A KINDERGARTEN LITERACY INTERVENTION:

PUTTING RESEARCH INTO PRACTICE

By

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Abstract

This piece of Action Research investigates both the process of and effects of implementing a research-based pre-reading intervention in a kindergarten classroom in British Columbia. It does so by asking: How can an early literacy intervention be implemented in a kindergarten classroom? How does targeted intervention affect a child's pre-reading skills? The participants are students from one kindergarten classroom in a mainstream elementary school, their classroom teacher, and the researcher, the school's Learning Support Teacher. Working with the classroom teacher, the researcher assessed each student in one kindergarten class on essential pre-reading skills, determined which seven students would benefit from targeted intervention, decided how to conduct the intervention, and then provided the intervention. Data consisted of two early literacy assessments (DIBELS and a locally developed screener), a reflective journal and field notes. An analysis of the data reveals that using a classroom rotation schedule to provide fifteen-minute, small group intervention sessions three times a week over the course of one month that focus on alphabet knowledge, as well as phoneme blending and segmenting, is effective at improving pre-reading skills.

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CHAPTER 1: INTRODUCTION

The ability to read is perhaps the greatest gift a teacher can give a student. Reading not only opens the door to the world of books, it allows individuals to fully participate in society where the need for literacy is continuously rising (UNESCO, 2005, p. 30; National Research Council, 1998, p. 1). Children who struggle with reading in the early years tend to continue to struggle throughout school without targeted intervention (McNamara, Scissons, & Gutknecth, 2011). In particular, Deborah Simmons and colleagues (2014) point out that "Kindergarten represents a critical window of opportunity in which intervention can differentially accelerate reading growth compared to later intervention for children at early reading risk" (p. 452). There is a consensus among reading researchers that early literacy intervention (pre-kindergarten and kindergarten) leads to more growth in reading than waiting to intervene in grade one or later (Al Otaiba et al. 2007; National Research Council, 1998; Norton & Wolf, 2012; O'Connor, Bocian, Sanchez, & Beach, 2014; Ozernov-Palchik et al., 2017; Schuele & Boudreau, 2008; Snowling, 2013). In the last twenty years, research has indicated that there are specific pre-reading skills that predict future reading success. These skills include: phonological awareness, alphabet knowledge, and Rapid Automatic Naming (RAN) (Castles, Rastle, & Nation, 2018; Kirby et al., 2010; National Early Literacy Panel, 2008; Ozernov-Palchik, 2017).

Unfortunately, "There is a profound disconnection between the science of reading and educational practice" (Seidenberg, 2017, p. 9). Canada's *National Strategy for Early Literacy* (2009) confirms this disconnect, by bluntly writing, "the substantial body of knowledge on how to teach children to read, how to identify children who have failed to acquire specific reading skills, and how to intervene effectively is not being applied in many Canadian classrooms" (p. 18). I have been a British Columbian educator since 1998 and I have observed that early reading

intervention in kindergarten is not practiced in many schools, or, when practiced, does not focus

on the skills that research clearly demonstrates to be necessary. This further confirms the lack of

connection between educational research and classroom practice.

As a result of the lack of proper pre-reading interventions, students may enter grade one

not prepared to begin reading instruction. As a former grade one teacher, I observed that many

students seem to be "ready to read" at the beginning of grade one with knowledge of all upper-

and lower-case letters as well as their corresponding sound; yet, every year some of these same

students struggle to become proficient readers. This frustration sparked my desire to research the

pre-reading skills that are predictive of reading success, to use the best methods to screen

students for these predictive skills, and to engage in the most effective intervention practices for

pre-readers in kindergarten.

Although I found a plethora of quantitative research that connects the importance of early

literacy intervention with the pre-reading skills young students need to acquire, it was more

difficult to find qualitative research that documented the implementation of these practices in a

classroom. Such studies could serve to provide teachers and researchers with insights into the

organization and structure necessary to successfully implement a reading intervention. After

release of the American National Reading Panel (2000) report, one of the lead researchers

explained that it would have been ideal if experimental research on an aspect of instruction that

was found to be effective could be coupled with qualitative research in order to give others

information on how the particular approach was brought into the classroom and the effect of

particular approaches (Shanahan, 2003). Furthermore, panelists from 2008's American National

Early Literacy Panel (NELP) report commented that many of the interventions found to be

successful were conducted by researchers or research assistants in ideal conditions and not in

authentic classrooms. The panelists called for more research on interventions occurring in "more ordinary circumstances" (Shanahan & Lonigan, 2010). The current study addresses both of these concerns by focusing on providing intervention in a kindergarten classroom by a school's Learning Support Services teacher, by documenting and describing the process of working with a classroom teacher to provide intervention, and by comparing pre-intervention and post-intervention results in struggling pre-readers.

The purpose of this project has been to document, describe and analyze the process of using research to guide an early literacy intervention in a kindergarten classroom. The specific research questions that guided this study are: (1) How can an early literacy intervention be implemented in a kindergarten class? and (2) How does targeted intervention affect a child's pre-reading skills? Working in conjunction with the classroom teacher, I, the school's Learning Support Services Teacher, assessed the students on essential pre-reading skills, determined which students would benefit most from a targeted intervention, collaboratively decided how to schedule the intervention with the classroom teacher, and provided the intervention. Data consisted of Dynamic Indicators of Basic Early Literacy Skills 8th Edition (DIBELS) developed at the University of Oregon (University of Oregon, 2018), a locally developed Kindergarten phonological awareness assessment, a reflective journal and field notes. An examination of the data reveals the process of implementing the intervention and its effectiveness at improving early literacy skills in struggling pre-readers. To do so, definitions of key terms is helpful.

Definition of Terms

Phonological Awareness- Phonological awareness is the "ability to analyze the sound structure of language, separate from meaning" (Schuele & Murphy, 2014, p. 23). Phonological awareness does not involve recognizing letters or associating a letter with a sound. Instead, it involves

listening to, and working with, the sounds of words. Phonological awareness includes the key skills of segmenting words into syllables, deleting syllables from words, identifying rhyming words, segmenting initial, medial, and final sounds, segmenting words into sounds, manipulating sounds, and blending sounds into words.

Phonemic Awareness- Phonemic awareness is a subset of phonological awareness. It consists of listening to and manipulating phonemes in language. Phonemes are the smallest sounds we hear in language, with most experts agreeing that English has 41 phonemes (Ehri et al., 2001). Phonemic awareness skills include: isolating initial, medial, and final sounds, blending sounds into words, segmenting a word into phonemes, as well as deleting and manipulating phonemes (Schuele & Boudreau, 2008, p. 6). In order to avoid confusion, it is important to note that when phonemic awareness skills are practiced using letters, rather than simply orally, this instruction can also be called phonics.

Rapid Automatized Naming (RAN)- RAN refers to the task of naming a series, usually rows, of familiar items that are presented visually in arrays, such as colours, objects, letters, or numbers, with speed and accuracy (Norton and Wolf, 2012, p. 429; Ozernov-Palchik et al, 2017, p. 3).

Alphabet Knowledge- Alphabet Knowledge refers to recognizing both the name and sound associated with alphabet letters.

Learning Support Services teacher (LSS teacher)- In the school district in which this study occurs, an LSS teacher is a school-based teacher who works with numerous classroom teachers to provide support for all students in the classroom. This includes providing intervention in literacy and numeracy and helping develop programs for students with designations.

This study offers a relevant review of the research regarding pre-reading intervention (Chapter 2). The particular methods of this project are discussed in Chapter 3, while the data and discussion of the results are considered in Chapter 4. Due to the qualitative nature of this research project, the data and discussion are offered together for a better, clearer connection concerning the intervention and the results of the intervention for each of the seven children. The two research questions that guide the discussion are outlined in Chapter 4 as well. The final chapter, Chapter 5, clarifies some implications of the study, some limitations and some ideas for future research based on this study into early pre-reading intervention in a kindergarten classroom.

CHAPTER 2: LITERATURE REVIEW

This chapter explores the research on early literacy intervention, skills that are associated with future reading success, the elements of evidence-based interventions, and the relevant intervention delivery models. The focus of this chapter is the significance of pre-reading early intervention in developing strong readers. The connection of research examined here relates strongly to the motivation of this project: to follow research in offering a classroom-based model for kindergarten teachers to use to identify and encourage struggling pre-readers.

Early Reading Intervention

Keith Stanovich's (1986) ground-breaking paper synthesized many studies on early reading and popularized the term "Matthew Effect" in reading. Based on a verse in the Gospel of Matthew, the Matthew Effect in reading is often used to describe a "rich get richer and poor get poorer" scenario in regard to reading skills. Stanovich described how difficulties with phonological awareness at a young age can lead to difficulty reading due to slow development of decoding, which can lead to an overall lack of motivation in reading. A lack of motivation in reading significantly impacts the volume of reading children can experience causing them to progress at a much slower rate than their peers (the poor get poorer). This slower rate causes the achievement gap to widen and eventually encompass many areas of academics, not just reading ability. Stanovich cites, as an example, a longitudinal study in which kindergarten students low in phonological awareness were compared to peers with adequate ability in phonological awareness. By grade one, there was a four-month separation in reading ability between the two groups: By grade two, the gap was nine months (Jorm, Share, Maclean, & Matthews, 1984 cited in Stanovich, 1986). Canadian students are not immune from the Matthew Effect. A 2011 longitudinal study of 382 Canadian students in Saskatchewan confirmed Stanovich's theory.

Students who scored low in a test of phonological awareness in kindergarten continued to

progress below their peers in reading measures every year until the study's end at grade three,

with the achievement gap widening each year (McNamara, Scissons, & Gutknecth, 2011).

Stanovich believed that educational researchers need to study effective instruction to ameliorate

this situation (Stanovich, 1986) and help the "poor" get "richer".

Since Stanovich's 1986 work, a considerable amount of research has been published that

links early reading intervention to greater reading success. O'Connor, Bocian, Sanchez and

Beach's (2014) longitudinal study followed a sample of over 1200 students from kindergarten

through grade three in California. The students were assessed three times per year in reading and

received intervention if their scores ever indicated that they were at-risk for reading difficulties.

The groups of children receiving intervention were fluid due to students' response to the

intervention, meaning that if a student receiving intervention became proficient, he or she would

be exited from the intervention lessons. Similarly, if a child not receiving intervention fell below

expectations, he or she would be added to the intervention lessons. The researchers found that

after three years, a large proportion of students who received intervention starting in kindergarten

were exited before the end of grade two (45%), while only 26% of the students who began

intervention in grade one exited before the end of grade two, supporting the theory that providing

reading intervention earlier leads to more success.

Marita Partanen and Linda Siegel's (2014) longitudinal study conducted in North

Vancouver also linked early reading intervention to greater reading success. Following a group

of 650 students from kindergarten to grade seven, Partanen and Siegel found that screening for

pre-reading skills and providing intervention in kindergarten led to most children scoring in the

average range for reading in grades one through seven, concluding that "our study provides long-

term evidence of the success of early literacy interventions" (p. 16). This study lowered the average number of students eventually diagnosed with dyslexia, a specific learning disability in reading that affects an individual's word decoding skills. One of the study's authors, Linda Siegel, a University of British Columbia professor and Editor-In-Chief of the International Dyslexia Association's publication *Perspectives on Language and Literacy,* explained the need for identifying those students at risk of reading failure when they are still at the pre-reading stage by writing,

- It is much easier to prevent the problems from becoming serious than to wait until they are fully developed.

- It is much cheaper to provide early intervention than to wait until intervention requires more intense remediation and therefore becomes much more costly.

- Early identification and intervention will reduce, and, in many cases, prevent serious social and emotional consequences of not paying attention to these problems.

- The brain of a young child is more plastic and amenable to change than that of an adolescent or adult (Siegel, 2018, p. 5).

A review of the literature reveals that researchers in the area of reading acquisition are in agreement with Siegel's viewpoint. Kindergarten literacy intervention, or simply intervention at the pre-reading stage, leads to more growth in reading than waiting to intervene in later grades (Al Otaiba et al. 2007; Desrochers & Glickman, 2009; Kilpatrick, 2015; National Reading Panel, 2000; National Research Council, 1998; Norton & Wolf, 2012; Ozernov-Palchik et al., 2017; Seidenberg, 2017; Schuele & Boudreau, 2008).

In the past twenty years, literature on reading development consistently refers to the importance of providing intervention early before difficulties worsen. Knowing that early intervention can have such positive effects on a child's success, I consider the necessary skills associated with future reading success.

Skills Associated with Future Reading Success

Motivated by a desire to identify children in need of early literacy intervention, a number of studies have examined the pre-reading skills related to reading success. Maryanne Wolf and Patricia Bower's (1999) seminal work examined the influences of phonological awareness and rapid naming (also referred to as naming speed or RAN) on reading development. They operationalized naming speed to refer to the ability to quickly name letters, colours, or shapes and asserted that naming speed is a product of an individual's processing speed. Using data from a number of longitudinal and cross-linguistic studies, they theorized that dyslexia could stem from a deficit in phonological processing, a deficit in naming speed, or a deficit in both phonological processing and naming speed, aptly named the "double deficit hypothesis". Individuals with a double deficit had the poorest outcomes in reading acquisition.

The double deficit hypothesis has been largely supported in subsequent research. A review of the literature by John Kirby and colleagues (2010) asserts that naming speed is either correlated with, or predictive of, most aspects of reading (p. 345). They found that even when controls such as IQ, socio-economic status, phonological awareness, attention deficit disorder and other influential aspects were controlled, naming speed predicted reading ability and confirm that students who have a deficit in naming speed and phonological awareness will have the most difficulty reading.   In a Canadian longitudinal study spanning from preschool to grade five, Virginia Cronin (2013) found support for the double deficit hypothesis with phonological

awareness and rapid naming predicting reading progress at every stage. Adding to her seminal

work on the double deficit hypothesis, Wolf, along with Elizabeth Norton, (2012) explain that

RAN and phonological awareness are effective tools to predict which students will have

difficulty learning to read because the rapid naming of known items such as objects along with

phonological awareness can be assessed before the child is learning to read, allowing for early

pre-reading intervention to take place. Norton and Wolf assert that once children learn to

identify letters and numbers, their naming speed becomes more associated with reading success

(p. 438). Norton and Wolfe caution that while RAN is the best predictor of future reading

success, followed by phonological processing, neither can account for all cases of low reading

ability and cannot solely predict which students will eventually be diagnosed with a reading

disability (p. 439).

The American National Early Literacy Panel's meta-analysis of post-positivist research in

early literacy development sought to determine how teachers and families can support literacy

development in children up to age five as well as guide the development of literacy programs for

young children in order to ensure success. The panel started with 8000 research studies and

narrowed them down to 500 based on rigorous criteria. Synthesis of these studies resulted in

Developing Early Literacy: Report of the National Early Literacy Panel (NELP report)

(National Early Literacy Panel, 2008). The report found the following skills to be correlated to,

or even predictive of, reading success:

- alphabet knowledge (AK): knowledge of the names and sounds associated with printed
  letters;

• phonological awareness (PA): the ability to detect, manipulate, or analyze the auditory

aspects of spoken language (including the ability to distinguish or segment words,

syllables, or phonemes), independent of meaning;

• rapid automatic naming (RAN) of letters or digits: the ability to rapidly name a

sequence of random letters or digits;

• RAN of objects or colors: the ability to rapidly name a sequence of repeating random

sets of pictures of objects (e.g., "car," "tree," "house," "man") or colors;

• writing or writing name: the ability to write letters in isolation on request or to write

one's own name; and

• phonological memory: the ability to remember spoken information for a short period of

time. (NELP, 2008, p. vii)

A longitudinal study of 366 participants on the effectiveness of a Response to

Intervention model (Catts, Nielsen, Bridges, Liu, & Bontempo, 2015) found that a kindergarten

screening of RAN, letter naming fluency, and phonological awareness was predictive of reading

outcomes at the end of grade one, with letter-naming fluency being the most predictive. By

studying the students' response to the interventions, the researchers found that students who

demonstrated improvement in letter naming fluency while in kindergarten had better reading

outcomes at the end of grade one.

Recently, Ola Ozernov-Palchik and colleagues (2017) furthered the research on

kindergarten predictors of reading success with a two-year longitudinal study that included over

one thousand kindergarten students and followed their progress to the end of grade one.

Participants' abilities in RAN, letter knowledge, verbal short-term memory, and phonological

awareness in the Spring of the year prior to kindergarten and the Fall of kindergarten were

predictive of reading success at the end of grade one. Similar to Wolf and Bower's (1999)

earlier research, they found that students with a double deficit (in both RAN and phonological

awareness) had the most difficulty achieving reading success followed by participants with a

single deficit in either RAN or phonological awareness.

Phonological awareness is a term with a variety of subskills, and not all are predictive of

reading success.   Gail Gillon (2018) provides an analysis of the specific phonological awareness

skills that can be correlated to future reading success. The most predictive skills are at the

phoneme level (rather than the broader phonological awareness skills) and include phoneme

segmentation (Share, Jorm, Maclean, and Mathews, 1984 cited in Gillon 2018), phoneme

blending (Torgesen, Wagner, and Rashotte, 1994 cited in Gillon, 2018), and phoneme deletion

(MacDonald and Cornwall, 1995 cited in Gillon, 2018).   Phoneme segmentation involves

hearing a word, then repeating the word in individual phonemes. For example, hearing the word

"bat" then saying /b/ /a/ /t/. Phoneme blending refers to hearing the individual phonemes of a

word and blending the phonemes to say a word. For example, hearing the phonemes /b/ /a/ /t/

and being able to blend the phonemes to say the word "bat". Phoneme deletion involves saying a

word without one of its phonemes. For instance, saying the word "mat" without the /m/ to

produce the word "at". Interestingly, the phonological awareness skill of identifying or

producing rhyming words has been found to not be an indication of future reading success.

Similarly, segmenting words into syllables, for instance clapping syllables, has not been shown

to be indicative of future reading success (Gillon, 2018).

The evidence presented in this section indicates that kindergarten screening can be used

to quite accurately identify children in need of extra instruction in pre-reading skills. Almost

every study found phonological awareness, specifically at the phoneme level, and rapid naming

of letters to be accurate predictors of reading success. Most studies also found alphabet

knowledge to be predictive of reading success as well. Because literature continuously points to

the importance these three skills, I ensured that they were included in the screening assessments

to determine which students required intervention. In the following section, I examine how

educators can best provide intervention in pre-reading skills.

Evidence-Based Intervention

      National reports. Best practices in early reading instruction and intervention have been

a heavily debated topic throughout the English-speaking world for many decades. This has

resulted in many national inquiries into effective reading instruction, including the United States

in 2000 and 2008, Australia in 2005, Great Britain in 2006 and Canada in 2009.

      The United States Congress formed the National Reading Panel in 1997 with the goal of

reviewing scientific research in order to find the most effective practices for the teaching of

reading (National Reading Panel, 2000). The panel released its findings in 2000 with a

document entitled *Teaching Children to Read: An Evidence-Based Assessment of the Scientific*

Research Literature on Reading and its Implications for Reading Intervention (NRP Report)

(National Reading Panel, 2000). The meta-analysis confirmed that phonemic awareness

instruction helps students learn to read, spell, and comprehend with moderate effect sizes (p. 2-

28). They recommended early literacy instruction include explicit instruction in both the

alphabet principle, manipulating phonemes, and the phoneme-grapheme connection (phonics).

When working with pre- and early-readers, the report suggested that phonological awareness

instruction in school-aged children focus at the phoneme level and involve letters, such as letter

tiles or plastic letters. The report also emphasized the importance of putting phonemic

awareness skills into practice during lessons in order to explicitly connect the skills to reading

and writing. In essence, phonemic awareness lessons were more effective when students were

given the opportunity to transfer the skills to reading and writing (p. 2-33).

The United States followed the NRP report with the NELP report, chaired by Timothy

Shanahan, (2008) which provides a significant source of information on early literacy. The large

meta-analysis of research throughout English-speaking countries outlines a variety of aspects of

reading intervention. The report found that "code focused" interventions were the most

successful at improving pre-reading skills (p. 109). The NELP report defines code focused

interventions as interventions that focus on alphabet recognition, letter sounds, and manipulating

sounds (specifically the phonemic awareness skills of deleting and blending sounds). Shanahan

and fellow researchers wrote that "code-focused interventions have a significant, substantial, and

positive impact both on young children's conventional literacy skills and on early skills that

predict later literacy achievement" (p. 109). Rather than promoting specific programs that

schools would need to purchase in order to implement intervention in early reading skills, the

authors of the NELP report identified aspects of intervention that resulted in the greatest effect

sizes on both the predictor skill and reading. These include:

- higher order phonological awareness skills such as analyzing words at the onset-rime or
  phoneme level;

- immediate corrective feedback; and

- blending phonological awareness lessons with letter names and sounds rather than
  teaching phonological awareness alone (NELP, 2008, p. 119).

Australia's National Inquiry into the Teaching of Reading resulted in the 2005 *Teaching*

Reading: Reports and Recommendations, commonly referred to as the Rowe Report. The Rowe

Report confirmed that direct teaching of the alphabet code through the teaching of phonemic

awareness, alphabet knowledge, and phonics was lacking in many classrooms in favour of a

more constructivist approach to reading. Noting that the constructivist approach had no evidence

of effectiveness in reading acquisition, while direct teaching was found to be very effective, the

Rowe report recommended that evidence-based teaching of reading methods be taught to pre-

service teachers in Australia's universities as well as practicing teachers (Rowe, 2005).

Similarly, The United Kingdom's *Independent Review of the Teaching of Early Reading*, or

Rose Report, called for more emphasis on systematic phonics in the teaching of reading and

advocated for the early introduction of phonics instruction, claiming that children should be

involved in phonological awareness activities prior to the age of five and likely be ready for

phonics work at age five. The Rose Report supported the three tiers of instruction, called waves,

and emphasized the importance of quality, evidence-based wave one instruction, or whole class

instruction, in order to lesson the number of students needing wave two instruction. Wave two

instruction for students unsuccessful with wave on instruction, according to Rose, needs to be

started early, compliment the strong, evidence-based tier one instruction, and focus on the

phonemic awareness skills of blending and segmenting with letters in a sequential manner (Rose,

2006).

Concerned about Canada's literacy rate, and its impact on both health and economy, the

federal government sought the input of experts from the Canadian Language and Literacy

Research Network (CLLRN). Using a cycle of research, review, and public consultation in the

area of literacy development, the CLLRN published the *National Strategy for Early Literacy*

report (2009). The report provided information on best practices and strategies for individuals

from birth to age sixteen that could improve Canada's literacy rate. In the school realm, the

report recommended that:

- universities teach pre-service teachers the science of reading, the evaluation of reading

  progress, and appropriate reading interventions;

- districts provide practicing teachers with similar information at in-services;

- school districts implement a tiered system of providing instruction, monitoring, and

  intervention in the area of literacy; and

- teachers use evidence-based instruction in the teaching of reading including systematic,

  explicit, direct instruction in the areas of alphabetic code-breaking skills as well as oral

  language, vocabulary, grammar, fluency, and reading comprehension (Canadian

  Language and Literacy Research Network, 2009, p. 40).

The CLLRN also published a guide aimed at identifying best practices in the teaching of

reading with 2008's *Foundations for Literacy: An Evidence Based Toolkit for the Effective

Reading and Writing Teacher* (Canadian Language and Literacy Research Network). This

publication sought to bridge the research-practice gap by providing teachers and pre-service

teachers with information on literacy research and how to best teach decoding, comprehension,

and writing. The Canadian Language and Literacy Research Network echoed the

recommendations of the NRP Report, the Rose Report, and the Rowe Report by advising that

early literacy lessons include phonological awareness, letter knowledge and phonics integrated

together (p. 39). The authors also emphasized the importance of teaching these skills through the

use of explicit instruction.

The CLLRN reports, as well as the other national reports, make it clear that teachers need to assess for and provide intervention for students who are not meeting literacy goals and that literacy instruction must be explicit, direct and systematic. Explicit, or direct, instruction involves showing or modelling a task and having students, through guided and scaffolded instruction, learn to independently complete the task. Similarly, systematic instruction involves teaching skills in a highly sequenced and structured manner moving from simple to more complex tasks (Spear-Swerling, 2018). Systematic, direct and explicit instruction would therefore follow a logical progression, teach to mastery with skills gradually increased.

Despite the consistent findings of the need for direct instruction in alphabetic knowledge and phonological awareness, the British Columbia Ministry of Education, in its *Full Day Kindergarten Program Guide*, warns teachers of the negative affects of teaching that entails the use of direct instruction, citing an experimental longitudinal study conducted in Edmonton, Alberta on the effects of an explicit phonics program compared to a business-as-usual balanced literacy approach control group (Chapman, 2009, p. 13). Careful examination of the cited report, reveals that the researchers found that after three school years, students in the control group had greater literacy gains than those in the experimental group and warned against the continued use of the locally developed phonics program (Phillips, Norris, and Steffler, 2007). However, citing this one example as a reason to avoid direct instruction in kindergarten is unsubstantiated. First, there are many studies that demonstrate the effectiveness of direct instruction for pre-readers that the *Kindergarten Program Guide* ignored. Second, Phillips and colleagues conducted their study in grades one to three classrooms. Kindergarten students were not involved in the study. Furthermore, the study compared using a heavily scripted phonics program as the sole reading and writing program compared to a more balanced approach. It would be more accurate to

inform teachers of the evidence pointing towards including the teaching of core literacy skills with the use of direct instruction as is advocated by both Canada's *Foundations for Literacy* (2008) and the *National Strategy for Early Literacy* (2009).   It seems that the research on early literacy instruction is at odds with the child-centred philosophy of British Columbia's kindergarten program. In order to provide students with the instruction they need to be successful, there needs to be balance of instructional style and strategies.

The national reports all provide evidence for explicit, direct, and systematic instruction in the core classroom program as well as for intervention in the teaching of key literacy skills. For early readers, these skills include alphabet knowledge, phonemic awareness and letter-sound correspondences.

Phonemic awareness and alphabet knowledge. The role of phonemic awareness on learning to read has been widely investigated as researchers strive to understand the development of phonemic awareness and its implications. Linnea Ehri and colleagues' (2001) review of the National Reading Panel's section on phonemic awareness explained how it contributes to reading in numerous ways: by teaching students to blend sounds into words; by teaching students to analyze words and use knowledge of one word to read another, similar word; and by teaching students how to spell words using letter-sound relationships. When analyzing over fifty studies, Ehri and colleagues found that all aspects of reading were improved by phonemic awareness intervention, with the overall effect size of phonemic awareness being large. When the effect size was broken into ability groups of the participants, the effect size for at-risk students was very large (d=1.33) (p. 266). Ehri and fellow researchers found that teaching students the skills of blending and segmenting phonemes produced the best effect in both reading and spelling when compared to teaching other phonemic awareness skills. Their meta-analysis also outlines that, for

students without a reading disability, adding letter instruction (such as manipulating plastic

letters) into the phonemic awareness lessons had a statistically significant difference. For

students with a reading disability, including letters in the instruction also led to a greater effect

size; however, it was not statistically significant. This makes it clear that combining alphabet

knowledge with phonemic awareness instruction is likely to be the most effective method of

intervention for most students.

Isabel Beck and Mark Beck (2013) outline how teachers can use research to develop

interventions focussed on phonemic awareness and alphabet knowledge by incorporating the two

skills in a variety of sequential lessons that build upon one another. These activities include

identifying if a target phoneme is in a word by holding up a letter card or placing a letter card at

the beginning or end of a line to represent a phoneme at the beginning or end of a word.

Activities that involve spelling a word by segmenting the phonemes and sounding out a word by

blending the phonemes are the next level of skill. They also describe the importance of

introducing letters in an order that ensures the vowels are spaced out in order to decrease

possible confusion over the similar sounds (Holland and Doran, 1973 cited in Beck and Beck,

2013) and introducing visually similar letters, such as b and d, days apart from each other, also to

decrease possible confusion. This practical guide helps teachers put the research into practice.

Rapid Automatic Naming (RAN). While studies are very clear on effective methods of

providing instruction that blends alphabet knowledge and phonemic awareness, the instruction of

RAN is not supported by research. Both Kirby and colleagues' (2010) and Norton and Wolf's

(2012) overviews of the research explain that naming speed has not been found to be improved

through intervention and is likely connected to an individual's overall processing speed. Instead

of focusing on teaching RAN, these researchers suggest that students with low RAN ability

would benefit from a multi-component intervention that includes letter and sound naming as well as phonological awareness, the same interventions recommended for students with deficits in alphabet knowledge and phonological awareness.

More recently, Vander Stappen and Van Reybroeck's (2018) experimental research with thirty-six grade two students in Belgium suggest that RAN of objects and words can be improved through intervention twice a week for two months. Not only did the participants in the RAN group increase their RAN, their reading fluency improved as well, and was maintained six months after the intervention. The main limitation of their study is the small sample size, only eighteen students were in the RAN group and eighteen in the control group. Also, one wonders if the researchers taught RAN of words through the visual memorization of words, which neurologists warn is counterproductive to the reading process (Seidenberg, 2017). Being the first study that demonstrated positive effects of RAN intervention, more studies on this in the future could help our understanding of a possible RAN intervention. Due to the limitations of this study, it is premature to assume that RAN practice should be a part of a literacy intervention.

Although research clearly demonstrates a correlation between RAN and reading success, there is not evidence to support targeted RAN instruction to improve reading ability. Therefore, targeted early literacy interventions should, according to research, include letter names, letter sounds, and the phonemic awareness skills of segmenting and blending phonemes taught in a sequential manner, building from easier to more complex skills. Furthermore, research indicates that intervention needs to be taught with direct instruction and be scaffolded to gradually move from modelled to guided to independent skill acquisition. Teachers also need to provide feedback to students and ensure that errors are corrected.   Together, these elements provide a research-

based early literacy intervention. The next section addresses the research pertaining to effective intervention delivery models.

Intervention Delivery Model

Research consistently points to small group settings as being ideal for early literacy interventions (Canadian Language and Literacy Research Network, 2009; Department of Education, Science, and Training, 2005; Hawkin, 2008; National Early Literacy Panel, 2008; National Reading Panel, 2000; Rose, 2006). The Response to Intervention (RtI) model is recommended by the Canadian Language and Literacy Research Network (2009) as the most effective method to implement intervention. The RtI model includes three tiers of instruction. Tier one is classified as typical, whole class instruction. Tier two instruction is extra small group instruction for students in need of intervention and is the tier of intervention used in the current study. Tier three instruction is intense intervention for very small groups, or individual students, achieving significantly below expectations. The Canadian Language and Literacy Research Network (2009) recommends that Canadian schools monitor for students who are at risk of reading difficulties and provide immediate, research-based tier two intervention by a classroom teacher or a specialist teacher.

Recent research in the field of Response to Intervention (RtI) has explored different schedule possibilities for interventions. RtI researchers assert that pulling students from their class to attend intervention can be problematic as students often miss other core instruction in numeracy or literacy, which has the possibility of widening the achievement gap. Instead, they propose that students be pulled for intervention during other courses such as social studies or science (Bigham & Riney, 2014 cited in Dallas, 2017). William Dallas (2017) studied the effects of scheduling literacy RtI for each grade during a specific time period where tier one students

stayed in the classroom and participated literacy station rotations, with one station being

instruction with the classroom teacher; students identified as needing tier two interventions went

with a learning assistance teacher and were taught with a research-based program; and students

needing tier three interventions went with a special education teacher for more individualized

instruction. Dallas's data analysis indicated more academic growth in students with this

schedule than the previous year when the intervention groups were scheduled after school hours.

While Dallas' study demonstrates success with scheduling, it is problematic because he

compared a well-organized and carefully thought-out intervention that occurred daily, lasted for

the entire school year, and included an additional staff member to provide intervention to the

previous intervention that seemed to be haphazard and unavailable to many students due to being

after school hours. More research needs to document other possible schedules for RtI that are

effective and do not result in students missing core instruction.

Shobana Musti-Rao and Gwendolyn Cartledge's research (2007) used twenty-minute

intervention periods, three times a week for kindergarten and grade one children at risk for

reading failure. Their study, which explored the effectiveness of using paraprofessionals to

implement the intervention, found the short sessions led to moderate to substantial increases on

the students' DIBELS scores. While this small study with seven participants is not a major

contribution to the literature on early intervention, it is one of the only studies that explores not

just academic growth, but also describes and discusses the manner in which the intervention was

organized and scheduled in a kindergarten classroom using two rooms, with a paraprofessional

teaching in one room, a teacher in one room, and children involved in various literacy activities.

Dallas' (2017) and Musti-Rao and Cartledge's (2007) studies are rare in that most

researchers do not provide insight into how literacy interventions are scheduled and organized in

the school day.   Instead, most of the literature focuses on the intervention itself and the results of

the intervention. A key problem with such studies is that the environments in which the

interventions took place were unrealistic. Many assessments and interventions were provided by

research teams and, therefore, could be unrealistic for typical schools to implement with their

current staff schedules. In order to provide educators with more information on best practices in

scheduling intervention, more research needs to be conducted in real classroom settings that

provide readers with insight into how to develop an efficient and effective intervention schedule.

        Although research has provided an abundance of information on the pre-reading skills

that are predictive of future reading success and the effective instructional focus of early literacy

interventions, research that informs others of the implementation of intervention, including the

use of school personnel, scheduling, and organization, is sparse. By documenting the process in

which I worked with the classroom teacher to implement intervention that is based on the

research described in this chapter, I attempt to fill this gap in research. As I document the

assessment methods, the scheduling of the intervention, the intervention itself and its

effectiveness, readers will gain a clear understanding of the process of providing a kindergarten

literacy intervention. The next chapter outlines the methods I used to carry out this study.

CHAPTER 3: METHODS

The purpose of this project is to document and describe the process of using research to guide an early literacy intervention in a kindergarten classroom. The research questions guiding this study are: (1) How can an early literacy intervention be implemented in a kindergarten classroom? (2) How does targeted intervention affect a child's pre-reading skills?

As a Learning Support Services (LSS) teacher, my role is to help classroom teachers meet the learning needs of all students in the classroom. This includes supporting classroom teachers and educational assistants with the meaningful integration of students with special needs, developing individual education plans for students with special needs designations, as well as planning for and helping provide tier two and three interventions for all grades in the kindergarten through grade five school.   I have held this position for one year after gaining the qualifications through my graduate coursework in special education; my previous experience was in the classroom. For this study, I used my role as an LSS teacher to work with a classroom teacher to plan and implement an early literacy intervention that spanned a period of four weeks.

Position of the Researcher

As a teacher with twenty-years experience, I constantly strive to improve my practice and improve the learning outcomes of my students. After completing my teaching certification courses, which included a Bachelor of Arts in History and the Professional Development Program in Education at Simon Fraser University, I taught for one year before re-enrolling in university to complete an extra thirty credits of general education coursework. During the following twenty years of teaching, sixteen of which have been at the grade one level, I developed a passion for reading instruction and sought out as much information as I could about

best practices in the teaching of reading. My knowledge of best practice was limited to the

books, professional development sessions, and conferences suggested by my district's

curriculum department, or recommendations by colleagues. Once I embarked on graduate study,

I was exposed to educational research. I came to realize that all of the individuals that I

considered to be experts in literacy, many with popular educational books, were not cited in

research and, more problematic, many did not seem to use current research when dispensing

teaching advice. I began to see myself as a by-product of the disconnect between reading

researchers and the popular educational establishment. Being exposed to research has caused me

to re-evaluate the manner in which I teach reading.

As mentioned in Chapter 1, one concern that has been on my mind for many years has

been the occurrence of a few students each year, who are considered to be strong in Language

Arts in kindergarten, struggle to read in grade one. These students exit kindergarten being able

to recognize all the alphabet letters and their sounds and can often instantly recognize a dozen or

more words at sight. Sometimes these students even assessed well in the district's grade one Fall

reading assessment which consists of a running record. It was not until Winter of grade one, that

the difficulties these students were experiencing at acquiring reading became evident. Not being

aware that a student was struggling with reading until mid-grade one frustrated me, as I wanted

to provide all students with the instruction they needed in a timely manner. Upon being exposed

to educational research, this frustration inspired me to explore the literature pertaining to

kindergarten literacy skills that led to success in reading acquisition in grade one and provided

me with the drive to implement the strategies and screeners that research has shown to be

effective. This drive to implement research made Action Research the best methodology to use

for this project. Action research allowed me to apply research and report on the process and its effects in the hopes of fostering change in my practice, my school and my district.

Research Design

It was important for me to use research to guide practice in a way that improved the outcomes of students. For this reason, I chose to use qualitative Action Research methodology. Education Action Research is defined as "the process of studying a real school or classroom situation to understand and improve the quality of actions or instruction" (Johnson, 2012, p. 16). They cyclical nature of action research allows the researcher to continually assess the nature of the problem and make improvements as needed, allowing me to use both data and theory to guide my intervention decisions. It also allows flexibility in the variety of methods used to collect data: It enables me to document the process of providing intervention, the results of the intervention and my reflections on both the process and the results.

Costello (2003) explains that Action Research is valuable in education because it allows teachers to reflect on their own practice, it allows educators to link theory and practice, and can be beneficial to the school environment (p. 26). Similarly, Hong and Lawrence's (2011) study on the use of Action Research by graduate students found that Action Research led to students actively applying research, improving their teaching practice, and sharing with their wider educational community.

Educational Action Research is a way of inquiring into an educational problem and involves a variety of steps.

1. The researcher identifies an educational problem in the school setting.

2. The researcher makes a plan to address the problem, often by researching literature on the topic.

3. The researcher implements the plan.

4. The researcher observes the effects of the plan.

5. After analysing the data, the researcher reflects on the effects of the plan in order to inform teaching practice.

There are many reasons why Action Research was most appropriate for this study. Firstly, because I saw a problem that I wanted to explore, Action Research was most fitting because it allows me to research and implement best practices while documenting the process and its effects. In this manner, the project helps bridge the research-practice gap by actively implementing early literacy research. Secondly, there is already an abundance of post-positivist research that clearly demonstrates and outlines the strategies that are effective for early literacy intervention. Instead of adding more research to confirm the many helpful strategies, my study uses the research to implement actual change in pre-reading assessment and intervention in the school setting.

Site and Participants

The participants were students in one kindergarten class in an elementary school located in a small city in British Columbia near the greater Vancouver area. The school is my workplace and has been for five years. Connecting the research to a kindergarten class at my workplace was significant to me, to the classroom teacher, and to the school itself. The school has 550 students (kindergarten to grade five) with 54 staff members and is located in a middle-socioeconomic neighbourhood filled with single family homes, some with basement suites. While the school is seen by many in the community as being more affluent, teachers describe the

school's demographics as changing drastically in recent years with more students displaying

difficulty with academic, social or emotional skills. The University of British Columbia's

Human Early Learning Partnership (2016) confirms this; they report a meaningful increase in

reported vulnerabilities, or risk factors, demonstrated at school entry in kindergarten students in

the neighbourhood between 2004 and 2016. The school is a dual track English and French

Immersion school, with the classroom in this study being from the English track. In the English

track there are two full-day kindergarten classes as well as a combined full-day

kindergarten/grade one class. One kindergarten class participated in the study.

At the initiation of the study, there were nineteen students between the ages of five and

six enrolled in the participating kindergarten class. All nineteen students in the class received

parental permission to participate in this study. All students and the teacher have been given

research names to protect anonymity. One student was not included in the data as she was not

verbal at school, making it impractical for her to participate in the assessments. A twentieth

student joined the class part-way through the research study and was not included in the data.

The eighteen remaining students participating in the study included nine girls and nine boys.

Seventeen percent of the class identified as having aboriginal heritage. Twenty-two percent of

the students spoke an additional language in the home; although all students were proficient

English language speakers. From the screening assessments, seven students (three girls and four

boys) were identified as most in need of extra pre-reading instruction and participated in the

intervention groups. The process of using the data to determine which students required

intervention is discussed in more detail in Chapter 4.

The kindergarten classroom teacher, Mrs. Henderson, also participated in the research

study as we worked as a collaborative team planning the intervention schedule and collaborating

on each students' needs and progress. Mrs. Henderson is a native English speaker, grew up in

the local area and is in her mid-thirties. She holds a Bachelor of Arts degree with a major in

Geography as well as a Bachelor of Education degree with a minor in Curriculum Studies. She

has twelve years of teaching experience, all in the local area, and has taught at the school where

the study takes place for five years. Mrs. Henderson has taught the primary grades (kindergarten

to grade three) for her entire career, with this year being her fifth year teaching kindergarten

students.

Procedure

In order to study the effects of implementing research on early literacy skills in a

kindergarten classroom, I began by meeting with the classroom teacher to share information

about research on essential early literacy skills for two half hour sessions. Then all eighteen

student participants were screened with the Dynamic Indicators of Basic Early Literacy Skills 8th

Edition (DIBELS) as well as phonological awareness sections from the locally developed

Kindergarten Literacy Assessment Package. From these two assessments, we decided which

students required targeted early literacy intervention which is detailed in Chapter 4. Mrs.

Henderson and I worked together to decide which manner of intervention would best benefit the

children and would work well with the classroom schedule. Over the course of one month,

intervention occurred in two fifteen-minute rotations, three times a week. Throughout the

intervention, I observed and documented student progress using field notes and adjusted the

intervention to ensure effectiveness. At the end of the four weeks, students who received the

intervention were reassessed with both the DIBELS and the Kindergarten Literacy Assessment

Package. Throughout the process I recorded my impressions and reflections in the reflective

journal.

Data Collection Methods

Data was collected using four measures: the DIBELS screener, the locally developed Kindergarten Literacy Assessment Package, field notes, and a reflective journal.

DIBELS screener. I administered the Letter Naming Fluency (LNF), Phoneme Segmentation Fluency (PSF), and Nonsense Word Fluency-Correct Letter Sound (NWF-CLS) sections of the Kindergarten DIBELS 8th Edition (University of Oregon, 2018) screener to all student participants. The screener assesses letter recognition, letter naming speed, letter sounds, and the phonemic awareness skill of segmenting phonemes. It is conducted one-on-one in three sections, each timed for one minute. DIBELS is considered by many researchers to be an appropriate screener for identifying kindergarten students at risk of reading difficulties because it is quick and easy to administer, it is accurate at measuring the pre-reading skills that are correlated with later reading acquisition, and its validity is well established (Burke, Hagan-Burke, Kwok, & Parker, 2009; Gillon, 2018). All reliability measures for the kindergarten sections used for this research range from .80 to .97 with most scores in the .90s (University of Oregon, Center on Teaching and Learning, 2018). Additionally, DIBELS has alternate equivalent forms for progress monitoring which allow for a clear measure of growth. This allowed me to use the DIBELS to both screen for students who are at risk of having reading difficulties and to monitor their progress, or response, to the intervention. While the DIBELS does not assess every aspect of phonemic or phonological awareness, it is intended to indicate risk. DIBELS publishes benchmark goals for each subtests: Students who do not meet benchmarks are considered to be at risk of reading failure (University of Oregon, 2018).

Kindergarten Literacy Assessment Package. The Kindergarten Literacy Assessment Package (KLAP) (see Appendix) is developed by the local school district for administration by teachers, in the classroom setting, three times a year, at each reporting period. It is intended to help teachers monitor growth, help teachers determine instructional needs, and provide year-end formative assessment. It assesses alphabet knowledge and phonological awareness skills; two of the pre-reading skills research determines to be essential. For this research project, I administered the phonological awareness sections of the KLAP that a teacher would typically administer at the half-way point in the kindergarten year. This includes rhyming, isolating initial sounds, deleting syllables of compound words, and segmenting syllables. The KLAP is administered individually, in a conference format. While it is not normed, this assessment is more typical of how a teacher would assess students in the classroom setting, checking for understanding of the skills taught during lessons. As I sought to use this project to bridge research with actual classroom practice, it was natural to include the district's assessment.

Together, the DIBELS and KLAP assess letter naming speed, alphabet knowledge and phonological awareness, the pre-reading skills predictive of future reading success. These two assessments were administered in order to determine which students needed intervention. They were re-administered after the four-week intervention to determine the effectiveness of the intervention. Comparison of pre- and post-intervention scores help answer Research Question #1 "How does targeted intervention affect a child's pre-reading skills?" while the process of assessing students helps answer Research Question #2, "How can an early literacy intervention be implemented in a kindergarten classroom?"

Field notes. During the actual intervention sessions, I took rough notes on paper in order to keep track of the lessons and student progress. These notes provided insight into student learning, progress, response to lessons, and helped me plan the subsequent lessons. Much of the information on each student's progress during the four weeks of intervention is documented in the field notes and helps answer Research Question #1 "How does targeted intervention affect a child's pre-reading skills?"

Reflective Journal. The reflective journal allowed me to reflect on the process of implementing the intervention. At the end of every work day during the project, I wrote in the reflective journal to document how the classroom teacher and I worked together to plan the intervention, how we delivered the intervention, as well as my thoughts and impressions on all aspects of the intervention including student progress. The notes from the reflective journal provide data to help me answer Research Question #1 "How does targeted intervention affect a child's pre-reading skills?" and Research Question #2: How can an early literacy intervention be implemented in one kindergarten class?

Data Analysis

A combination of data analyses describes both the manner in which the intervention was delivered and the effects of the intervention. In order to describe how I worked with the classroom teacher to plan the intervention, I analysed the reflective journal by looking for themes and grouping the data by each theme. Then I summarized each theme. Themes included: discussions of student needs, the intervention schedule, and student response to the intervention and its schedule. In order to ensure validity of these themes, I used a member check. The member check involved providing the teacher participant a summary of the themes in order to confirm the accuracy of the data gleaned from the reflective journal.

In order to analyse the effectiveness of the intervention, student scores on both the DIBELS and KLAP were compared using a pretest post-test design. Descriptive statistics shed light on each students' progress. The field notes taken during the lessons added further information on each student's response to the individual lessons as did my daily reflections in the reflective journal. In order to analyse the field notes, I sorted each note by student and summarized each student's progress and response to lessons. Together, the DIBELS, KLAP, reflective journal and field notes provided four sources of information on each child's response to the intervention. By using all four sources of data, I was able to ascertain a clear understanding of the effects of the intervention for each participant.

Ethical Research Practices

In order to guard against any harm, the university's ethical review board read and approved the research proposal. Student participants' parents received written information on the planned Action Research study and returned a signed consent form. When working with each student individually, I received assent before beginning by asking the student, "Would you like to come work with me?" No student was assessed for the research without both the signed, returned consent form and verbal assent. Similarly, the teacher participant received information on the study and signed a consent form. All the names of the student participants and teacher participants were changed for this report in order to maintain confidentiality.

Using four data collection methods allowed me to analyse the both the process of implementing an early literacy intervention in a kindergarten classroom and the effectiveness of the month-long intervention. The next chapter explores the research questions in conjunction with the data.

CHAPTER 4: RESULTS AND DISCUSSION

This study set out to investigate the process of using research to guide an early literacy intervention in a kindergarten classroom and to reflect on effectiveness of the intervention. The following discussion focuses on the intervention itself and how effective it was for each of the seven children involved by focussing on two research questions. The first question explores how an early literacy intervention can be implemented in one kindergarten class. The second question examines how the targeted intervention affected each child's pre-reading skills. In this chapter, the research questions are considered in light of the data.

Research Question # 1: How can an early literacy intervention be implemented in one kindergarten class?

Mrs. Henderson and I worked together to plan the implementation of the intervention with her students.   Because we had worked together for seven years as grade partners, each teaching a grade one class in the same school, we had a relationship of trust and respect that made this process seamless. Furthermore, Mrs. Henderson was receptive to listening to summaries of research in the area of early literacy and discuss its implications on classroom practice and this intervention. We worked closely to choose struggling pre-readers for this project and to determine how best to provide the intervention within the class schedule. The details of this process and the intervention lessons are explained here.

Choosing students for the intervention. In order to ensure that students who required intervention received it, I assessed all the student participants in Mrs. Henderson's class using both the DIBELS assessment as well as the phonological awareness aspects of the locally

developed KLAP. In order to assess all the kindergarten students in the class, I dedicated

approximately three hours of time to individually pull-out students and assess them in my

Learning Support room. Each assessment took approximately three to five minutes to complete

per student. Because my schedule also included working with various other classrooms, it took

approximately one week to complete the assessments. Table 1 and 2 summarize the scores of the

entire kindergarten class on the DIBELS and KLAP.   The three DIBELS measures are Letter

Naming Fluency (LNF), Phonemic Segmenting Fluency (PSF) and Nonsense Word Fluency-

Correct Letter Sound (NWF-CLS). The DIBELS LNF requires students to say the names of

alphabet letters, both lower-and upper-case, presented in rows, in random order. The students

are scored on the correct number of letters identified in one minute. The DIBELS PSF requires

students to listen to a word and repeat the word, broken into phonemes. The students are scored

on the correct number of phonemes identified in one minute. The DIBELS NWF-CLS subtest

requires students to identify the letter sounds of consonant-vowel-consonant or vowel-consonant

nonwords. Students have the option of blending the sounds to read the nonwords, or to say the

individual letter sounds. Students are scored on the correct number of correct letter sounds in

one minute.

Table 1
Whole Class Scores DIBELS

Subtest	Benchmark Goal	Range of Scores	Mean	**Number of Students Below Benchmark**	Number of Students at or above Benchmark
DIBELS LNF	37	4-73	36	**9**	9
DIBELS PSF	16	0-46	16	**11**	7
DIBELS NWF-CLS	25	0-85	25	**10**	8

Note: LNF=Letter Naming Fluency, PSF=Phoneme Segmenting Fluency, NWF-CLS=Nonsense Word Fluency-Correct Letter Sounds. Benchmark for mid-kindergarten: LNF=37, PSF=16, NWF-CLS=25 (University of Oregon, 2018).

The KLAP rhyme portion has two sections. In the first section, students identify which two

words, of three, rhyme. In the second section, students listen to a word and provide a rhyming

word. The KLAP's Isolate Initial Sound subtest requires the students to listen to a word and say

the word's first sound. The KLAP's Delete Parts of Compound Words subtest requires the

students to listen to a compound word and then delete one of its syllables, for example, "Say

sunshine without sun". The KLAP's Segment Syllables subtest requires the students to listen to

a word and repeat the word while clapping or tapping the word's syllables.

Table 2
Whole Class Scores Kindergarten Literacy Assessment Package

Subtest	Benchmark Goal	Range of Scores	Mean	**Number of Students Below Benchmark**	Number of Students at or above Benchmark
Identify Rhyme	4	0-5	3.4	**7**	11
Produce Rhyme	4	0-5	2.7	**8**	10
Isolate Initial Sounds	4	0-5	4.2	**4**	14
Delete Parts of Compound Words	4	0-5	3.8	**6**	12
Segment Syllables	4	1-5	3.7	**7**	11

Mrs. Henderson and I decided to choose the students who did not meet benchmark scores in the most subtests of both the DIBELS and the KLAP for intervention.   Therefore, not all students who scored below benchmarks were selected for intervention, only those who scored the most below benchmarks. This resulted in the selection of six students who were not meeting benchmarks in five or more subtests and one student who was not meeting benchmarks in four subtests, totalling seven students. The seven students that were selected for intervention are described briefly in Table 3. They include four kindergarten boys, whose pseudonyms include Eli, Luke, Sam and Aidan, as well as three kindergarten girls, with the pseudonyms Kennedy, Ria, and Suzie. The students are all between the ages of five and six and live in the local area. The students selected for the intervention were all fluent English-Language speakers, although Ria and Suzie spoke another language in the home. Their scores in the subtests of the KLAP and the DIBELS that intervention focussed on are highlighted in Table 3 which reflect a diversity of abilities.

Table 3
Students Participating in the Intervention

| Student Pseudonym | Pre-Intervention Scores | | | | Basic Descriptors |
| | KLAP | DIBELS | | | |
	Initial Sound	LNF	PSF	NWF-CLS	
Eli	2	4	6	4	Compliant and friendly
Luke	0	19	0	0	Excited and wiggly
Sam	5	42	8	17	Mature and focussed
Aidan	2	48	0	0	Attentive yet impulsive
Kennedy	5	18	6	13	Shy and unsure
Ria	5	14	29	11	Quiet and compliant

Suzie	5	21	2	16	Excited and chatty

Scheduling the intervention. Mrs. Henderson had already implemented a half hour

block of stations during her morning schedule. This had been well-established since the school

year began in September (some six months earlier). All of the students in Mrs. Henderson's class

were divided into groups of three to four students and each group visited two different stations

per day for fifteen minutes each. The stations often included playing a literacy game with a

parent volunteer, writing in journals, playing a literacy or fine motor game with classmates,

working with the teacher on a literacy activity, and working with an Educational Assistant on a

social-emotional curriculum. To the students, it appeared that each day's station assignment was

random; however, Mrs. Henderson carefully planned each groups' daily station to ensure

students received the instruction they most needed. When Mrs. Henderson described her station

set-up, it was clear to both of us that adding the intervention at this time would be ideal since it

would fit in naturally as another 'station' and it would not be obvious who was receiving the

extra lessons. Mrs. Henderson and I divided the students requiring intervention in two groups

(one group of three students and one group of four students) and Mrs. Henderson ensured that,

on the intervention days, each of the two groups was assigned to work with me for one of the

fifteen-minute rotations. We discussed the possibilities of conducting the intervention in the

classroom, in the Learning Commons, or in my learning support room. Mrs. Henderson

preferred that I work with the intervention group in the learning support room as she liked to

spread out stations in areas of her classroom and the Leaning Commons in order to allow each

group to talk and hear each other.

This intervention schedule worked well for two reasons. First, because all students were

participating in assigned stations, no student felt singled-out or that they were missing something

fun when they went to intervention. Also, because some stations were in the classroom and

some in the Learning Commons, it was not unusual for the students to leave the room for

stations. With my room situated next to the Learning Commons, it was an ideal location for

students to move from one station to my room, avoiding the stigma of attending learning

assistance, yet benefitting from the quietness and lack of distractions a separate room allowed.

In previous experience, I have had students not want to work with me because the teacher

scheduled me to work with the student during play time or another fun activity. This rotation

set-up avoided this situation and students were always excited to visit my station (Reflective

Journal, April 9, 2019).

The second aspect of the intervention schedule that worked well was the fifteen-minute

time slot. We chose the short sessions because they worked with the class station schedule. Mrs.

Henderson and I discussed the possibility of providing a half hour block of intervention (and

only work with one group) but decided that more students could receive small-group targeted

intervention with immediate feedback if we kept the number of students in each group (three to

four) small. We agreed to two fifteen-minute blocks with the opportunity to make changes, if

needed. However, after the first lesson, I reflected that the fifteen-minute blocks were perfect as

all the students were engaged and on-task the entire time (Reflective Journal, April 4, 2019).

Plus, with a fast-paced lesson, the students were able to work on many skills in the short time

and maintain focus. We continued with the fifteen-minute block for the entire four-week

intervention.

Providing the intervention. As outlined in Chapter 2, research indicates that the best

outcomes occur when alphabet knowledge and phonological awareness are integrated (Ehri et al,

2001; Canadian Language and Literacy Research Network, 2008; NELP Report, 2008).

Furthermore, teaching students the skills of blending and segmenting produced the best effect

sizes in both reading and spelling when compared to teaching other phonemic awareness skills

(Ehri et al, 2001). As a result, when developing the lessons, I only focused on alphabet

knowledge, phoneme identification, blending, and segmenting. Additionally, research supports

the use of explicit, systematic instruction that includes the correction of errors, so I focused on

careful sequencing and scaffolding of the lessons. Beck and Beck's (2013) book provides

information on how to integrate letters and phonemic awareness at the emergent level. Using

their advice, I developed a lesson framework and sequence that would reinforce alphabet letter

names and phonemes, help students listen for target phonemes, help students learn to segment

words and help students learn to blend phonemes. A typical lesson included:

- reviewing the letter names and phoneme associated with previously taught alphabet letters;

- listening to a segmented word and blending the sounds together;

- looking at letters in sound boxes, a visual box for each phoneme, and blending the phonemes to say the word;

- listening to a word with a consonant-vowel-consonant (CVC) spelling and segmenting the word orally;

- listening to a word with a consonant-vowel-consonant (CVC) spelling and segmenting the word by representing the phonemes with letter tiles in sound boxes;

- introducing a new alphabet letter and the phoneme associated with it;

- examining how the phoneme is produced with the mouth and practicing;

- identifying if a targeted phoneme is at the beginning or end of a word; and

- applying the blending concept by reading a sentence with known high frequency words and decodable words (words that use the letters previously taught).

The lessons were responsive to student progress. For instance, when four students displayed difficulty blending letter sounds together, I ensured that lessons included both blending without letters and then with letters and scaffolded the task, starting with modelling and gradually working towards independent blending (Reflective Journal, April 11, 2019).

Establishing the intervention with careful attention to participant selection, scheduling the intervention lessons, and planning the lessons were critical in setting up meaningful literacy experiences for the children in need of some extra attention in pre-reading skills.

Research Question #2: How does targeted intervention affect a child's pre-reading skills?

The intervention affected each of the children in different ways. In the following sections I describe each of the student participants, their progress during the intervention, and their scores on both the DIBELS and the KLAP before and after the intervention.

Eli. Eli is a compliant, friendly five-year-old boy. Mrs. Henderson expressed concern about his pre-reading skills before the initial assessments because, although Eli was able to demonstrate an ability to identify rhyme and clap syllables, he seemed to struggle with activities that involved alphabet letters including identifying letters and their corresponding phoneme. The initial assessments confirmed Mrs. Henderson's concerns: As Table 4 shows, Eli scored four in Letter Naming Fluency on the DIBELS assessment, the lowest of the entire kindergarten class. His Phonemic Segmenting Fluency score was six and Nonsense Word Fluency-Correct Letter Sounds score was four; all scores resulted in recommendations for intensive instruction based on the DIBELS benchmarks. However, as Table 5 indicates, he scored well on all aspects of the district's Kindergarten Literacy Assessment Package, aside from initial phoneme identification.

After the assessments were complete, Mrs. Henderson and I agreed that Eli was a definite

candidate for intervention.

Table 4
Eli's Pre and Post Intervention DIBELS Scores

Subtest	Pre-Intervention Score	Post-Intervention Score	Intensive Intervention Benchmark
Letter Naming Fluency	4	11	37
Phoneme Segmentation Fluency	6	24	16
Nonsense Word Fluency – Correct Letter Sounds	4	10	25

Table 5
Eli's Pre and Post Intervention Kindergarten Literacy Assessment Score

Subtest	Pre-Intervention Score	Post-Intervention Score	Possible Total Score
Rhyme Identification	5	5	5
Rhyme Generation	5	4	5
Isolating Initial Phonemes	**2**	**5**	**5**
Deleting Parts of Compound Words	5	5	5
Syllable Segmenting	5	5	5

Note: The bolded "Isolating Initial Phonemes" is the only subtest of the KLAP addressed in the intervention.

During the intervention lessons, it was immediately apparent that Eli was usually able to

recall the names and corresponding sounds of letters as they were introduced. He could even

identify if he heard a targeted letter sound at the beginning or end of a word; however, his

struggle appeared to be with blending and segmenting sounds. For instance, when I would orally

present the students with the phonemes of a word such /r/ /a/ /t/ and asked the students, "What word am I saying?" Eli could not answer. The same task with the addition of visual sound boxes and letter tiles originally did not result in correct identification of the word as well. Similarly, he could not segment a word either orally or by moving the letters into sound boxes.

As the intervention progressed, Eli started to demonstrate improvement in his ability to segment and blend sounds both orally and with letter tiles. In order to help him understand the processes of blending and segmenting, I would scaffold the activities for him. For instance, during segmenting activities I would say the whole word, then each sound slowly, and elongated, while pointing to the correct sound box. On the fifth session he demonstrated an ability to listen to a CVC word, repeat the word slowly, then put the individual letters into the correct sound boxes independently. He continued to demonstrate a fairly good understanding of segmenting a word and representing the sounds with letters as the intervention progressed. Although he occasionally made errors, he could independently correct the error when prompted with a cue such as, "You need to fix one of your letters, the word is fffaaaannnn." Similarly, on the seventh session Eli began to demonstrate an ability to blend sounds together when presented orally with the phonemes. During the last two weeks of the intervention, instruction included manipulating phonemes. Eli was able to independently switch the first letter tile with another to make a new word without extra scaffolding.

Eli's progress is evident in his final assessment scores, shown on tables 4 and 5. On the KLAP he increased his ability to isolate initial sounds from 40% to 100% accuracy, indicating mastery of this skill. When compared to his initial scores, Eli's final DIBELS scores showed improvement in all areas, although they were still not within benchmark cut-points; this indicates that Eli will continue to require intervention as more formal reading instruction begins in grade

one. Improvements noted are: a more than doubling of his scores in both Letter Naming Fluency

and Nonsense Word Fluency and a four-time improvement in Phonemic Segmentation Fluency.

Clearly these improvements indicate that the intervention was successful for Eli and

could perhaps be even more successful if extended for a longer period of time. The scaffolds

used to help Eli achieve success seem to be effective and need to continue in order to build upon

this growth. While his acquisition of the pre-reading skills during previous whole group lessons

in the classroom were very minimal, the introduction of targeted, small group intervention

addressing these skills proved to be imperative for Eli's growth.

Luke. Luke is a very eager five-year-old boy, the youngest child in his family. He is

always excited to see known adults in the school and will poke his head out of the classroom to

say "Hi" when I walk by. Luke participated in all activities with enthusiasm and focus; however,

he often displayed difficulty waiting to answer a question. For example, when I asked the

students to put their thumbs up if they knew what word I was thinking, he often forgot to give me

a thumbs up and instead blurted out his response. Often, when I entered the classroom and

observed whole-class lessons on the carpet, Luke would be sitting near the back wiggling and

fidgeting. Mrs. Henderson provided him with fidget tools that would help him stay seated for

longer; however, I wondered how well he was able to focus on lessons.

Mrs. Henderson expressed concern for Luke's acquisition of pre-reading skills. Upon

kindergarten entry he could not identify any alphabet letters or his printed name. During the

second term of Kindergarten, Luke began to improve in the area of alphabet knowledge, and

Mrs. Henderson was very pleased with his progress. However, he still struggled with many pre-

reading skills. As indicated in Table 6, he did not achieve benchmark scores in any of the

subtests of the DIBELS screener; he scored zero in both Phonemic Segmentation Fluency and

Nonsense Word Fluency-Correct Letter Sound. Similarly, the district's KLAP indicated that he

had not acquired any of the phonological awareness skills on the screener (Table 7). Mrs.

Henderson and I agreed that Luke was in need of intervention in all pre-reading skills.

Table 6

Luke's Pre and Post Intervention DIBELS Scores

Subtest	Pre-Intervention Score	Post-Intervention Score	Intensive Intervention Benchmark
Letter Naming Fluency	19	36	37
Phoneme Segmentation Fluency	0	22	16
Nonsense Word Fluency – Correct Letter Sounds	0	14	25

Table 7

Luke's Pre and Post Intervention Kindergarten Literacy Assessment Scores

Subtest	Pre-Intervention Score	Post-Intervention Score	Possible Total Score
Rhyme Identification	1	3	5
Rhyme Generation	0	1	5
Isolating Initial Phonemes	**0**	**5**	**5**
Deleting Parts of Compound Words	0	4	5
Syllable Segmenting	2	2	5

Note: The bolded "Isolating Initial Phonemes" is the only subtest of the KLAP addressed in the intervention.

During the first intervention lesson, Luke was able to identify when he heard a targeted phoneme; however, he could not identify if he heard a targeted phoneme at the beginning or end of a word. After two lessons of direct instruction he became accurate at identifying beginning and ending phonemes. He quickly learned how to orally blend sounds after only two lessons as well. Listening to a CVC word, segmenting the three phonemes, then using letter tiles to represent the phonemes in sound boxes proved to be the most difficult skill for Luke to acquire. However, with explicit instruction, Luke was able to complete this task independently and accurately by the fifth lesson.

Post assessment data indicates that Luke made gains in many areas. On the KLAP, Luke went from 0 percent to 100 percent accuracy identifying initial phonemes (Table 7). The DIBELS assessment, shown in Table 6, indicated an almost doubling of his score in Letter Naming Fluency. His Phonemic Segmentation Fluency and Nonsense Word Fluency both grew incredibly with improvements from zero to twenty-two and zero to fourteen respectively.

Luke's improvements demonstrate that the intervention was effective in improving his alphabet knowledge, his phonemic awareness and his letter naming speed. The nature of the small group instruction seemed to be particularly beneficial as he was always engaged and on-task for the entire lesson, something he struggles with in class. The dramatic improvements in only a few weeks suggest that small group intervention using explicit instruction to teach alphabet knowledge and phonological awareness is can be effective for a student who has difficulty focusing during whole class lessons and had little exposure to the alphabet system before beginning kindergarten.

Sam. Sam is a six-year-old boy with a calm, confident personality. He appeared to be mature compared to the other students in the intervention groups. After completing the initial screening assessments, Sam's scores indicated that he needed intervention in phonemic awareness and letter-sound correspondence. However, Mrs. Henderson was surprised that he was considered for intervention and she displayed evidence of his segmentation skills in his writing book where he had used inventive spelling to spell entire sentences with fairly accurate beginning and ending sounds. After discussing the possible positive and negative effects of including Sam in the intervention, Mrs. Henderson and I decided to include him because: the screening device could be indicating a need that was not apparent from classroom instruction and there was no negative effect for including him (Reflective Journal, April 2, 2019). During the intervention lessons, Sam was able to complete each task after explicit teaching.

Table 8

Sam's Pre and Post Intervention DIBELS Scores

Subtest	Pre-Intervention Score	Post-Intervention Score	Intensive Intervention Benchmark
Letter Naming Fluency	42	38	37
Phoneme Segmentation Fluency	8	22	16
Nonsense Word Fluency – Correct Letter Sounds	17	26	25

Table 9

Sam's Pre and Post Intervention Kindergarten Literacy Assessment Scores

Subtest	Pre-Intervention Score	Post-Intervention Score	Possible Total Score

Rhyme Identification	5	5	5
Rhyme Generation	0	0	5
Isolating Initial Phonemes	**5**	**5**	**5**
Deleting Parts of Compound Words	2	4	5
Syllable Segmenting	4	4	5

Note: The bolded "Isolating Initial Phonemes" is the only subtest of the KLAP addressed in the intervention.

Sam's post intervention data indicate that he is no longer at risk and could be exited from another round of intervention, should the intervention continue beyond this study. He has now surpassed benchmark scores in all three DIBELS categories as indicated in table 8. He almost tripled his score in phoneme segmentation fluency and increased his score in Nonsense Word Fluency-Correct Letter Sounds by 53%. Sam was also able to blend the phonemes in the nonsense word fluency to read six whole words, an increase from zero. Table 9 indicates that Sam still struggles with rhyme generation; however, this is a skill that is not correlated to future reading success (Gillon, 2018). The data indicates that Sam is on his way to becoming a successful reader with regular classroom instruction. Perhaps the intervention helped Sam solidify his understanding of the grapheme phoneme connection.

Aidan. Aidan is an attentive, five-year-old boy. Although he was quite attentive during lessons, his comments were often off topic in both the classroom and the intervention. Sometimes I would ask a question about letters and phonemes and he would respond with a comment about something unrelated that happened at home. Mrs. Henderson believed that Aidan had good memorization skills but had a difficult time applying knowledge; his pre-assessment confirmed this. As tables 10 and 11 show, Aidan scored well above benchmark

scores on Letter Naming Fluency; however, on the assessments of phoneme awareness,

phonological awareness, and letter sounds, his scores indicated that he had little understanding of

these concepts.

Table 10

Aidan's Pre and Post Intervention DIBELS Scores

Subtest	Pre-Intervention Score	Post-Intervention Score	Intensive Intervention Benchmark
Letter Naming Fluency	48	47	37
Phoneme Segmentation Fluency	0	6	16
Nonsense Word Fluency – Correct Letter Sounds	0	12	25

Table 11

Aidan's Pre and Post Intervention Kindergarten Literacy Assessment Scores

Subtest	Pre-Intervention Score	Post-Intervention Score	Possible Total Score
Rhyme Identification	0	1	5
Rhyme Generation	0	0	5
Isolating Initial Phonemes	**2**	**5**	**5**
Deleting Parts of Compound Words	2	3	5
Syllable Segmenting	4	4	5

Note: The bolded "Isolating Initial Phonemes" is the only subtest of the KLAP addressed in the intervention.

During the intervention Aidan quickly mastered identifying phonemes; after a few examples, he could confirm if a word had a target phoneme at the beginning or end. However, he was unable to blend sounds together or segment sounds even with many days of direct instruction. I began carefully scaffold the task by saying the phonemes with a clear rest between each, wait three seconds, then repeat the phonemes while elongating each and pausing for only a short rest between phonemes. This seemed to help Aidan blend the sounds together more successfully; by the last week of intervention he was able to independently blend phonemes with 60% accuracy. Segmenting words into individual phonemes and representing each sound with a letter tile was similarly challenging for Aidan. Often, he would watch the other participants and replicate their work. I was able to scaffold this task by pointing at each box while saying the word slowly, allowing Aidan to achieve success. By the last intervention session, Aidan was beginning to independently segment words.

The post-assessment data in tables 10 and 11 indicate that Aidan made gains in phoneme segmentation, isolating initial phonemes and correct letter sounds. He did not show any improvement in letter naming; this could possibly be explained his very accurate and quick letter naming ability at pretest which was well beyond benchmark cut points. Aidan's scores indicated that while the intervention was successful, he would have benefitted from a continuation of the intervention for a longer period of time as he is still not meeting benchmarks for the letter sounds and segmenting subtests of the DIBELS.

Kennedy. Kennedy is a quiet, compliant five-year-old girl with some speech-sound articulation substitutions. She was always smiling and tried her best, although she seemed to lack confidence and often looked to other children for confirmation before attempting a task.

After pre-assessing Kennedy, Mrs. Henderson and I examined my notes of her assessments to check that her articulation errors did not affect her scores. Kennedy's scores on the DIBELS, shown in Table 12, indicated that she was a candidate for intervention; however, Mrs. Henderson felt that Kennedy's low scores may be a result of her hesitation and lack of confidence. This was definitely plausible, given that the DIBELS subtests are timed for one minute. We decided to include her in the intervention in order to develop her confidence and capabilities in pre-reading skills.

During the first few intervention sessions, Kennedy never volunteered to answer an oral question until a peer provided the answer. She seemed to be avoiding having an incorrect answer or needed longer processing time. In order to help Kennedy, I began asking the children to put their thumbs up when they knew the answer and I provided wait time, ensuring that Kennedy's thumb was up, before asking a student for an answer. Her lack of confidence was also evident during activities involving letter tiles. When the students were asked to listen to a word, segment it into phonemes, then place a letter tile into each sound box to represent each phoneme, Kennedy always looked to the other children and copied their work. This made it difficult for me to determine if Kennedy needed more scaffolding, or if she simply wanted confirmation of her answer before moving a tile. In order to help Kennedy during this task, I began to position myself in front of her while she worked with the letter tiles and, if I saw her eyes begin to look towards another child's work, I would redirect her to her sound boxes with a phrase such as, "What do you hear first?" By the seventh session she no longer needed my redirection and independently completed the task. She still worked slowly; however, she worked accurately and independently.

Post intervention data on the DIBELS screener, shown in Table 12, indicates great

improvement on the DIBELS screener. She improved 44% in Letter Naming Fluency, 533% in

Phonemic Segmentation Fluency and 77% in Nonsense Word Fluency-Correct Letter Sounds.

These improvements indicate that the intervention was very successful in improving Kennedy's

abilities and confidence in pre-reading skills. She is no longer below the benchmark cut-points

in segmentation and is only two letter sound away from meeting the benchmark for Nonsense

Word Fluency-Correct Letter Sounds. While she demonstrated growth in Letter Naming

Fluency, she still requires intervention by DIBELS standards. Table 13 shows improvement in

Kennedy's ability to identify and produce rhymes. This task was not a focus of intervention,

although I used the term "rhyme" when manipulating initial phonemes. For instance, the

students were asked to change the first letter of "bat" to make the word "hat". Mrs. Henderson

also teaches rhyme during whole class lessons, making it difficult to know how much the

intervention affected her improvement in rhyming.

Table 12

Kennedy's Pre and Post Intervention DIBELS Scores

Subtest	Pre-Intervention Score	Post-Intervention Score	Intensive Intervention Benchmark
Letter Naming Fluency	18	26	37
Phoneme Segmentation Fluency	6	38	16
Nonsense Word Fluency – Correct Letter Sounds	13	23	25

Table 13

Kennedy's Pre and Post Intervention Kindergarten Literacy Assessment Scores

Subtest	Pre-Intervention Score	Post-Intervention Score	Possible Total Score
Rhyme Identification	3	5	5
Rhyme Generation	3	4	5
Isolating Initial Phonemes	**5**	**5**	**5**
Deleting Parts of Compound Words	3	5	5
Syllable Segmenting	4	3	5

Note: The bolded "Isolating Initial Phonemes" is the only subtest of the KLAP addressed in the intervention.

Kennedy's improvements demonstrate that the intervention was successful for her. Not only did her confidence improve, but her scores improved too. The small group setting, allowing for immediate teacher feedback and redirection was likely instrumental in helping her develop the confidence to attempt pre-reading tasks independently.

Ria. Ria is a quiet, compliant five-year-old girl. While she is a fluent English speaker, Ria also spoke Punjabi at home. Mrs. Henderson explained that Ria entered kindergarten knowing the names of only a couple letters of the alphabet. Whole class lessons on alphabet knowledge as well as targeted in-class extra instruction such as playing letter identity games with the classroom teacher or a parent volunteer helped Ria become more familiar with letter knowledge during the first few months of kindergarten. At the time of the pre-assessment, Mrs. Henderson reported that Ria could identify all alphabet letters aside from "v" and could identify the sounds associated with twenty letters. According to district expectations, Ria was now meeting expectations in alphabet knowledge. However, her pre-intervention DIBELS scores, shown in Table 14, indicate that her Letter Naming Fluency and ability to identify letter sounds

were both not meeting benchmarks. It appeared that although Ria could identify almost all

letters and their sounds, her knowledge was new and recall was not immediate, making her a

good candidate for intervention.

Table 14

Ria's Pre and Post Intervention DIBELS Scores

Subtest	Pre-Intervention Score	Post-Intervention Score	Intensive Intervention Benchmark
Letter Naming Fluency	14	27	37
Phoneme Segmentation Fluency	29	44	16
Nonsense Word Fluency – Correct Letter Sounds	11	18	25

Table 15

Ria's Pre and Post Intervention Kindergarten Literacy Assessment Scores

Subtest	Pre-Intervention Score	Post-Intervention Score	Possible Total Score
Rhyme Identification	4	5	5
Rhyme Generation	3	4	5
Isolating Initial Phonemes	**5**	**5**	**5**
Deleting Parts of Compound Words	3	5	5
Syllable Segmenting	4	3	5

Note: The bolded "Isolating Initial Phonemes" is the only subtest of the KLAP addressed in the intervention.

During the intervention, Ria was always on task and made an effort to follow instructions. She seemed to catch on to skills fairly quickly, never requiring further scaffolding or much corrective feedback. According to the DIBELS post-assessment, shown in Table 14, the intervention was very successful in increasing Ria's pre-reading skills. She increased her Letter Naming Fluency 93%, her Phonemic Segmenting Fluency 51% and her Nonsense Word Fluency-Correct Letter sounds 63%. The data indicate that Ria would benefit from additional intervention as her scores in Nonsense Word Reading-Correct Letter Sounds and phoneme segmenting are still not meeting benchmarks.

Ria serves as an example of a student that would not have received intervention had we not initiated the DIBELS screener. According to the district's KLAP screener, shown in Table 15, along with her alphabet letter and sound recognition, she was fully meeting expectations for the mid-point of kindergarten and would not require any intervention. Because of the use of the DIBELS screener, we gained further insight into Ria's learning and I was able to provide intervention to move towards success in reading.

Suzie. Suzie is a five-year-old girl who always seems to be excited and happy. While Suzie was a fluent English speaker, she spoke Arabic at home. Her enthusiasm for the lessons resulted in Suzie constantly blurting out answers and needing reminders to allow think-time for the other children. Mrs. Henderson described Suzie as needing constant reminders to wait her turn to talk during class as well. Mrs. Henderson also indicated that Suzie could recognize all alphabet letter names aside from G and E and that she could identify the phoneme associated with each letter. However, Table 16 shows that the DIBELS pre-assessment indicated that Suzie was a candidate for intervention as all subtests of the DIBELS were below benchmark cut-points. Table 17 shows that she had control over some phonological awareness tasks, but not others.

Table 16

Suzie's Pre and Post Intervention DIBELS Scores

Subtest	Pre-Intervention Score	Post-Intervention Score	Intensive Intervention Benchmark
Letter Naming Fluency	21	25	37
Phoneme Segmentation Fluency	2	12	16
Nonsense Word Fluency – Correct Letter Sounds	16	14	25

Table 17

Suzie's Pre and Post Intervention Kindergarten Literacy Assessment Scores

Subtest	Pre-Intervention Score	Post-Intervention Score	Possible Total Score
Rhyme Identification	2	2	5
Rhyme Generation	0	0	5
Isolating Initial Phonemes	**5**	**5**	**5**
Deleting Parts of Compound Words	5	4	5
Syllable Segmenting	1	5	5

Note: The bolded "Isolating Initial Phonemes" is the only subtest of the KLAP addressed in the intervention.

During the intervention, Suzie was usually able to identify if a target phoneme was at the beginning or end of a word. However, she could not blend or segment phonemes without direct modelling. Often, when I asked the students to blend phonemes, by asking, "What word am I saying /m/…/a/…/t/?" She would quickly call out a word with the same initial phoneme or initial

two phonemes. Or she would reverse the phonemes, saying "bat" for the phonemes /t/ /a/ /b/

(Field Notes, April 16, 2019). When working on segmenting tasks involving making words with

letter tiles, Suzie often looked to the other children and copied their work. I would respond with

immediate feedback and prompt Suzie to try again, repeating the word slowly. On the seventh

intervention session Suzie began to find success with both segmenting and blending

independently. By the last intervention session, Suzie was achieving 75% correct blending with

letters, 100% blending orally, and 83% correct segmenting words and representing them with

letter tiles (Field Notes, May 2, 2019).

Her progress was reflected in her DIBELS post-intervention score for phoneme

segmentation fluency, as shown in Table 16. However, there was a slight decrease in her

Nonsense Word Fluency-Correct Letter Sounds which was surprising considering her progress

during the intervention. Similarly, Table 17 indicates that Suzie did not demonstrate any gains

on the KLAP. Interestingly, the KLAP indicated that Suzie only required intervention in the

concept of rhyme and syllable segmentation. However, the DIBELS screener indicates that

Suzie was a candidate for intervention in all three areas, showing another disconnect between the

two screeners and student needs for intervention.

Intervention group. I was very pleased with the gains made by the intervention group

after a month-long intervention. All seven students demonstrated growth in segmenting words,

six students demonstrated growth in letter sound fluency, and five demonstrated improvement in

letter naming fluency. Table 18 displays the pre-test and post-test mean scores for the group of

seven intervention students. The mean scores show gains on all three subtests of the DIBELS,

with quite large gains in Phonemic Segmentation Fluency.

Table 18

Pre- and post-test DIBELS means and mean gains of the intervention group

Measure	Pre-test mean	Post-test mean	Mean difference
LNF	24	30	+6
PSF	7	24	+17
NWR-CLS	9	17	+8

The students made gains in the KLAP as well. Scores in initial phoneme identification indicate that all three students who did not have mastery of the skill developed 100% mastery. Because research has found that focussing intervention at the phoneme level rather than the syllable level to be more effective, I did not include the other KLAP skills in the direct instruction. However, the students made modest improvements in these categories as well. Perhaps learning to listen carefully to the different phonemes helped the students pay closer attention to syllables, the larger sounds of words.

Table 19

Pre- and post-test KLAP means and mean gains of the intervention group

Measure	Pre-test mean	Post-test mean	Mean difference
Rhyme Identification	2.9	3.7	+0.8
Rhyme Generation	1.6	1.9	+0.3
Isolating Initial Phonemes	3.4	5.0	+1.6

Deleting Parts of Compound Words	2.9	4.3	+1.4
Syllable Segmenting	3.4	3.7	+0.3

Note: Each subtest of to KLAP has a total possible of score of five.

Every subtest of both the DIBELS and the KLAP showed a positive mean difference which indicates that small group intervention helps improve at-risk kindergarten students' pre-reading skills.

Lessons Learned

Implementing an early literacy intervention in one kindergarten classroom. The current study demonstrates that a kindergarten literacy intervention can be successfully implemented in a kindergarten classroom by: using DIBELS as a screener, using stations to integrate the intervention into the classroom schedule, and focusing intervention on alphabet knowledge, including letter names and sounds, as well as the phonemic awareness skills of segmenting and blending.

The importance of an effective screener. The importance of screening students in kindergarten and providing intervention for those that are at risk of reading difficulties is well documented in literature (Schuele & Boudreau, 2008; Ozernov-Palchik et al., 2017; O'Connor, Bocian, Sanchez, & Beach, 2014; Norton & Wolf, 2012; Al Otaiba et al. 2007; National Research Council, 1998). Although administering the DIBELS assessment on a whole class was somewhat time consuming (four to five minutes per student), the information was invaluable. Three students who appeared to be making appropriate progress according to the classroom

teacher and the district's assessments where identified by the DIBELS screener as requiring

intervention. If not for the use of the DIBELS screener, these students would not have been

included in the intervention groups. This is important to note because, as mentioned in Chapter

3, every year a handful of students entered grade one with alphabet knowledge that indicated

they would succeed in reading; however, some of these same students struggled with reading

acquisition. The DIBELS screener could potentially be the method needed to shed light on these

students' needs and allow teachers to provide much needed intervention.

The local KLAP took approximately the same amount of time to administer as the

DIBELS and it touched on quite a few aspects of phonological awareness; however, it did not

assess RAN, or the advanced phonological awareness skills of phoneme blending, phoneme

segmenting and identifying medial or end phonemes. Instead, the KLAP included two sections

on rhyming and two sections on working within syllables all of which, as discussed in Chapter 2,

are not skills that research has found to be predictive of reading success (Gillon, 2018). The only

aspect of the KLAP that assessed the phonological awareness skills that are correlated with

future reading success was the isolating beginning sounds subtest. It seems that the KLAP was

not as useful for screening students and would be better suited for classroom progress monitoring

or for using with children who score below benchmarks on the DIBELS to determine the less

complex phonological awareness skills in which the student may require extra instruction.

However, in order to determine which students may struggle with reading acquisition and require

intervention, the DIBELS is much for valuable that the district's KLAP.

Working intervention into the classroom schedule. The current study is one of the few

that explores possible ways to schedule intervention in a kindergarten classroom. It clearly

describes the successful integration of a pre-reading intervention in a kindergarten classroom

using school personnel and working within the daily schedule. The organizational use of stations allowed for a simple, yet effective, addition of intervention to the classroom schedule. It is important to note that students receiving the intervention did not miss any core or additional instruction, which is a common worry when implementing intervention (Bigham & Riney, 2014 cited in Dallas, 2017). Nor were students needing intervention singled out because of the nature of the stations and the variety of locations for the stations. This approach is similar to Dallas' (2017) research in Colorado which described success with a stations approach to intervention that also aimed to avoid having students miss classroom instruction. While there are many models that classroom teachers and support teachers may use to implement intervention, this study demonstrates the ease of implementation and simplicity of the stations approach.

Effectiveness of the kindergarten literacy intervention. The results of this study suggest that small group intervention focussing on alphabet knowledge, blending, and segmenting can be very effective, even with just twelve fifteen-minute sessions administered over one month. The gains observed make a strong case for continuing small group intervention focusing on alphabet knowledge, as well as the phonemic awareness skills of blending and segmenting. The study also demonstrates the efficacy of explicit, systematic instruction for use with kindergarten students. While many kindergarten teachers may agree with Chapman's *Full Day Kindergarten Guide* (2009) and worry that explicit, systematic teaching and intervention is not appropriate for the kindergarten level, such teachers would be doing a dis-service to their students by not systematically providing intervention or even whole class research-based instruction for those at risk of reading difficulties or dyslexia. Explicit, systematic teaching of important pre-reading skills needs must be a part of tier one and two kindergarten instruction in order for all students to become successful readers.

The ease of administering the DIBELS screener, the simple way in which intervention can fit into a stations ration, and the positive results in the students' post-intervention assessments demonstrate how easy and effective it is to implement early literacy intervention in kindergarten classrooms. The success and ease of implementation of the intervention, coupled with the overwhelming amount of research that points to the importance of screening and early intervention in the area of literacy in kindergarten, make it clear that it would be beneficial to continue this type of intervention. Although this study does not follow the students' progress as they begin more formal reading instruction; I would assume, based on previous research, that this intervention helped students avoid reading difficulties in grade one. Considering that kindergarten literacy interventions of this type had not been implemented in prior years at the school site, I would argue that it is imperative that the school begins systematic screening of kindergarten students using the DIBELS followed by intervention for those not achieving benchmarks. This will identify those needing extra help before reading difficulties develop, allowing staff to begin intervention before the reading difficulties become more pronounced, requiring more intense remediation.

CHAPTER 5: CONCLUSIONS

By documenting the process and effects of implementing an early literacy intervention in a kindergarten classroom, this Action Research project shows how a classroom teacher and a Learning Support Services teacher worked together to provide students with a literacy intervention that was engaging for students, was easy to implement in the daily schedule, and saw student progress in key areas of alphabet knowledge, and phonemic awareness. The results of this study support the use of fifteen-minute stations as they ensured that students were not missing core instruction, ensured that students were not singled out as needing extra instruction, and ensured that students were on-task for the entire intervention lesson. Even over one month, improvement can be seen. There is very little research that describes how intervention can be effectively implemented in a kindergarten setting, making this project valuable to other educators wanting to implement a kindergarten literacy intervention and to early years researchers in general.

Limitations

Despite the positive effects of this study, it does have its limitations. The study took place in middle socioeconomic suburban neighbourhood with a small group of seven students, making it difficult to generalize to other populations. Seventeen percent of students in the classroom have aboriginal heritage and 22% of students speak a language other than English in their home. A similar study in a classroom with different demographics, for example a classroom with a higher percentage of students with English as an additional language, would provide more insight into the efficacy of the intervention in different populations.

The study takes place over a short time period of four weeks. A study of the intervention as part of the classroom routines over the course of a school year or term could be more useful to educators wanting to know about the effects of this type of intervention. Additionally, following the students into grade one, when more formal reading instruction begins, would have allowed for more in-depth analysis of the effects of the intervention on students' reading abilities. Similarly, a follow up at a later grade, such as grade four when instruction moves from "learning to read" to "reading to learn", would have provided insight into the long-term effects of a kindergarten early literacy intervention. Unfortunately, the time constraints of this graduate project did not allow for a longer intervention period or longitudinal follow-up of reading acquisition.

Further Research

The findings of this study indicate that assessing for and addressing pre-reading skills over a four-week period can improve pre-reading skills. A natural progression of this research could involve investigating student growth with an intervention that occurs over many months in order to ascertain its effectiveness. A follow up at the end of grade one, or later, on student's reading success would shed more light on the effectiveness of the intervention. A randomized controlled trial with a larger sample size would allow researchers to compare the effects of using the DIBELS screener and providing intervention to students not meeting benchmarks compared to students assessed and being provided with intervention in the typical manner, such as through the district's assessment.

Further research needs to be conducted to examine effective methods of planning and conducting an intervention in a variety of kindergarten classrooms as there is too little research on this topic to make larger claims. A variety of models of intervention could be compared using

mixed methods. This way both effectiveness of the intervention as well as teacher perceptions of the intervention's structure and scheduling could be examined.

Other similar studies documenting the process of implementing a research-based tier one classroom program of alphabet knowledge and phonological awareness complimented by regular progress monitoring, and intervention when needed, would likely be effective at bridging the research-practice gap in the area of early literacy essential skills and intervention. The connection of research to practice is imperative to help students become successful readers and to lesson the Matthew Effect in reading.

Implications of Research

The findings of this study have implications for best practice in British Columbia's kindergarten classrooms and beyond. First, this research highlights the importance of screening kindergarten students on predictive pre-reading skills through methods such as the DIBELS screener which checks for rapid naming of alphabet letters, phonemic segmenting, and naming letter sounds and can possibly identify students needing intervention who may otherwise appear to be making appropriate pre-reading progress. Waiting to see which students need reading intervention in grade one or beyond is not as effective as pro-actively providing pre-reading intervention at the kindergarten level, making kindergarten screening imperative. Second, this project demonstrates how classroom teachers and Learning Support Services teachers can use a station model to provide intervention that does not involve students leaving the classroom and missing core instruction, does not single out students as needing intervention, and is simple to implement in the classroom.

Research clearly demonstrates the importance of early intervention in the area of pre-reading skills. By providing screening and intervention in kindergarten, students have a much better chance of becoming successful readers in the future and avoiding the "Matthew Effects" in reading. This study demonstrated how seamlessly a learning support teacher can work with a classroom teacher to both screen and provide intervention that is effective at helping students gain the imperative pre-reading skills of alphabet knowledge and phonological awareness. It also serves to bring awareness to the research, which is largely unknown to teachers, on the importance of early literacy screening and intervention.

This study has also significantly impacted my teaching. Researching the literature on reading acquisition, pre-reading skills, and evidence-based interventions has led me to reflect on my past teaching practices, has changed how I taught reading this past year, and will affect the manner in which I approach reading instruction in the future. This change in my pedagogy will be an everlasting result of undertaking this Action Research project.

The ability to read is the greatest gift a teacher can give a student. The significance of screening for and providing intervention for pre-reading skills in kindergarten is compelling. It is my hope that this research can be useful for educators in ensuring that students are prepared to start the journey to become readers.

"To learn to read is to light a fire; every syllable that is spelled out is a spark."

Victor Hugo,

Les Miserables

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Appendix

Screening measures used from the district's Kindergarten Literacy Assessment Package (KLAP):

Recognize Words That Rhyme

Adult says the words for one row of pictures at a time.
Child identifies the two words that rhyme.

Rhyming
Rubric

1 Approaching	2 Meeting	3 Exceeding Expectations
0 – 3	4 - 5	

Assessment

tree	bee	house
dog	hat	log
snow	blow	jump
smell	cat	bell
sock	light	clock

Produce Words That Rhyme

Directions: "I'm going to say a word and I want you to tell me a word that rhymes with it. Listen carefully."
Demonstration item: "Tell me a word that rhymes with bat."

	Stimulus	Response	
1.	rap		
2.	win		
3.	same		
4.	trouble		
5.	flower		
	Total		/5

Isolate initial letters

Materials: 3 blocks – 2 of the same color.
Place the blocks in a row with different colored block at the beginning of the row.

Directions: "I'm going to say a word and ask you to tell me the beginning or first sound of the word. Listen carefully."

Demonstration item: Say "cat". Then ask, "What's the beginning sound in the word cat?" or "What sound does the word cat start with?" Point to the first block.

	Stimulus	Response	
1.	bug		
2.	sick		
3.	pan		
4.	duck		
5.	fudge		
	Total		/5

Delete Parts of Compound Words

Directions: "Listen – I will say a word to you and say it again without one of its parts. "Cowboy" – Now I'll say it again but I won't say "boy." The answer is "cow." Now I want you to try. Say "football." Now say it again but don't say "foot." (Answer: "ball.")

Stimulus	Response	Correct Response	
1. Say mailbag	Say it again, but don't say bag.	mail	
2. Say sunlight	Say it again, but don't say sun.	light	
3. Say backpack	Say it again, but don't say pack.	back	
4. Say shoelace	Say it again, but don't say lace.	shoe	
5. Say driveway	Say it again, but don't say drive.	way	
Total			/5

Segment syllables / compound words

Directions: "I will say a word and I want you to tap one time for each part of the word."
"Ba-na-na." Tester should demonstrate by tapping on an arm for each part of the word.

Stimulus	Response	
1. cowboy	2 taps / cow - boy	
2. baseball	2 taps / base - ball	
3. computer	3 taps / com – pu - ter	
4. watermelon	4 taps / wa – ter – me - lon	
5. refrigerator	5 taps / re – frig – er – a -tor	
Total		/5