incidence disabilities, working with severe caseload), and limited training for other adults in the room (i.e., para-educators).

When asked about potential supports, teachers provided suggestions on ways to facilitate teaching reading to students with ID. Several teachers ($n = 5$) identified the need for more

support personnel. Teachers suggested more para-educators with enhanced training and increased collaboration with behavior specialists and speech-language pathologists (SLPs): that is, more adults with advanced training in the classroom could meet the individual needs more effectively. Conversely, other teachers expressed interest in increased coordination with general education teachers to counteract feelings of isolation.

Teacher suggestions regarding curricula addressed content and training methods. Ms. Wyatt and Ms. Francis reported interest in budget increases for curricular tools. In addition to requests for more options to reflect different student performance levels, other specific suggestions were offered. Ms. Harvey and Ms. Burnett suggested observing various programs and supports being implemented with fidelity to determine what was appropriate for their students. If conducted by another teacher or instructional coach, this same individual could then observe her classroom to evaluate appropriateness and/or fidelity. Ms. Wheatley was interested in a comprehensive curriculum that would have components to be completed during individual, small group, and inclusion portions of the day, taking into account specific behaviors common to students with ID. She also expressed wanting more resources to determine effective goal setting and instruction for a student, based on current levels of performance.

CHAPTER IV

DISCUSSION

The aims of this study were to describe reading instruction provided to students with intellectual disability in special education settings, compare findings with intended instruction and teacher perceptions of potential instructional barriers and supports. To achieve these aims, we observed students with ID receiving typical reading instruction in special education settings and systematically coded for content emphasis, grouping structures, materials used, student engagement, and instructional quality. Furthermore, we supplemented observation data with teacher self-report data using surveys and individual interviews. Special educators reported their experiences teaching reading to students with ID, evaluated adequacy and availability of training and resources, and identified challenges and potential means for improvement. Data were analyzed using mixed methods. Summary statistics were calculated for observation data by category (e.g., content, engagement) and across participants. Teacher self-report data were coded for themes and summarized by topic. In the following sections, I summarize study findings across data sources, connect findings to existing literature, acknowledge limitations, and discuss implications for future research and practice.

Summary of Findings

Instructional content emphasis. Aspects of observed reading instruction for students with ID resembled that of both high-incidence (e.g., Kent, Wanzek, & Al Otaiba, 2016; Swanson, Solis, Ciullo, & McKenna, 2012; Swanson & Vaughn, 2010) and low-incidence (Ruppar, 2015) populations. Of reading instruction observed, the greatest proportion was spent on phonics and word study. Over a quarter (27.8%) of all reading instruction was dedicated to

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learning and application of phonics, whereas activities involving word-level reading constituted 19.2% of observed reading instruction. In order of emphasis from most time to least, word study/phonics were followed by comprehension, vocabulary, alphabetic knowledge, text reading, and writing. Together, activities in concepts of print, PA, and spelling constituted 2% of observed reading instruction. Across participants, almost half of all designated reading time was dedicated to non-instructional activities and other academics. This time included behavior management, breaks from instruction, transition between activities, distribution of materials, and instruction in areas such as fine motor, life skills, and numeracy.

In a recent review of ten observation studies (Lindström, 2017), comprehension, text reading, and phonics activities—in that order—were most prevalent in observations of reading instruction for struggling readers in grades K-12 across eligibility categories. On the other hand, Ruppar's (2015) qualitative observation study of middle-and high-school students with severe cognitive disabilities (including ID), indicated a majority of activities addressing vocabulary and comprehension, with far less emphasis on phonics and print awareness. The present study's focus on elementary learners may explain these discrepancy, as we would expect to see a greater emphasis on foundational reading skills in earlier grades, and more comprehension in later grades. However, low rates of fluency instruction in the present study correspond with findings on both severe disabilities (Ruppar, 2015) and other eligibility categories (Lindström, 2017), in which it was the least observed category of instruction activities. These findings suggest that students' grade level may shape teachers' instructional decisions, beyond individual abilities.

Discrepancies between teacher estimates of time allotment and observed instruction contrast with previous research; in the review of observation studies across populations and settings, observed instruction was similar in length to teacher estimates (see Lindström, 2017);

however, the review featured more samples of high-incidence populations, for whom longer reading blocks may be more rigid. Additionally, the mean length of observation (58 min) in our sample was significantly lower than in the review (77 min), suggesting less reading instruction time for students with ID than other disabilities. Furthermore, the present study's finding on non-instructional time and time spent on other academic skills is higher than in the review (Lindström, 2017), in which these combined activities constituted only 32% of observed instruction. Although the author offered whole class instruction as a potential contributor to high rates of non-reading instruction, the same conclusions cannot be drawn in the present study. Instead, these high rates may be due to deficits in behaviors and language exhibited by participating students with ID, as rated by teachers on the SWAN and outlined in IEPs.

Related features of reading instruction. Observation data indicated that individually administered instruction, was the most commonly observed grouping structure, followed closely by small groups (39.4%). Independent instruction encompassed 13% of reading instruction, and paired instruction was uncommon during reading activities. Whole class instruction ($\geq$ 7 students simultaneously) was not observed in the present study, in part due to sampling methods. Participants' small class sizes (i.e., $\leq$ 7 students at one time) often precluded the possibility of instruction categorized as whole class. Materials used during observed reading instruction included worksheets/workbooks, words and letters out of context, computers and tablets, visuals, connected text, and behavior materials (e.g., sticker charts). Sources of connected text included trade books, basal readers, decodable text, and others. Although non-instructional time and other academics were not coded for materials, several teachers reported using technology for behavioral reinforcement and management.

In general, students demonstrated medium engagement during observed reading instruction, varied by content and grouping structure. That is, students generally showed some indicators of attention to a given task by looking at materials or their teachers, staying near the instructional area, and responding to teacher prompts, but the behaviors were intermittent and not sustained. These indicators of high engagement were most commonly observed during activities on concepts of print and alphabetic knowledge and during individual instruction, in which a student worked one-on-one with a teacher or para-educator. Behaviors indicating low engagement such as tantrums, elopement, and attention to extraneous environmental stimuli were more likely to be observed during phonics instruction or independent seat work, but were not predominant for all students.

Across observations and activities, ratings of instructional quality were just above low-average, indicating inconsistent use of efficient and explicit instructional methods. Specifically, instructional quality took into account both curricular characteristics and instructor practices that contributed to increased learning opportunities. High quality instructional methods included scaffolding tasks using modeling and guided practice, explicitly teaching concepts with multiple exposures, pacing lessons appropriately to maintain momentum and optimize learning, and providing prompt and specific feedback to correct errors. However, these research-based methods were not observed consistently in the present study. The highest quality instruction observed incorporated one or two of these practices, but failed to include the rest. One teacher's instructional pacing and explicitness contributed to consistently higher quality ratings than those of her peers (i.e., all "high average"). It should be noted, however, that she had the shortest observation sessions and one of the lowest-performing students.

Connections to previous research. As with reading content, findings pertaining to related features of instruction indicated some overlap with previous research on both severe disabilities and other eligibility categories. As compared with peers with in other eligibility groups, students with ID are more likely to receive individual instruction in self-contained settings, with lower student-teacher ratios. Individual instruction was more prevalent than observed across eligibility categories (Lindström, 2017), but less than in Ruppar's (2015) study. As in the present study of students with ID, previous studies reported the least instruction occurring in student pairs (Lindström, 2017; Ruppar, 2015). However, the review noted predominantly whole class instruction, whereas that structure was not observed in the present study and rarely (4%) by Ruppar.

Similarly, our student engagement and instructional quality ratings were somewhat higher than in Ruppar's (2015) study, as students in that study participated passively in poorly planned literacy activities misaligned with perceived abilities. Our students demonstrated some off-task and non-compliant behaviors, but also demonstrated some response to teacher prompts and attention to instructional materials. On the other hand, engagement was lower than in high-incidence studies (e.g., Kent et al., 2014; Swanson & Vaughn, 2010), which may be attributed to cognitive and behavior profiles of the students in the present study. Specifically, deficits in adaptive behavior in students with ID may contribute to greater tantrumming, aggression, and elopement than peers with high-incidence disabilities (AAIDD, 2011).

In addition to sample differences, varying definitions of engagement may also contribute to divergent results across studies. Authors of previous studies of students with RD (e.g., Kent et al., 2014; Swanson & Vaughn, 2010) rated engagement on a class level, determining the proportion of students demonstrating engagement with a given activity, out of the entire group

(e.g., most students are engaged, few students are engaged). However, our adapted measure rated indicators of individual engagement, such as attending to a task and response to teacher prompts. By contrast, Ruppar (2015) evaluated engagement more qualitatively, taking into account meaningfulness and thematic connectedness of activities. Overall, these variations in defining engagement may contribute additional variance beyond sample characteristics and invite further inquiry on indicators of engagement specific to this population.

Individualized education plans. Findings from student IEPs indicate widespread challenges in reading (mostly sight words and decoding), behavior (staying on task, sitting in place, response to teacher prompts), and language (receptive, expressive). Because developmental deficits in this these domains are common in students with ID, a vast majority of the sample had goals in all three. The co-occurrence of language deficits and problem behaviors in children has been documented across sex, age, and disability categories (see Chow & Wehby, 2016), but compared with other eligibility categories, the degree to which these characteristics manifest in students with ID and inhibit learning for themselves and peers is far greater (AAIDD, 2011). These developmental deficits in behavior and language common among students with ID may provide some explanation of this discrepancy.

These findings support previous research by Lemons and Fuchs (2010). In their sample of 24 students with Down syndrome, a majority had IEP goals in sight word reading, and fewer students had goals in foundational reading skills including phonics, letter sounds, and PA. Compared with the present study, their sample had more goals in comprehension and fewer goals in fluency. This may be in part due to sampling differences, as their students were generally older (ages 7-16), and they were able to read correctly at least one word or one letter sound for the intervention component of the study. The authors did not collect data on IEP goals in other

areas, such as behavior or language. Although Ruppar's (2015) study examined student IEPs, they were used to describe student reading performance, rather than instructional goals.

Teacher perspectives. In their interviews and surveys, teachers reported their perspectives on reading instruction for students with ID. Teachers reported providing inadequate reading instruction for their students, citing minimal progress. Deficits in language, behavior, and cognitive development were commonly reported challenges to successful reading intervention. Additionally, teachers reported frustration due to limited materials, inadequate training and professional development, and balancing individual student needs. Despite some apprehension of the applicability of phonics instruction for students with ID, teachers reported wanting to learn and use more research-based instructional practices with this population. Concerns about feasibility reflected previously discussed challenges. Instead, participants relied heavily on other teachers to inform their decisions on instructional content and methods. 111

As in the present study, teachers of adolescents with severe disabilities (Ruppar et al., 2014) reported inadequate pre-service preparation to teach reading to this population. Teachers whose training emphasized life skills and adaptive behavior lacked knowledge about reading instruction, and those with experience in reading instruction reported difficulty adapting content to a low-incidence population. Results from the interview and survey portion of the study support findings by Ruppar and colleagues (2014), in which experienced teachers (i.e., ≥ 3 years) of students with severe cognitive disabilities attributed success in reading instruction to availability of materials and personnel. As in Ruppar's study, the present study's teachers made instructional decisions that took into account skills and availability of para-educators, as well as access to appropriate instructional materials. However, responses from teachers in Ruppar's study indicated more individualization of content, whereas our sample tended to make decisions

on what was best for most students. Another similarity in both studies was the influence of other teachers on curricular decisions, as teachers alluded to collective support from other special educators at their sites. The present study's teacher-reported materials shortages and desire for appropriate reading programs resonates among teachers of high-incidence (e.g., Swanson et al., 2012) and low-incidence populations (Ruppar et al., 2014), alike.

Connections Across Data Sources

Overall, findings from the present study extend existing knowledge on reading instruction for students with ID. Data from observations, interviews, and student IEPs indicate students with cognitive and behavioral deficits receiving low-average instruction from teachers who are inadequately prepared to meet their needs. Use of multiple data sources allows for triangulation of findings and more precise understanding of instructional practices. In the following sections, findings are discussed in the context of all included data sources.

Considerable reading time spent on phonics and word study reflected student IEP goals and teacher-reported instructional emphases. Despite teacher preferences for sight word programs and the predominance of sight word goals on student IEPs, observations revealed greater time spent on phonics than sight words. Teachers did report wanting to deliver more research-based instruction, but cited issues with feasibility due to lack of knowledge and resources. Observed instruction generally consisted of content and delivery reflecting teachers' professional backgrounds (i.e., academics or behavior) and augmented by recommendations from other teachers. That is, special educators taught their students with ID using familiar and available programs, while recognizing considerable room for improvement. As with teacher preparation programs, observed instructional materials emphasized either academic or behavior needs of students with ID, with little attention to the other domain.

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Teachers' estimates of instructional time use differed significantly from what was observed; observation sessions were shorter than teachers had reported their students receiving, and more time was spent on behavior management than estimated. Though teachers' intended instruction differed from what was observed, they reported that most instruction observed was typical, depending on availability of personnel and student attendance. Although problem behaviors were identified as impeding student learning in IEPs and interviews, only three students had function-based assessments and behavior intervention plans on record, whereas a majority had accommodations allowing breaks in instruction. These high rates of behaviors in the sample and lack of formal behavior supports likely contributed to the considerable instructional time spent on behavior management and transition between activities. Whether attributed to characteristics of intellectual disability or in response to challenging tasks (see AAIDD, 2011; Bierbaum, Henrich, & Zigler, 2005), disruptive behaviors were widely reported by teachers as a hindrance to successful reading instruction and seemed to negatively impact participants' views of their effectiveness. Overall, teachers reported feeling comfortable with one aspect of instruction: behavior management or teaching reading. None of the teachers expressed feeling competent in both domains.

The cognitive, behavior, and language profiles of students with ID present considerable challenges in implementing high-quality reading instruction. These characteristics require more intensive supports than for peers with high-incidence disabilities, and they often manifest in disruptive behaviors. Additionally, teachers of students with ID are responsible not only for meeting their students' IEP goals, but also coordinating responsibilities with other teachers and support personnel. When classroom management extends beyond student behavior and academics to coordinating materials and delegating tasks to para-educators, teachers' planning

and instructional time may become limited, resulting in lower-quality instruction for students with significant needs. Specifically, teachers in these situations may be more inclined to provide students with independent activities such as worksheets or computer programs, as they require less preparation and expertise than intensive, explicit instruction. Furthermore, these practices teachers to work individually with other students, as support personnel may lack training needed for implementation. Teacher-reported preferences for curricula that are easy to implement may manifest in lower-quality instruction, for the sake of minimizing problem behaviors and managing the classroom. With this in mind, teachers and their students would likely benefit from more skilled and reliable para-educators and greater access to high-quality materials.

Observed instruction and data collection using DTT was reported in teacher surveys and interviews. Instructional quality during DTT trials varied depending on instructor, pacing, and feedback; sometimes scoring and data management took longer than the instructional tasks. None of the teachers reported using other progress monitoring measures, such as CBM, to track student performance and reevaluate goals, despite responses of informal progress monitoring in regards to perceived "fit" of reading content and methods.

Connections to Recommended Practice

The predominance of word study and phonics instruction in our observations may reflect a shift from long-established sight word reading instruction for students with ID (Browder et al., 2006), toward more recent research recommendations of multicomponent, phonics-based instruction (e.g., Allor et al., 2014; Allor et al., 2010; Browder et al., 2008). Greater time spent in phonics, vocabulary, comprehension, and alphabetic knowledge may give students the opportunity to build skills at various levels: symbol, word, and text, with eventual goals of improved reading outcomes and independence. Beyond designating instructional time for

foundational skills, instructional quality must also be considered. Quality ratings in observed

phonics and other foundational skills were generally low-average. High-quality intervention

studies recommend explicit phonics instruction, with appropriate modeling, pacing, visual

supports, opportunities for practice, and feedback, to be beneficial for this population (e.g., Allor

et al., 2010a; Allor et al., 2014; Browder et al., 2008). With these practices, teachers can ensure

greater success of programs not originally designated for students with ID.

Omission of fluency instruction indicates a missed opportunity to apply word study and

phonics toward reading independence, especially for students whose IEP and assessment data

indicate potential benefits. Explicit fluency instruction may serve as a bridge from word reading

and decoding to accessing larger pieces of text with independence (Pikulski & Chard, 2005).

Repeated and timed readings may build automaticity by rerouting demands from working

memory to text processing and comprehension (NRP, 2000; Wolf & Katzir-Cohen, 2001), while

increasing motivation and engagement (Hudson, Lane, & Pullen, 2005).

Grouping results generally reflect research-based recommendations (e.g., Elbaum,

Vaughn, Hughes, & Moody, 1999) to conduct reading instruction for students with disabilities in

small, homogeneous groups. Observed small group and individual instruction structures

increased exposure to oral language, reading content, and peer learning among students (Elbaum

et al., 1999). Independent activity quality ratings were generally lower, in comparison, evidenced

by slower pacing and few opportunities to respond.

Collaboration with other professionals is recommended to address language and behavior

challenges that impede reading instruction in this population. In their guide for implementing

high quality reading instruction to students with ID, Lemons and colleagues (2016) recommend

teachers partnering with SLPs and behavior specialists to plan comprehensive instruction that

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meets students' needs. The prevalence of language and behavior goals in the sample indicates potential needs for more intensive supports. Specifically, the authors suggest meeting to coordinate supports and plan consistent practices and language. By providing complementary research-based supports in language, academics, and behavior, teachers may increase outcomes for students in all of these domains.

Finally, researchers recommend using student data to strategize and implement reading instruction for students with ID (e.g., Lemons et al., 2016). Though DTT may be well suited for some students with limited verbal communication skills, one-minute measures such as CBM may be more efficient and precise for some students with ID. CBM measures can help in determining appropriateness of instruction, progress toward goals, and areas in need of intensification. By planning data collection and analysis carefully, special educators can prioritize instruction that reflects individual needs.

Limitations

This observation study included a small number of teachers and students within a single district; as such, findings should not be generalized to describe experiences for the entire population. Similarly, limiting observation sessions to three per student may not provide sufficient detail on instructional content and emphasis. Increasing the number of participants and observations would add to the generalizability of findings and allow more precise analysis of appropriate instruction.

This study focused solely on instruction provided to students with ID in special education settings, but some students in the sample also received instruction in general education settings. Observation of general education settings may have led to different results in content, grouping,

engagement, and/or quality. More information is needed on the nature of reading instruction provided to students with ID in all settings.

Observation studies are inherently vulnerable to threats to reliability and validity; that is, teacher and student behaviors may be affected by the awareness of being observed, and observed instruction may have been higher quality than typical. The research team made considerable efforts to establish positive rapport with participating teachers and students and minimize intrusiveness during observations. Furthermore, we offered teachers the opportunity to evaluate whether findings represented their typical instruction. As classroom observations become more commonplace in statewide evaluations of accountability and performance, teachers and students may be less sensitive to potential observer effects.

Future Directions for Research

More rigorous observation studies are needed to describe the reading instruction provided to students with ID. These studies would aggregate data from multiple sources: systematic observations of special education and general education settings, teacher perspectives, student achievement, and progress. With this information, researchers may examine student response to instructional methods and appropriateness of observed instruction. Observation studies in various grades, settings, districts, and with larger samples will help to determine predictors of high-quality instruction, what is optimal for this population, and areas in need of greater attention.

In addition to more efficacy studies of phonics-based approaches for students with ID, future experimental studies may explore multicomponent reading interventions that specifically target other needs of students with ID, such as behavior and language. Additionally, examining the role of para-educators, assistive technology, and other characteristics of self-contained classrooms in reading instruction may optimize quality and outcomes for students with ID.

Furthermore, findings from teacher interviews and surveys raise questions regarding the role of professional development in teacher preparation, as well as characteristics of teachers who use research-based practices. More research is needed on efficacy of pre-service training programs and in-service professional development on reading instruction for students with ID.

Implications for Practice

Although findings from the present study suggest some use of research-based practices in classrooms serving students with ID, far more progress is needed to adequately support them in becoming independent readers. By incorporating recommendations from research on instructional delivery such as appropriate pacing and explicit modeling, teachers may be able to adapt existing materials to the needs of students in this population without further strain to already limited resources.

As students with ID continue to be included in school accountability data, the findings from this study may inform training that is tailored to this particular population. For example, training may facilitate systematic planning and collaborative partnerships between teachers, instructional coaches, and other educational professionals (e.g., behavior specialists, SLPs) to leverage knowledge of research-based practices across disciplines and strengthen instruction. Furthermore, future pre-service and in-service training may consider findings from this study to prepare special educators to adapt existing programs to meet language, behavior, and cognitive needs of students with ID.

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Table 1.

Teacher Background and Training

Teacher name	School	Grades taught	Highest education	# Years teaching total	# Years teaching SPED	RBP Importance	RBP Feasibility	Recent PD sessions
Clifton	Tarrywile	K, 1	Master's	6	5	100	75	Eden, PCI, OG, Pathways
Lewis	Harrington	3	Master's	1.5	1.5	54	38	Wilson, PCI, OG, Building with Stories
Wyatt	Gibson	1-3	Master's	6	6	100	60	PCI, Text-Level Assessments, Balanced Literacy Reading and Writing, OG
Browne	Harrington	K, 1	Master's	6	3	100	100	None
Francis	Herbert	K-3	Bachelors	1	1	98	63	PCI
Wheatley	Gibson	K-1	Master's	2	2	100	80	None
Harvey	Everly	K-2, 4	Bachelors	2	1	100	60	OG, PCI
M	-	-		3.50	2.79	93.14	68.00	
(SD)	-	-		(2.36)	(2.0)	(17.3)	(19.5)	

Note. OG = Orton-Gillingham. *RBP Importance*, *RBP Feasibility*= teacher rating of importance/feasibility of using research-based practices to teach reading to students with ID.

Table 2.

Sample Demographics - Students

	N	%	M (SD)
Age (years)	-	-	7.73 (1.43)
Gender			
Male	8	47.1%	-
Female	9	52.9%	-
Grade			
Kindergarten	3	17.6%	-
First	4	23.5%	-
Second	6	35.3%	-
Third	4	23.5%	-
Race/ethnicity			
White	9	52.9%	-
Black	8	47.1%	-
Latino/Hispanic	1	5.9%	-
Primary disability			
ID	2	11.8%	-
DD	7	41.2%	-
ASD	6	35.3%	-
OHI	2	11.8%	-

Note. *ID* = intellectual disability; *DD* = developmental delay; *ASD* = autism spectrum disorder; *OHI* = other health impairment; *SLI* = speech/language impairment; *Age* = student age in years on the date of first observation.

Table 3.

Student Ability and Achievement - Descriptive Statistics

	n	Min.	Max.	Mean	(*SD*)
IQ	13	40	77	50.31	(12.73)
Print Knowledge	13	1	34	20.85	(10.59)
Phonological Awareness					
FSF	17	0	26	3.94	(7.55)
PA	13	3	19	10.23	(4.64)
Oral Reading					
LSF	17	0	42	7.88	(13.71)
WIF	17	0	39	6.65	(12.46)
DORF	8	0	38	9.25	(14.58)
Vocabulary	13	2	58	29.62	(17.24)
Comprehension					
Listening Comp.	17	1	9	3.71	(1.79)
Passage Comp.	17	0	7	1.59	(1.77)
Behavior					
Attention	17	9	35	21.18	(6.60)
Hyperactivity/Impulsivity	17	9	48	26.41	(10.12)
Combined	17	18	74	47.59	(15.29)

Note. Except for IQ, all values represent raw scores. IQ is the age-normed calculation of IQ, as measured by KBIT-2 (Kaufman & Kaufman, 2004). Print Knowledge, Vocabulary, and PA are subtests of the TOPEL (Lonigan et al., 2007); FSF and DORF are subtests of DIBELS Next (Good & Kaminski, 2011); FSF = First Sound Fluency; DORF = DIBELS Oral Reading Fluency; LSF = Letter Sound Fluency; WIF = Word Identification Fluency (Fuchs, Compton, & Fuchs, n.d.); Listening Comp. and Passage Comp. are comprehension subtests of the WRMT-R (Woodcock, 1998); Attention and Hyperactivity/Impulsivity are subscales of the SWAN Behavior Rating Scale

Table 4.

School and District Demographics

School	Enrollment (n)	Low income (%)	ELL (%)	Students with disabilities (%)	Non-white (%)
Everly	584	42.8	7.4	15.1	49.8
Gibson	695	52.7	13.1	20.1	33.1
Harrington	756	27	4.1	8.6	13.8
Herbert	545	77.4	13.2	17.2	49.4
Tarrywile	731	94.9	63.1	7.9	65.4
District	85,123	53.9	17.6	12.8	NR

Note. ELL = English language learners; NR = not reported. Reported values reflect 2015-2016 academic year.

Table 5.

Content, Quality, and Engagement in Observed Instruction

	# Minutes	% of Subcategory	% of Total Reading Instruction	% of Total Observed Time	Average Instructional Quality	Average Student Engagement
Concepts of print	16	100.0%	1.2%	0.6%	2.14	2.14
Total alphabetic knowledge	134	100.0%	10.0%	4.6%	2.06	2.15
Letter identification/recognition	128	95.5%	9.6%	4.4%	2.06	2.16
Other	6	4.5%	0.4%	0.2%	2.00	2.00
Total PA	8	100.0%	0.6%	0.3%	2.00	2.00
Blending or segmenting phonemes	8	100.0%	0.6%	0.3%	2.00	2.00
Total phonics/word study	630	100.0%	47.1%	21.7%	2.13	2.04
Letter-sound relationships	109	17.3%	8.1%	3.8%	2.12	2.18
Application of letter-sound relationships to reading/writing/spelling	264	41.9%	19.7%	9.1%	2.11	1.93
Irregular words	29	4.6%	2.2%	1.0%	2.33	2.44
Word reading	210	33.3%	15.7%	7.2%	2.14	1.97
Integration of word study	18	2.9%	1.3%	0.6%	2.00	2.17
Total fluency	0	0.0%	0.0%	0.0%	NA	NA
Total vocabulary	146	100.0%	10.9%	5.0%	2.18	1.95
Teach or practice definitions	8	5.5%	0.6%	0.3%	2.33	2.00
Examples or non-examples	137	93.8%	10.2%	4.7%	2.18	1.94
Discussion to promote deep understanding of word knowledge	1	0.7%	0.1%	0.0%	2.00	2.00
Total comprehension	212	100.0%	15.8%	7.3%	2.09	1.97
Prior knowledge/predicting	16	7.5%	1.2%	0.6%	1.67	2.33
RC monitoring	55	25.9%	4.1%	1.9%	2.27	2.09
LC monitoring	141	66.5%	10.5%	4.9%	2.12	1.76
Total text reading	103	100.0%	7.7%	3.6%	2.10	1.97
Supported oral reading	77	74.8%	5.8%	2.7%	2.15	2.00
Independent silent reading	4	3.9%	0.3%	0.1%	1.00	1.00
Teacher reads aloud, students listen	11	10.7%	0.8%	0.4%	2.00	2.00
Teacher reads aloud, students read along	11	10.7%	0.8%	0.4%	2.00	2.00
Oral language	0	0.0%	0.0%	0.0%	NA	NA
Spelling	3	100.0%	0.2%	0.1%	2.00	2.00
Total writing/language arts	86	100.0%	6.4%	3.0%	2.06	2.00
Shared writing	33	38.4%	2.5%	1.1%	2.67	2.00
Independent writing/publishing	29	33.7%	2.2%	1.0%	2.33	2.00
Handwriting	24	27.9%	1.8%	0.8%	1.50	2.00
Total reading instruction	1338	-	-	46.1%	2.12	2.03
Total non-instruction	932	-	-	32.1%	-	-
Total other instruction	631	-	-	21.8%	-	-
Total minutes observed	2901	-	-	100.0%	-	-

Note. Text reading category includes reading connected text without simultaneous instruction in vocabulary, phonics, fluency, or comprehension. Activities that were not observed are excluded from the table. Average instructional quality scale: 1 = weak, 2 = low average, 3 = high-average, 4 = excellent; average student engagement scale: 1 = low, 2 = medium, 3 = high; RC = reading comprehension; LC = listening comprehension. Adapted from "An Observation Study of Reading Instruction Provided to Elementary Students with Learning Disabilities in the Resource Room," by E. Swanson & S. Vaughn, 2010 *Psychology in the Schools, 47*(5), p. 486.

Table 6.

Materials Used in Observed Instruction

	# Instructional Events Observed	Percent of Observed Activities
Workbooks/worksheets	86	27.4%
Words/letters out of context (flash cards, lists)	78	24.8%
Computer/tablet	67	21.3%
Visuals without print (e.g., picture cards)	36	11.5%
Behavior materials (e.g., sticker chart, visual schedule)	36	11.5%
Text--trade book, authentic text	31	9.9%
Manipulatives	26	8.3%
Visuals with print (e.g., calendars)	23	7.3%
Text--basal	16	5.1%
White board/overhead/easel	13	4.1%
Pencil & paper	7	2.2%
Audio recording	4	1.3%
Games and puzzles	2	0.6%
Text--decodable	2	0.6%
Text--unknown	1	0.3%
Other	1	0.3%
Total instructional events	314	-

Note. *Total instructional events* = the number of unique activities coded. The sum of *# Instr. Events Observed* exceeds this value, as several activities featured more than one material.

Table 7.

Student Goals Outlined in Individualized Education Plans (IEPs)

Student Goal Areas	*n*	Percent of sample
Reading/literacy	17	100.0%
Sight words/high-frequency words	13	76.5%
Letter ID	6	35.3%
Decoding	5	29.4%
Comprehension	5	29.4%
Fluency	4	23.5%
Letter-sound correspondence	3	17.6%
Character/setting	3	17.6%
Story sequence	2	11.8%
Matching colors to names	1	5.9%
Name spelling	1	5.9%
Writing sight words	1	5.9%
Other reading goals (e.g., writing, matching pictures to text)	6	35.3%
Pre-vocational	16	94.1%
Task completion	9	52.9%
Sitting in place	4	23.5%
Responding to teacher prompts	4	23.5%
Other (e.g., transitions, participation with peers, appropriate play)	11	64.7%
Communication	14	82.4%
Language	8	47.1%
Adaptive behavior	11	64.7%
Social/emotional	3	17.6%
Fine motor	13	76.5%
Math/numeracy	17	100.0%
Other (e.g., speech, writing, academic readiness)	5	29.4%

Table 8.

Teacher Estimates of Time Use During Reading Instruction, by Content and Grouping Structure

| | | Content (% of instructional time) | | | | | | | | Grouping (% of instructional time) | | | | |
ID	Est. total reading time (min)	PA	Phonics	Fluency	Vocab.	Comp.	Spelling	Writing	Non-instruction	Whole class	Small groups	Pairs	Indiv.	Indep.
1	30	10	10	50	5	20	0	0	5	0	0	0	50	50
2	60	0	40	5	0	20	0	10	10	0	0	40	20	10
3	75	5	10	5	10	25	5	15	10	50	0	0	50	25
4	90	12	12	11	0	15	0	11	50	0	0	0	100	0
5	90	11	22	11	11	35	5	5	10	0	70	0	20	10
6	90	20	10	15	5	15	5	20	10	20	0	10	60	10
7	30	23	33	0	33	0	0	17	17	0	50	0	50	30
Mean	66.43	11.6%	19.6%	13.9%	9.1%	18.6%	2.1%	11.1%	16.0%	10.0%	17.1%	7.1%	50.0%	19.3%
(SD)	(27.2)	(8.0)	(12.5)	(16.7)	(11.4)	(10.7)	(2.7)	(7.0)	(15.4)	(19.1)	(29.8)	(15.0)	(27.1)	(16.1)

Note. All values represent estimates from teacher surveys. *Allotted reading time* = time spent teaching reading, according to teacher estimate. *PA* = phonological awareness; *Comp.* = comprehension; *Non-instruction* = behavior management, transition, etc.; *Indiv.* = one-on-one instruction; *Indep.* = student working apart from teacher or other students.

Observed Instructional Time by Content

- Behavior, transition, etc.
- Other academics
- Phonics
- Comprehension
- Vocabulary
- Alphabetic knowledge
- Text reading
- Writing/Spelling/ELA
- Concepts of print
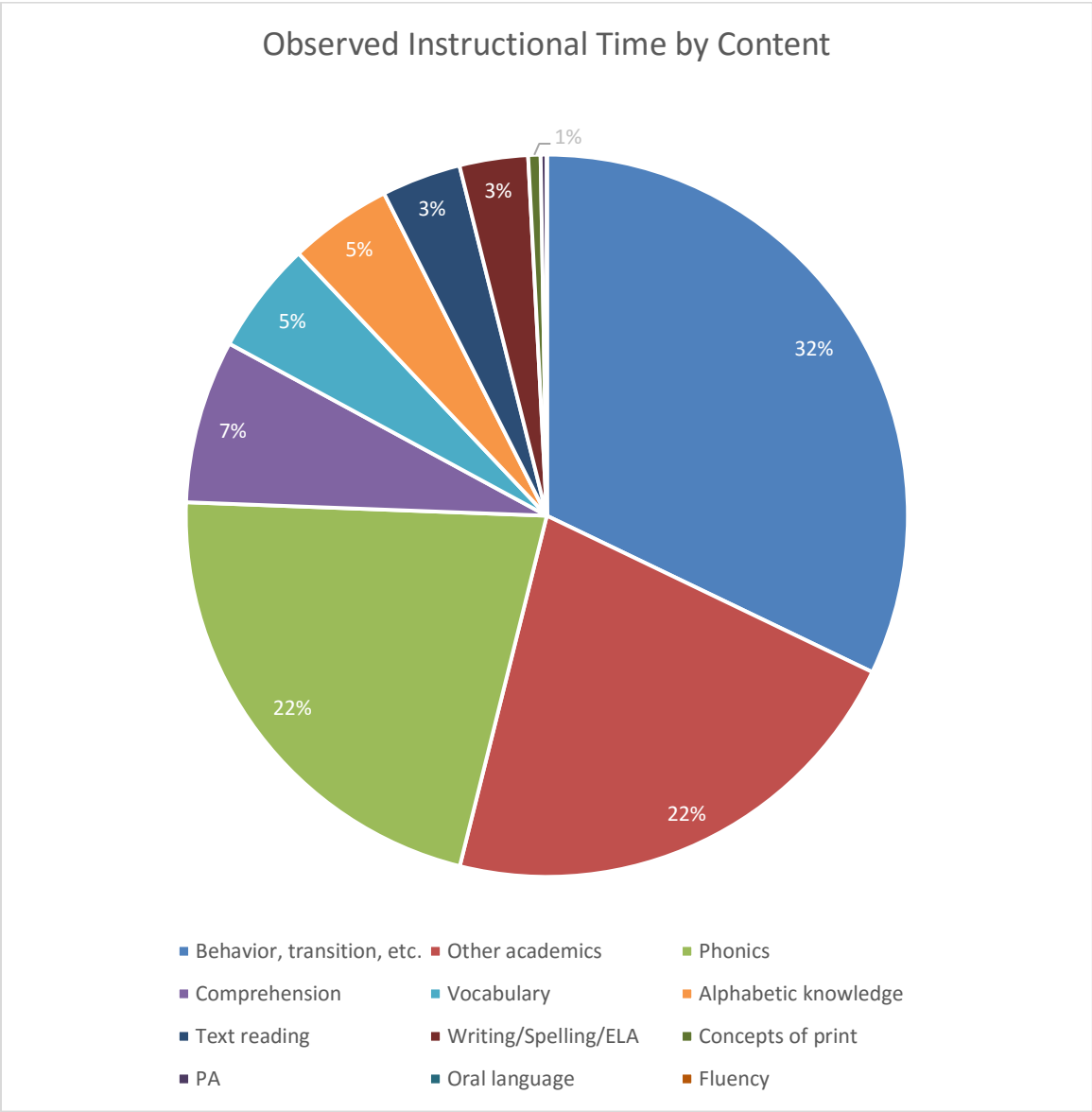- PA
- Oral language
- Fluency

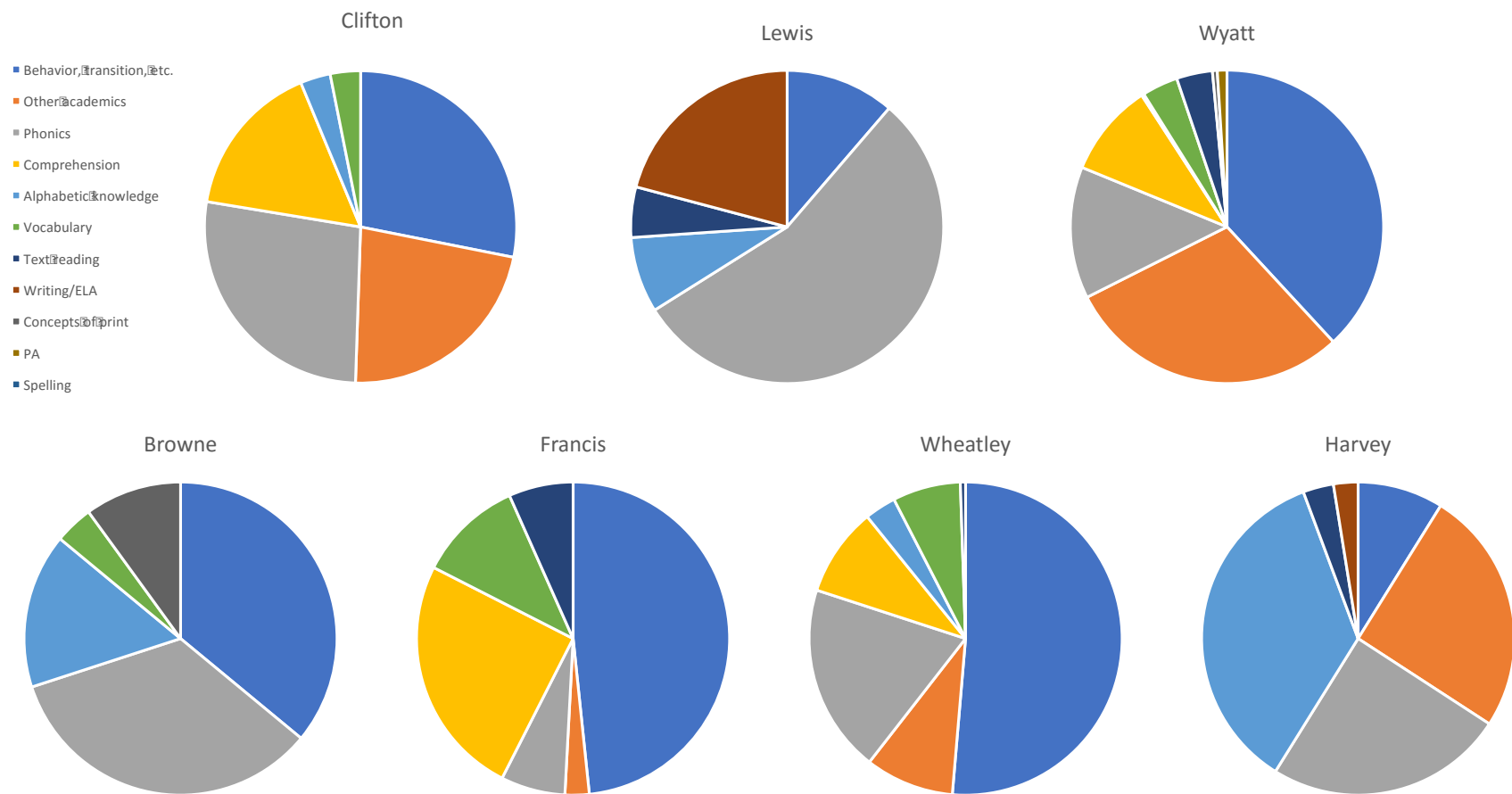*Figure 1*. Instructional content emphasis across observations.

Figure 2. Instructional content emphasis by teacher.
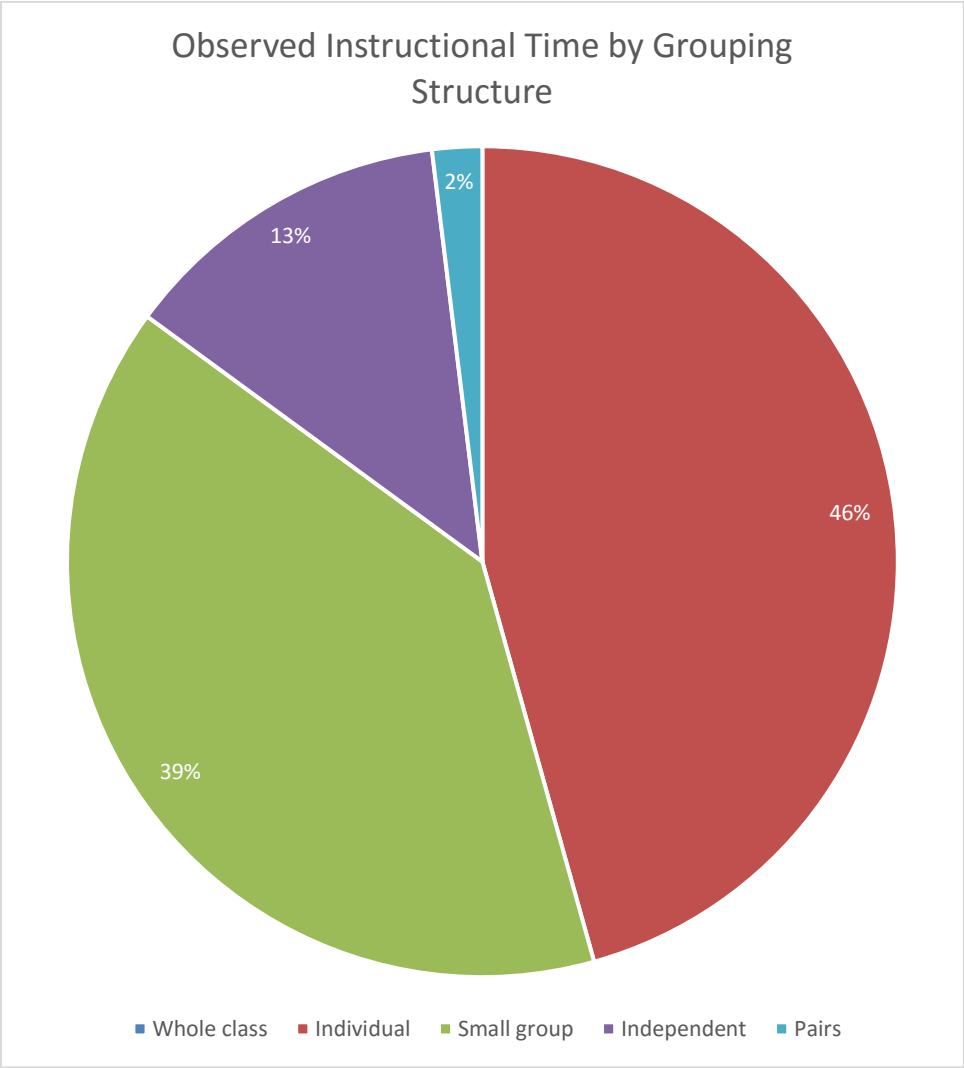
Figure 3. Observed grouping structures during reading instruction.
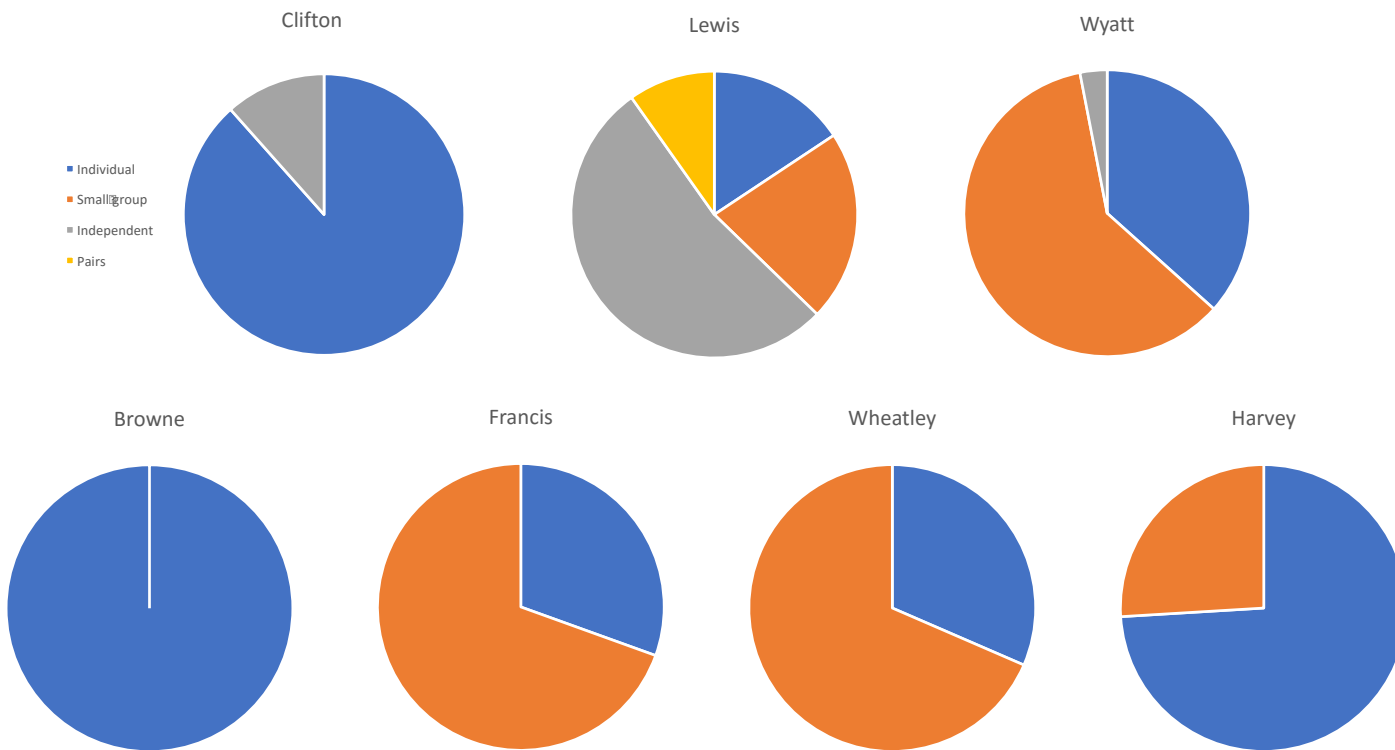
Figure 4. Observed grouping structures by teacher.

Adapted Student Engagement Rating Scale

Student Indicators of Low, Medium, or High Engagement During Instruction:

	Getting started	**Task persistence**	**Response to teacher prompt ***	**Mood/ demeanor**
1 **Low**	Student exhibits one or both of the following behaviors: • Tantrum • Elopement (wandering or running away from a task)	• Looks away from task, wanders, elopes, throws materials • Most of instructional event is spent focused on external stimuli or appears to be daydreaming	• Does not respond to teacher prompt, or responds with aggression, tantrum, elopement, etc.	Appears upset, angry, frustrated, dazed, overly playful ("goofing off")
2 **Medium**	• May provide some pushback/resistance/ delay when presented with a task, then turns attention to task • Forgets needed materials at first, then gets started	• Delayed start on a task then works steadily • Attempts assigned task, but sometimes distracted by peers or external stimuli • Fiddles with materials somewhat • Attention wanders when task is too difficult	• Delays responding to teacher prompt, then participates (some "dilly-dallying") • Easily redirected if veers off-task/off-topic	Appears to have a neutral mood, minimally frustrated
3 **High**	• Is prepared to begin when teacher signals	• Asks for help when needed • Focuses on task at hand, rather than external stimuli • Reads/writes/listens when appropriate	• Responds to teacher prompt verbally or through actions • (Requires minimal prompting)	Appears to be pleasant, eager, uses minimal call-outs, enthusiastic

* Note: Engagement ratings should reflect student behaviors, rather than those of the teacher. Try to distinguish student engagement from what may be teachers' perceptions of their engagement.

Adapted from ICE-RTI (Edmonds & Briggs, 2003)

Teacher Survey on Reading Instruction for Students with ID

Teaching Questionnaire

Please complete the survey below about math and literacy instruction for your students with ID. The survey has 3 pages and should take between 15-20 min. Click 'submit' at the bottom of each page to get to the next page. You may save your results and return to finish them later, if needed.

Please email Esther Lindstrom (esther.r.lindstrom@vanderbilt.edu) with any questions.

Thank you!

Demographic Information

Teacher name   _____

Gender   ○ Female
                                       ○ Male
                                       ○ Other

Race/Ethnicity   ☐ Black/African American
                                       ☐ White/Caucasian
                                       ☐ Hispanic or Latino
                                       ☐ Asian or Pacific Islander
                                       ☐ American Indian or Alaska Native
                                       ☐ Multi-Racial
                                       ☐ Other
                                        (Check all that apply.)

Background Information: Education and Teaching

School Name   _____

In my years teaching, I have had positions in ☐ Special Education
                                               ☐ General Education
                                               ☐ Reading
                                               ☐ Other
                                                (Check all that apply.)

Describe Other Teaching Position   _____

Total Number of Years Teaching   _____

Number of Years Teaching Special Education   _____

Highest Degree Attained   ○ High School graduate, diploma or the equivalent
                                               ○ Some college
                                               ○ Trade/techinical/vocational training
                                               ○ Associate degree
                                               ○ Bachelor's degree
                                               ○ Master's degree
                                               ○ Professional degree
                                               ○ Doctorate degree

Current Certification(s)

☐ Special Education
☐ General Education
☐ Reading
☐ Other
(Check all that apply.)

Describe Specific SPED Certification   _____

Describe Other Certification   _____

What grade level(s) do you teach?

☐ Kindergarten
☐ First
☐ Second
☐ Third
☐ Fourth
☐ Fifth
☐ Sixth
☐ Seventh
☐ Eighth
(Check all that apply.)

Literacy/ELA Teacher Questionnaire

Please complete the survey below.

Thank you!

Reading/ELA Training and Planning

Please describe any intensive reading instruction professional development you have received and when it occurred.

_____

What is your preferred reading curriculum? If the curriculum is mandated by school or district, please specify that here.

_____

How important is it to use research-based reading practices in your classroom?

Not at all important	Somewhat important	Very important

(Place a mark on the scale above)

How feasible is it to use research-based reading practices in your classroom?

Not at all feasible	Somewhat feasible	Very feasible

(Place a mark on the scale above)

What are your preferred evidence/research-based practices used in your reading instruction?

_____

What resources do you use most frequently to find evidence/research-based practices for your reading instruction?

☐ What Works Clearinghouse
☐ Peer-reviewed journals (e.g., Teaching Exceptional Children, Intervention in School and Clinic)
☐ Past experiences teaching with students
☐ Other teachers and colleagues
☐ Professional development
☐ Other
(Check all that apply.)

Describe "Other" Reading Resources

_____

Please describe any obstacles you've faced when implementing research-based practices in reading.

_____

Reading/ELA Instruction

The following questions pertain to your student(s) with intellectual and/or developmental disabilities.

What areas of reading instruction are you responsible for teaching your students?

- ☐ Phonological awareness
- ☐ Phonics
- ☐ Vocabulary
- ☐ Fluency
- ☐ Comprehension
- ☐ Spelling
- ☐ Writing

On average, how many minutes do you spend teaching Reading/ELA to each student?

_____

What estimated percent of your Reading/ELA instruction is spent teaching phonological awareness?

_____

What estimated percent of your Reading/ELA instruction is spent teaching phonics?

_____

What estimated percent of your Reading/ELA instruction is spent teaching vocabulary?

_____

What estimated percent of your Reading/ELA instruction is spent teaching fluency?

_____

What estimated percent of your Reading/ELA instruction is spent teaching comprehension?

_____

What estimated percent of your Reading/ELA instruction is spent teaching spelling?

_____

What estimated percent of your Reading/ELA instruction is spent teaching writing?

_____

What estimated percent of your Reading/ELA instruction time is spent on non-instructional activities?

_____
(Non-instructional activities include behavior management, taking attendance, announcements, etc.)

Reading Grouping Practices

What estimated percent of your Reading/ELA instruction is spent teaching students as a whole class?

_____

What estimated percent of your Reading/ELA instruction is spent teaching students in small groups?

_____

What estimated percent of your Reading/ELA instruction is spent teaching students individually?

_____

What estimated percent of your Reading/ELA instruction is spent teaching students in pairs?

_____

What estimated percent of your Reading/ELA
instruction is spent with students working
independently?

_____

Other Info

Think about the participants in this study who
receive reading instruction from you. Are there any
specific details it would be important for us to
know about their reading instruction, above and
beyond what you have already described?

_____
(If your reading instruction significantly differs
between participants, please list the details of
these differences here.)

Do you have any additional information you would like
to share about your reading instruction?

_____

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Student IEP Data Form

Confidential

Demographics, PLoP, Considerations

Record ID   _____

Student ID   _____

School   ◯ Tusculum
                                   ◯ Harpeth Valley
                                   ◯ Gower
                                   ◯ Hickman
                                   ◯ Other

Name of school   _____

SPED Teacher name   _____
                                   (Last, First)

Current grade   _____
                                   (Not necessarily what's listed on the IEP)

Date of IEP   _____

Demographics

Gender   ◯ Female
                                   ◯ Male
                                   ◯ Other/not specified

Date of birth   _____

Hispanic ethnicity   ◯ Yes
                                   ◯ No

Race   ☐ Black or African-American
                                   ☐ White or Caucasian
                                   ☐ Asian
                                   ☐ Native American
                                   ☐ Multi-racial
                                   (Check all that apply.)

Primary disability category   _____

Secondary disability category   _____
                                   (Enter NA if none listed)

To ensure confidentiality and participant privacy, please refer to the participant by their ID number, rather than their name.

Medical info

                                   _____
                                   (Please use participant ID.)

Strengths

                                   _____
                                   (Please use participant ID.)

In which of the following areas has the student been assessed?

☐ Academic - reading
☐ Academic - math
☐ Academic - unspecified
☐ Adaptive behavior
☐ Communication
☐ Fine motor
☐ Pre-vocational
☐ Social/Emotional behavior
☐ Other (specify)
(Check all that apply.)

Consideration of Special Factors for IEP Development

Does the student have limited English proficiency? ◯ Yes ◯ No

What is his/her primary mode of language? _____

Is the student blind or visually impaired? ◯ Yes ◯ No

Does the student need instruction in Braille? ◯ Yes ◯ No

Does the student have communication needs? ◯ Yes ◯ No

What are they? _____

Is the student deaf or hard of hearing? ◯ Yes ◯ No

Did the IEP team consider the student's language and communication needs? ◯ Yes ◯ No

Did the IEP team consider opportunities for direct communications with peers and professional personnel in the student's language and communication mode? ◯ Yes ◯ No

Did the IEP team consider necessary opportunities for direct instruction in the student's language and communication mode? ◯ Yes ◯ No

Is assistive technology necessary in order to implement the student's IEP? ◯ Yes ◯ No

What is needed? _____

Does the student's behavior impede his/her learning or that of others? ◯ Yes ◯ No

The IEP Team has addressed the student's behavior in the following ways:
☐ FBA ☐ BIP ☐ Accommodations
☐ Goals and objectives
☐ Other

Does the student demonstrate cognitive processing deficits that impact his/her classroom performance and warrant consideration in the development of the IEP? ◯ Yes ◯ No

Please explain

_____

Transition: N/A

Annual Goals

In which of the following areas does the student have annual goals?
(Check all that apply.)

☐ Reading/literacy ☐ Math/numeracy ☐ Pre-vocational ☐ Social/emotional behavior
☐ Adaptive behavior ☐ Fine motor ☐ Communication ☐ Other

Which of the following are included in the student's annual READING goals?
(Check all that apply.)

☐ Letter ID ☐ Letter-sound correspondence ☐ Sight word/high-frequency word reading
☐ Decodable word reading ☐ Initial sound ☐ Matching colors to their names ☐ Character and/or setting
☐ Story sequence ☐ Name spelling ☐ Writing sight words ☐ Other

Describe 'other'

Which of the following are included in the student's annual MATH goals?
(Check all that apply.)

☐ Number ID ☐ Rote counting ☐ Counting objects ☐ Adding sets up to 5 ☐ Adding sets up to 10
☐ Other

Describe 'other'

Which of the following are included in the student's annual PRE-VOCATIONAL goals?
(Check all that apply.)

☐ Sitting in place ☐ Responding to teacher prompts ☐ Other

Accommodations

Accommodations (tests)

☐ Modify content being tested
☐ Use of manipulatives
☐ Modify grading scale
☐ Additional time

Accommodations (assignments)

☐ Give directions in multiple formats
☐ Give directions in alternative format (written/picture/verbal)
☐ Give extra cues and prompts on assignments
☐ Allow alternate assignment when class demands conflict with IEP goals
☐ Give directions in small, distinct steps
☐ Additional time
☐ Modify worksheet/packet format (essay, short answer, fill in blank, multiple choice, etc.)
☐ Abbreviated assignments (fewer items, questions)
☐ Provide extra grade opportunities
☐ Modify grading scale (pass/fail or points)
☐ Modify difficulty level of content

Accommodations Behavior

☐ Model appropriate behavior
☐ Praise, attention, and/or reinforcers given to other students with appropriate behavior
☐ In-class "time out" to cool down and regain control and composure
☐ Clearly defined rules and limits
☐ First-then verbal prompting
☐ Visual Schedule
☐ Block aggression, ignore behavior, modify arrangement to give greater distance between student and peers
☐ Supervision during transitions
☐ Preferential seating
☐ Specifically praise appropriate behaviors immediately
☐ Visual first-then

Accommodations (other)

☐ Pacing - allow breaks
☐ Pacing - flexible time limits
☐ Presentation of subject matter - manipulatives
☐ Presentation of subject matter - use errorless learning strategies
☐ Environmental arrangements - planned/preferential seating

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Services

Type of Consultation Service

☐ Speech/Language Therapy
☐ Occupational Therapy
☐ Adaptive Behavior

Hours (speech consultation)

_____

Hours (OT)

_____

Hours (behavior consultation)

_____

Type of Direct Service

☐ Academics - ELA
☐ Academics - Math
☐ Adaptive Behavior Skills

Hours per week (ELA)

_____

Hours (math)

_____

Hours (behavior)

_____

Type of Related Service

☐ Speech/Language
☐ Occupational Therapy
☐ Ancillary - Attendant
☐ Special Ed. Aide in Regular Program

Hours (speech)

_____

Hours (OT)

_____

Hours (ancillary)

_____

Hours (aide)

_____

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Appendix D

Teacher Interview Questions

Observation Study Teacher Interview

- Review of observation data
    - For student XX, this is what we observed (pie charts)
    - Content tended to focus on __. Grouping was often __.
    - These numbers reflect a limited sample—3 observations. How typical would you say this is? If you were to draw your own pie charts, how would you expect them to look?

- Appropriateness of instruction/social validity
    - What are your instructional goals for XX in reading?
    - How important is it for this student to achieve these goals?

- Decision-making/curriculum
    - How do you make decisions regarding instruction for this student?
    - How do you choose the curriculum/content for this student?
    - Does [curriculum] seem to be a good fit for your student?

- Background/training
    - Do you feel that your teacher training program or in-service PD adequately prepared you to teach reading to XX?
    - What resources, if any, does the school/district provide to teach reading to XX?

- Challenges and supports
    - What are some challenges to teaching reading to this student?
    - What additional kinds of supports would be beneficial for helping you to teach XX how to read?

- Anything else?