A Dissertation

Entitled

Exploring the Relationship between Professional Development and Improvement on
Second-Grade Oral Reading Fluency

By

Martha S. Turnwald-Fether

Submitted as partial fulfillment of the requirements for
The Doctor of Education Degree in Education Leadership and Supervision

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Advisor: Lloyd Roettger, Ph.D.

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Barbara Bleyaert, Ed.D.

_____
Caroline Roettger, Ed.D.

_____
Eileen Carr, Ph.D.

_____
Judith Herb College of Education

_____
College of Graduate Studies

The University of Toledo

May 2009

An Abstract of

Exploring the Relationship between Professional Development and Improvement on

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The research of teaching and assessing early literacy skills throughout the past eight decades has provided teachers with information that vacillated in what and how the skills were taught and assessed. However, what has stayed constant in research is that once students struggle with reading by third grade they will continue to fall behind unless interventions are started in the younger grades (Fletcher, Shaywitz, Shankweiler, Liberman, Stueging, Francis, Fowler, & Shaywitz, 1994; Moats, 2004). Thus second-grade becomes a pivotal year to make sure struggling readers are provided with interventions that address specific skills. In order to determine which students need which interventions, screening assessments are the first key to start the process of intervention. However, many teachers have not been trained in using screening assessments such as Dynamic Indicators of Early Literacy Skills (DIBELS) oral reading fluency (DORF)

probe. Thus, effective professional development that includes initial, follow-up and ongoing phases is the first step in providing teachers with the knowledge and tools to use screening assessments like DORF.

The findings indicated that a positive and negative significant relationship existed between second-grade teachers' initial DIBELS professional development and the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words per year. In addition, a positive significant relationship existed between second-grade teachers' confidence level and the percentage of their students' pre- to post-DORF score improvement of 35 words and 45 words. Moreover, teachers' confidence level predicted the percentage of students improving 45 words from their DORF pre- to- post-scores. However, on closer examination, the majority of struggling students made little gains while as many teachers did not receive follow-up and ongoing professional development. These results indicate that further research is needed in the area of teachers receiving all phases of effective professional development and student achievement.

Dedication

This dissertation is dedicated to my husband, Mike, and my children, Jonathan and Ashley.

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Chapter One

Introduction

The understanding, assessing, and teaching of early literacy skills have long been influenced through research conducted by experts in the field of reading. However, the research at times has also caused confusion in what constitutes early literacy skills, how to teach early literacy skills, and how and what assessments should be used to assess these skills that are timely, valid, reliable, and ongoing. Unfortunately, there was no confusion as to what happens to children once they fall behind in reading, they are less likely to catch up with their peers unless intensive intervention is provided (Fletcher, Shaywitz, Shankweiler, Liberman, Stueging, Francis, Fowler, & Shaywitz, 1994; Moats, 2004). This is evident from the results of the National Achievement of Educational Proficiency (NAEP) assessments (National Center for Educational Statistics, 2005). The 4th grade reading results since 1992 have shown lackluster results and twelfth grade scores have continuously gone down as indicated in Figure 1.

Figure 1. Trends in NAEP Reading Scale Scores, by Grade, 1992-2005

Legend: No Accommodations permitted; Accommodations Permitted

Twelfth Grade: 292, 287, 291, 290, 287

Eighth Grade: 260, 260, 264, 263, 264, 264, 264, 263, 262

Fourth Grade: 217, 214, 217, 215, 213, 219, 218, 219

Note: In 1996, NAEP started allowing testing accommodations for students with disabilities and for limited English proficient students.

Figure 1. NAEP reading scale score trends in grades 4, 8, and 12.

SOURCE: National Center for Educational Statistics, (2005).

Though many factors affect a child's ability to read, the first step to addressing the needs of students reading ability is to have screening assessments that provided teachers with information throughout the school year. The screening assessments include the early literacy skills of "phonological processing, rapid naming, orthographic processing, oral language, print awareness and concept of word, alphabet knowledge, single word reading, oral reading in content, reading comprehension and written language" (Rathvon, 2004, p.14). Screening assessments line up with the No Child Left Behind (NCLB) Act accountability system to make sure that students stayed on trajectory in reaching benchmarks in reading achievement. Unfortunately, many teachers have not been exposed to the different types of screening assessments that assess early literacy skills. Thus, school districts would be wise to focus on professional development to increase teachers' knowledge of assessments and teaching of early literacy skills in order

to maintain an accountability system to ensure all children demonstrate improvement in reading to meet the mandates of NCLB.

Background

The birth of school accountability in the United States started in 1965 when President Lyndon Johnson authorized the Elementary and Secondary Education Act (ESEA) to combat poverty through education initiatives. This was the largest and most comprehensive funding of education for students in kindergarten through twelfth grade throughout American history, with the majority of the funding going towards Title I reading programs. The purpose of the ESEA addressed the inequality of education for poor and disadvantaged students. Initially, the Act was authorized until 1970; however, it has evolved throughout the decades into what is currently called NCLB, which was enacted in 2002. In addition, NCLB brought about the needs of schools to have highly qualified teachers who received highly qualified professional development training.

In addition, NCLB mandated that public schools needed to "build assessment systems that track the achievement of all students" based on state grade-leveled standards and benchmarks that included assessing early literacy skills (Jorgensen & Hoffman, 2003, p. 6). The determination of which early literacy skills needed taught in order to be assessed came about through the recommendations from the National Reading Panel (NRP) consisting of numerous reading researchers and statisticians. These recommendations included the following: phonemic awareness training, systemic phonics instruction, practicing reading to develop fluency, teaching comprehension, vocabulary development, comprehension, teacher training on how to teach reading, and

computer technology and reading instruction using scientifically researched programs (NRP, 2000).

The NRP also recommended an accountability system to assess these reading skills and monitor their progress to determine whether instruction improved students' reading achievement. According to the NRP, the assessments had two purposes: 1) to determine what skills were lacking and 2) to progress monitor the skills in a way that was dynamic, timely, valid, and reliable. This type of accountability system provided timely and immediate feedback so improvement in instructional practices could be made throughout the year. In the past, teachers received student reading achievement reports at the end of the year, which precluded teachers from making instructional changes as needed (Reeves, 2004).

With the demands and requirements of state and federal laws that school districts were expected to follow, screenings using reading assessments of early reading skills starting in kindergarten is the first step as part of a total reading program. Brief screenings are one way to assess and monitor the progress of reading skills (Bishop, 2003; Chambers & Dean, 2000; Daly, Murdoch, Lillenstein, Webber, Lentz, 2002; Deno, 2003; Duhon, Noell, Witt, Freeland, Dufrene, & Gilbertson, 2004; L. S. Fuchs & D. Fuchs, 1993, 2006; Good III, Gruba & Kaminski, 2001; M. K. Hosp & J. L. Hosp, 2003; Jones & Wickstrom, 2002; Paris, 2003;). Graney and Shinn's (2005) study revealed two outcomes that using brief screening assessments may contribute to improved reading scores. First, students displayed improvement in their oral reading fluency scores, and second, teachers receiving weekly progress reports were more likely to change their instruction. Furthermore a study conducted by Case, Speece and Eddy, (2003) suggested

that students with difficulties in reading needed more than one test at a single point in time to determine special education eligibility.

An example of this type of brief screening assessment is Curriculum Based Measurement (CBM) (Deno, L. S. Fuchs, Marston, & Shin, 2001). CBM originally started with oral reading fluency (ORF) passages taken from the curriculum. ORF incorporated all early literacy skills including letter naming, phoneme segmentation, non-sense word fluency, and fluency (Paris, 2003). The ORF was repeated over time, measurable, observable, and "reinforce[s] teachers' efforts as they see tangible evidence of student progress and, as a result, increase the social validity and perceived importance of systematic reading instruction and intervention" (Coyne & Harn, 2006, p. 42). The overall goal of CBM is to gather the results from the data in order to evaluate and impact instructional practices (L. S. Fuchs & D. Fuchs; 1993; Hintze, Daly & Shapiro, 1998; M. K. Hosp & J. L. Hosp, 2003; Paris, 2003).

One example of a CBM is the oral reading fluency (ORF) screening from the Dynamic Indicator of Early Literacy Skills (DIBELS), a set of web-based screens (Kaminski, & Good III, 1998). In addition to DIBELS oral reading fluency (DORF), DIBELS also screens letter-naming fluency (LNF), initial sound fluency (ISF), phoneme segmentation fluency (PSF), nonsense word fluency (NWF), retell fluency (RTF), and word usage fluency (WUF). These skills were chosen based on the "Big 5 Ideas of Reading" that included the following: phonemic awareness, alphabetic principles, fluency, comprehension and vocabulary (Institute for the Development of Educational Achievement (IDEA), *Big ideas of reading*, 2009).

The premise of DIBELS is to screen all students to determine which students are at-risk for not meeting the next established early literacy skill grade-level benchmark, to provide those students with interventions, and to progress monitor skills students are lacking to determine if the intervention is effective. For example, second-grade students not at benchmark in DORF may lack skills in LNF, ISF, PSF and NWF. A teacher would determine which skill needs progress monitoring, provide an intervention, and decide how often the skill needs monitoring to indicate if the intervention is impacting the students growth.

In addition, DIBELS website provides easy access to numerous screens of LNF, PSF, NWF, ORF, RTF and WUF so teachers can progress monitor students who have not reached benchmark on these skills (Good III, et. al., 2001). Studies were conducted on LNF, PSF, NWF and ORF screens that confirm its validity and reliability (Coyne & Harn, 2006; Elliott, Lee, & Tollefson, 2001; Hagan-Burke, Burke, & Crowder, 2006; Hintze, Ryan, & Stoner, 2003; Rouse & Fantuzzo, 2006).

If early literacy screening assessments like DIBELS are to be used correctly in the classroom, teachers need a thorough understanding of its uses and protocols. One way that teachers can gain this understanding is through effective professional development. However, professional development practices have not kept pace with the research in teaching reading (Chard, 2004). As a consequence, many teachers are offered ineffective professional development that does not provide an in-depth understanding of screening assessments. As a consequence, ineffective professional development is costly not only in terms of monetary loss but also in terms of students not making adequate achievement

growth (Cohen & Hill, 1998, 2001; Horsley & Loucks-Horsley, 1998; Porter, Garet, Desimone, Yoon, & Birman, 2000; Showers & Joyce, 2002).

For teachers to attain this knowledge base, studies suggest that effective professional has the following characteristics:

1. Based on the analysis of student data from which district- and building-level goals are then developed as part of a School Improvement Plan (SIP) (Engstrom & Danielson, 2006; Kelleher, 2003; Lieberman & Wilkins, 2006; Wood, McQuarrie, & Thompson, 1982).

2. Provides in-depth learning on content knowledge, curriculum focus, and instructional strategies (Cohen & Hill, 1998, 2001; Engstrom & Danielson, 2006; Holloway, 2006; The National Commission on Teaching & America's Future, 1996)

3. Sustained over time, allowing time for peer coaching, study groups, observations, collaboration among staff, examination of students' work, and reflection until the innovation is transferred to the teacher and is fully implemented (Cohen & Hill, 1998, 2001; Garet, Porter, Desminone, Birman, & Yoon, 2001; Holloway, 2006; Joyce & Showers, 2002; Kinnucan-Welsch, Rosemary, & Grogan, 2006; National Staff Development Council (NSDC), 2001; Wood, et al., 1982)

4. Addresses teachers' concerns about new implementations or innovations (Guskey, 2002; George, Hall, & Stiegelbauer, 2006; Hall, Wallace, & Dossett, 1973; Holloway, 2006).

5. Continuous and based on the analysis of student data (Good III, Kaminski, Smith Simmons, Kame'enue, & Wallin, 2002; Grant, Young, & Montbriand, 2001;

Guskey, 2002; Hall, Dirksen, & George, 2006; Hayes & Robnolt, 2007;

Holloway, 2006; Hord, et al., 2006; Horsley & Loucks-Horsley, 1998; Liberman

& Wilkins, 2006; Joyce & Showers, 2002; NSDC, 2001; Wood, et al., 1982).

Based on an in-depth research of the effective professional development characteristics,

the author of this study suggest that professional development aligns itself into phases

that include: an initial phase that provides a thorough explanation of the new content so

teachers see a purpose for using it, a follow-up component that assist teachers in further

understanding assessments (including the protocol for giving the assessment), and an

ongoing phase that makes available further collaboration on administering the assessment

and analyzing the results.

Statement of the Problem

Though state and federal mandates have existed for many decades to make public

schools accountable for students learning to read, the new accountability system has

many more consequences attached for schools not making adequate progress. Because of

these consequences, public schools would benefit from using screening assessments with

predictive value that are timely, valid, reliable and ongoing to make sure students are

identified early who need interventions. One of these screening assessments is ORF.

Studies have indicated that ORF in earlier grades has predictive value in reading

comprehension and on state-wide reading achievement tests (Baker, Smolkowski, Katz,

Fien, Seeley, Kame'enui & Beck, 2008; Foorman, Francis, S. E. Shaywitz, B. A.

Shaywitz, & Fletcher's, 1997; Keller & Shapiro, 2005; Keller-Margulis, Shapiro, &

Hintze, 2008).

However, many screenings are relatively new which is problematic since teachers across the United States average 14 years of experience (National Center for Educational Statistics (NCES), 2005). Consequently, to use these screens correctly and understand their usefulness, teachers need access to effective professional development. Yet, many schools do not provide effective professional development because of a lack of funds, district level's lack of understanding of the change process, and district level's accepted views that teachers have been trained in assessments as undergraduates and graduate students, (Emberger, 2007; Levine, 2006; Joyce and Showers, 2002; Odden, Archibald, Fermanich, & Gallager, 2002; Porter, et al., 2000).

To compound the problem, very few, if any, professional development studies investigate the relationship between teachers' professional development phases and student achievement and which phase may significantly affect student achievement. The NRP (2000) agrees after their extensive search on "more than 300 studies on the topic of professional development [they] identified. However, only 21 studies met the methodological criteria for inclusion in their review. Because of the wide range of variables studied in those 21 studies, meta-analytic approaches to data analysis could not be used. Thus, a meta-analysis of professional development practices in early reading outcomes providing findings and their impact is not available" (Chard, 2004, P. 176). Even less studies have emerged that explore the relationship of teachers receiving professional development experiences in initial, follow-up, and ongoing phases of professional development in the area of early literacy skills of oral reading fluency screening assessments to develop teachers' confidence level in using the screens and student improvement in early literacy skills that focus specifically on ORF. In addition,

even less studies explore if any teachers' professional development phases and their confidence level significantly effect students improvement on their ORF scores.

Purpose of the Study

Studies conducted on teachers' professional development and student achievement in math do exist. One of the largest studies was conducted by Cohen and Hill (1998) that suggested a relationship did exist between teachers' professional development experiences and their students' improvement in math. Conversely, from an extensive search of teachers' professional development experiences and students' improvement in early literacy skills of oral reading fluency research, no studies were discovered. Thus, gaps in research are present that explore the relationship between teachers' professional development experiences and student achievement in early literacy skills of ORF. Furthermore, no studies exist that examine if any of the teachers' professional development phases including their confidence level significantly impact students' ORF scores.

Therefore, this study on professional development and student improvement in early literacy skills of ORF serves two purposes. First the study examines if relationships exists between effective professional development experiences that second-grade teachers receive on DIBELS during their initial, follow-up and ongoing phases of professional development plus their confidence level in using DIBELS and the percentage of the teachers' second-grade students' DORF improvement based on scores of 35 words, 45 words or 60 words improved per year. In addition, this study explores if any of the professional development phases and teachers' confidence level variables significantly

affected the percentage of their students showing yearly improvement from their pre to post DORF scores of 35 words, 45 words, and 60 words.

Research Questions

By examining the relationship between second-grade teachers' DIBELS professional development overall experiences and their students' end-of-the-year DORF results, and if any of the experiences significantly affect the students DORF improvement, this study will attempt to answer the following questions:

1. Is there a relationship between second-grade teachers' initial DIBELS Professional Development (DPD) experiences and the percentage of their students showing yearly improvement from their pre- to post- DORF scores of 35 words, 45 words, and 60 words?

> H_1: The second-grade teachers' initial DPD will have a significant positive relationship with the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words.
>
> H_{01}: The second-grade teachers' initial DPD will not have a significant relationship with the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words.

2. Is there a relationship between second-grade teachers' follow-up DPD experiences and the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words?

H$_2$: The second-grade teachers' follow-up DPD will have a significant positive relationship with the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words.

H$_{02}$: The second-grade teachers' follow-up DPD will not have a significant relationship with the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words.

3. Is there a relationship between second-grade teachers' ongoing DPD experiences and the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words?

H$_3$: The second-grade teachers' ongoing DPD will have a significant positive relationship with the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words.

H$_{03}$: The second-grade teachers' ongoing DPD will not have a significant relationship with the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words.

4. Is there a relationship between second-grade teachers' confidence level with DIBELS and the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words?

H_4: The second-grade teachers' confidence level DPD will have a

significant positive relationship with the percentage of their students

showing yearly improvement from their pre- to post-DORF scores of 35

words, 45 words, and 60 words.

H_{04}: The second-grade teachers' confidence level DPD will not have a

significant relationship with the percentage of their students showing

yearly improvement from their pre- to post-DORF scores of 35 words, 45

words, and 60 words.

5. Does second-grade teachers' initial DPD, follow-up DPD, ongoing DPD or

teachers' confidence level increase the percentage of their students showing

yearly improvement from their pre- to post-DORF scores of 35 words, 45 words,

and 60 words?

H^5: The teachers' DPD experiences (initial, follow-up and ongoing)

including the teachers' confidence level will increase the percentage of

their students showing yearly improvement from their pre- to post-DORF

scores of 35 words, 45 words, and 60 words.

H_{05}: The teachers' DPD experiences (initial, follow-up and ongoing)

including the teachers' confidence level will have no affect the percentage

of their students showing yearly improvement from their pre- to post-

DORF scores of 35 words, 45 words, and 60 words.

Overview of the Research Design

The non-experimental research design was chosen from the study conducted by

Johnson (2000). He developed a matrix that organized non-experimental research design

into nine different designs. Two of the non-experimental research designs were used to conduct this study. First, a quantitative non-experimental descriptive, cross-sectional design was chosen to determine if a relationship existed between second-grade teachers' DIBELS professional development experiences including the teachers' confidence level and the percentage of their students improving from their pre and post DIBELS scores (Johnson, 2000). Pearson product-moment correlation was used for the statistical analysis. Second, a cross-sectional, predictive design was chosen to determine if any of the experiences including the teachers' confidence level significantly predicted rather the percentage of their students improved from their pre and post DIBELS scores (Johnson). A multiple regression was used for the statistical analysis.

Population and Sample

The population chosen for this study came from second-grade teachers in northwest Ohio who used DIBELS in their classrooms. According to the Ohio Department of Education (ODE), there are thirteen counties that make-up the northwest Ohio region. Since no data-base existed on the number of schools currently using DIBELS in northwest Ohio, 50 principals from 25 school districts were chosen based on convenience and contacted by telephone to determine if DIBELS was used in second-grade. Of the 50 principals contacted, 17 agreed to allow their second-grade teachers to volunteer to participate. Reasons for not participating included the following: DIBELS was not used, DIBELS was in place for less than one year, only one second-grade class was in the building, principals were given directives from their district office not to participate, or principals chose not to take part in the study.

Therefore, a purposeful non-random convenience sample was used for this study. Altogether 71 surveys were sent to principals; however, the actual sample comprised of 54 teachers' who completed surveys according to the criteria and having the DORF pre- and post-scores. The 54 surveys collected featured a broad and diverse demographic sample. The schools' socio-economic status based on students receiving free and reduced lunches were diverse with the highest being 50% and the lowest having 5% free and reduced lunch.

Data Collection Procedures

In using the two designs, second-grade teachers using DIBELS answered a non-norm referenced survey developed by the author of this study. The surveys were mailed to teachers with a self-stamped envelop for the teachers to return to the author of this study with their students' pre and post DORF scores. The survey consisted of demographic questions and questions on the three professional development phases and a question on the teachers' confidence level of understanding DIBELS (independent variables) (please see Appendix A). Each of the independent variables were analyzed with the teachers' percentage of students improving 35 words, 45 words or 60 words read per year on the DORF (dependent variables) using Pearson product-moment correlation to determine if relationships existed. Multiple regression analysis was used to determine if any of the independent variables were predictive of the dependent variables. These benchmarks were based on recommendations from studies by Deno, et al., (2001) and L. S. Fuchs and D. Fuchs (1993). L. S. Fuchs and D. Fuchs (1993) maintain that students who are behind in reading need a more aggressive improvement score if they have any chance of catching up with their peers.

The second-grade was chosen because it is the first time DORF screening assessments were used three-times-per-year to determine if students were at benchmark in DORF. Students by the beginning of second grade should be at benchmark in the skills of LNF, ISF, PSF, and NWF. However, struggling readers may still need skill monitoring in these areas (Christ, 2006; Elliott, et al., 2001; Good III, Simmons, Kame'enui, Kaminski, & Wallin, 2002; Hintze, et al., 1998; Hintze & Christ, 2004; Kaminski & Good, 1998; Levin, Shatil-Carmon, & Asif-Rave, 2006; Morris, Bloodgood, & Perney. 2003). These skills could be overlooked if teachers' lack understanding of these early literacy skills which may impact a student's continually oral reading fluency growth. Once students fall behind in ORF, the gap increases each year unless interventions are developed as displayed in Figure 2 (IDEA, *Reading in America*, 2009).
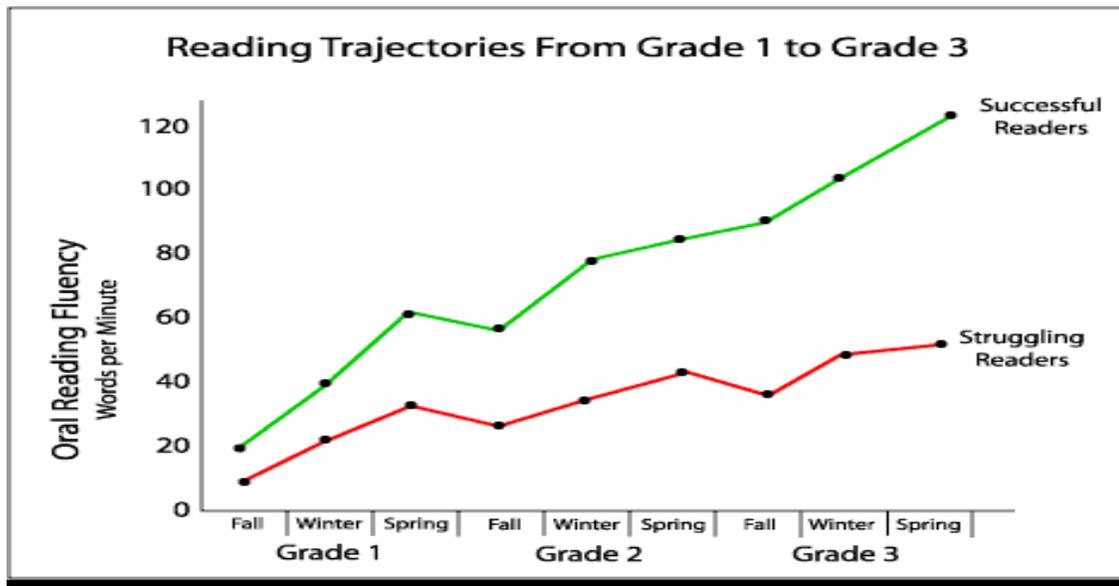
Figure 2. Struggling students' ORF trajectories in grades 1 through 3.

SOURCE: IDEA, Reading in America (2009).

In addition, L. S. Fuchs and D. Fuchs (1993) determined that the graphical slope of improvement on oral reading fluency probes' predictability decrease with grade level. In

other words,   slope of improvement is more reliable in second-grade ORF in determining future growth than at third grade and each subsequent grade.

Significance of the Study

The significance of this study was two-fold. First, the study presented past and current research on the teaching of early literacy skills and assessments. Though many factors affect a child's ability to read, one of the first steps is for teachers to have a thorough understanding of past and present research of early literacy skills and assessments of these skills   However, research has caused some confusion for many teachers on what assessments to use and what early literacy skills to assess.

Second, this study examined the research on what constitutes effective professional development and how effective professional development may or may not have a relationship and possibly affect student achievement in oral reading fluency. Many school districts have not provided teachers with effective professional development in the area of early literacy skills and assessments which is problematic for veteran teachers who may have not received instruction on early literacy skill assessments. Thus, this study examined if relationships existed between second-grade teachers' professional development experiences and student improvement in early literacy skills of oral reading fluency. In addition, this study explored if any of the second-grade teachers' professional development experiences significantly affected their students improvement in oral reading fluency.

Theoretical Framework

The theoretical framework used for this study was taken from Senge, Cambron-McCabe, Lucan, Smith, Dutton, and Kleiner, (2000) Fifth Discipline Model of

Organizational Learning. Organizational learning provides a framework where schools make permanent changes not through demands and regulations but "involving everyone in the system in expressing their aspirations, building their awareness, and developing their capabilities together" (p. 5). The model is divided into 5 key disciplines that consist of the following: personal mastery, shared vision, mental models, team learning and systems thinking. Through this system, professional development becomes the main source where teachers can examine the reality (student data), express their concerns, build their knowledge and come together as a team to improve student learning. Though Senge et al.maintains that a school that learns must include the community, parents, teachers, students and administrators; however, only the teachers are examined for this study.

The initial, follow-up and ongoing professional development model starts with examining student data. The data piques teachers' "interest and curiosity which in turn means that (teachers) need to see where they want to go and to assess where they are" (Senge, et al., 2000, p. 59). The result, if supported in a positive learning environment, generates teachers who are willing to reflect on their past practices and want to make changes. Therefore, personal mastery is a time for teachers to reflect on the current reality of what the data reports and refine their vision for any needed changes.

Through the reflection of personal mastery, then mental models then need addressing. Mental models are preconceived notions that are developed through a person's beliefs based on the data that the person collects. This explains why, when given the same experience, one person sees it entirely different from another person having the same experience. Mental models are uncovered through discussion and sharing that is

uninhibited or where teachers feel safe to discuss their feelings. One way to change

mental models occurs through effective professional development that includes initial,

follow-up and ongoing phases. The changing of mental models is needed so that a shared

vision emerges where teachers have a common purpose by "developing shared images of

the future they seek to create and the principles and guiding practices by which they hope

to get there" (Senge, et al., 2000, p. 7).

Through continual discussion and sharing, as is provided during all of the

professional development phases, team learning occurs. During this discipline key, some

or many teachers "transform their collective thinking, learning to mobilize their energies

and actions to achieve common goals and drawing forth an intelligence and ability

greater than the sum of individual members' talents" (Senge, et al., p. 8).

Finally, system thinking takes place. During systems thinking, "teachers learn to

better understand interdependency and change and thereby are able to deal more

effectively with the forces that shape the consequences of their actions" (Senge, et al.,

2000, p. 8). As a result, the examining of student data provides a continuing vehicle to

examine and change mental models in order to develop a shared vision that promotes

team learning so that system thinking takes place to enhance student achievement.

Assumptions, Delimitations, Limitations

Assumptions in this study included the following: a) teachers' answers on the

survey were professional and honest; b) all teachers surveyed were certified or licensed

as either elementary or early childhood teachers; c) all second-grade teachers returning

surveys used DIBELS for at least one full school year; d) teachers had a basic

understanding of early literacy skills; and e) teachers responses revealed their true DIBLES professional development experiences.

Delimitations included the following: a) only second-grade teachers were surveyed whose schools used DIBELS for at least one full school year; b) the study sampled schools in Northwest Ohio; and c) only second-grade DORF pre and post scores were used even though three times per year DORF scores could be obtained in grades three through sixth.

Limitations of the study included the following: a) the teachers returning incomplete surveys; b) students moving into or out of the district before the three benchmarks were administered; c) inaccurate reports returned with the surveys; d) assessment conditions such as noise, temperature, student's condition, and assessor change affected the students' pre and post DIBLES results; e) changes in students' data was due to type of instruction the students received; f) teachers' attitudes towards the survey; g) teachers difficulty in remembering their DIBELS professional development experiences; h) results not generalized due to a small sample; and i) survey, though approved by a team of experts, was developed by the author of this study, therefore, not norm-referenced.

Definition of Terms

Alphabetic Principles: Alphabetic principles are part of the "Big Idea of Reading" and include "alphabetic understanding or the mapping of print to speech and the phonological recoding of letter strings into corresponding sounds and blending stored sounds into words" (Good, et al., 2001, p. 682).

Benchmark Goals: Benchmark goals from DIBELS are timelines that "are the minimal level students need to achieve to be confident they are on track for literacy outcomes" (Good, et al., 2001, p. 684).

Brief Screening Assessments: Brief screening assessments are short measurements, usually one minute that are used to assess "large groups of children with relatively brief cost-effective measures to identify which students are at-risk for reading failure and require intervention so they do not fall behind their peers" and can also be used for weekly progress monitoring of skills, a process which provides teachers with ongoing data to support whether an intervention is working (Rathvon, 2004, p 12).

Curriculum Based Measurements (CBM): CBM are short assessments that are timely, valid, reliable and ongoing with two main purposes " to: (a) obtain point estimates of basic skill performance to identify and certify potential academic weaknesses, and (b) monitor student responsiveness to instruction over time in a formative manner" (Hintze & Christ, 2004, p. 204).

DIBELS: Dynamic Indicators of Basic Early Literacy Skills are brief assessments in phonemic awareness (initial sound fluency and phoneme segmentation fluency), alphabetic principal (letter naming fluency and nonsense word fluency), fluency (oral reading fluency), comprehension (retell fluency) and vocabulary (word usage fluency) "to monitor growth in the acquisition of critical early literacy skills to (a) identify children in need of intervention and (b) evaluate the effectiveness of intervention strategies" (Good, et al., 2001, p. 681).

Oral Reading Fluency (ORF): ORF is one of the DIBELS screening assessments that begins the second semester of first-grade that "is reading words with no noticeable

cognitive or mental effort. It is having mastered word recognition skills to the point of overlearning. Fundamental skills are so 'automatic' that they do not require conscious attention" (IDEA, *Fluency in beginning reading*, 2009).

Peer Coaching: Peer coaching is a method used during follow-up and ongoing professional development where trained teachers "observe other teachers who are attempting to implement new behaviors do so in order to learn from their colleague's efforts with the innovation" (Joyce & Showers, 2002, p. 89).

Phonemic Awareness (PA): PA is the ability to manipulate sounds and is "essential to learning to read in an alphabetic writing system, because letters represent sounds or phonemes, fundamental to mapping speech to print, and a strong predictor of children who experience early reading success (IDEA, *Phonemic awareness in beginning reading*, 2009).

Professional Development: Professional development is a system of "opportunities offered to educators to develop knowledge skills, approaches and dispositions to improve their effectiveness in their classrooms and organization" and based on student data and teachers' needs (Loucks-Horsely, 1996).

Progress Monitoring: Progress monitoring is used as screening assessments that assesses "students' academic performance on a regular basis for three purposes: 1) to determine whether children are profiting appropriately from the instructional program, in-cluding the curriculum, 2) to build more effective programs for the children who do not benefit, and 3) to estimate rates of student improvement" (National Research Center on Learning Disabilites [NRCLD], 2006, p. 2).

Response to Intervention (RTI): RTI is a model that was developed to assist in qualifying students into special education in the area of specific learning disabilities and now also provides "high-quality instruction and interventions matched to student need, monitoring progress frequently to make changes in instruction or goals, and applying child response data to important educational decisions" (RTI Action Network, 2008).

Summary

This study examined if relationships existed between second-grade teachers DPD phases of initial, follow-up and ongoing including the teachers' confidence level and percentage of their second-grade students' DORF improving 35 words, 45 words or 60 words peer year. Further examination took place if the DPD phases including teachers' confidence level significantly affected the students' DORF improvement. Through these examinations, this study addressed a gap in the current research that supports the importance of professional development for teachers when implementing innovations and how this may impact student's achievement in early literacy skills of oral reading fluency.

An analysis of the literature in Chapter 2 focused on 1) brief historical overview of early literacy skills pedagogy, including assessments, 2) choosing early literacy skills to assess, 3) types of assessments, 4) DIBELS, 5) professional development 6) issues concerning professional development, 7) characteristics of effective professional development, and 8) DIBELS phases of professional development. Chapter 3 reviewed the research methodology used in this study. Chapter 4 provided an analysis and interpretation of the data from the study. Chapter 5 discussed recommendations and implications for future study and included a discussion and conclusions about the study.

Chapter Two

Literature Review

Introduction

   Teachers need an understanding of past and present research on early literacy

skills and assessments in order to make informed decisions about instructional practices

that could impact student reading achievement. Studies have suggested that many

teachers have a tendency to misjudge their knowledge in phonemic awareness, phonetic

principles including the terminology (Al-Hazza, Fleener, Hager, 2008; Cunningham,

Perry, K. E. Stanovich, & P. J. Stanovich, 2004). In order to gain this understanding and,

in turn, determine whether these instructional practices are impacting student growth in

early literacy skills, frequent screening assessments with predictive value are needed that

are timely, reliable, valid, and ongoing such as Dynamic Indicators of Basic Early

Literacy Skills (DIBELS) assessments.

   One way that teachers can gain this understanding is through effective

professional development. Teachers need effective professional development that

provides an in-depth understanding of assessments. For teachers to attain this knowledge

base, studies suggest that an initial phase can provide a thorough explanation of an

assessment so teachers see a purpose for using it, a follow-up component can assist

teachers in further understanding assessments (including the protocol for giving the

assessment), and an ongoing phase can provide for further collaboration on administering

the assessment and analyzing the results. Very few, if any, professional development

studies investigate the relationship between teachers' professional development experiences in the area of assessments following the initial, follow-up, and ongoing phases of professional development and student improvement in early literacy skills assessments and if the phases significantly affect students early literacy skills improvement; even fewer focus specifically on the Dynamic Indicators of Basic Early Literacy Skills Oral Reading Fluency (DORF) assessment.

Thus, this literature review suggests that the sections of this chapter may impact one another in important ways. The sections include 1) brief historical overview of early literacy skills pedagogy, including assessments, 2) choosing early literacy skills to assess, 3) Types of assessments, 4) DIBELS, 5) professional development 6) issues concerning professional development, 7) characteristics of effective professional development, and 8) DIBELS phases of professional development. The term "professional development" was intentionally selected for this dissertation. Although the terms "training," "staff development," "in-service," and "teacher education" could also be used, Loucks-Horsley (1996) suggests that these terms are perceived negatively in the educational arena. Thus, the term "professional development" was chosen because it best reflects the role of teachers as the main mechanism needed to improve student learning based on data (Chard, 2004; Odden, et al., 2002).

A Brief Historical Perspective on Early Literacy Skills and Assessment Research

Research throughout the past nine decades has influenced the teaching of early literacy skills and assessments. Starting in the 1920s, research on the teaching of early literacy skills flourished. This burgeoning interest in the ways that students learn to read came about when the military announced that many World War I soldiers had difficulty

reading directions and filling out forms (Sears, 2006). As a result, comprehension assessments began in earnest as a means of evaluating students' reading proficiency. In response, educational leaders restructured how children learned to read. Early recommendations focused on the use of basal readers that featured in-house selections for beginning readers, the teaching of alphabetical principles, the use of word lists, and silent reading (as opposed to reading aloud) (Martinez & McGee, 2000; Sears, 2006). As a result of these recommendations, students were taught alphabetical principles through incidental phonics approaches as they entered second grade. Incidental phonics approaches did not follow a rigid set of guidelines but instead emphasized teaching phonics naturally as it appeared in texts and in students' writings. In the 1920s, reading readiness assessments were used, and this decade marked the beginning of a tremendous expansion in the reading and testing movement.

After the 1920s reading research boom, the 1930s and the 1940s saw a decrease in early reading skills research and an increase in the number of controversial issues. Some professional journals continued to recommend the use of basal readers during this time period, and researchers suggested that alphabetical principles be taught through phonics instruction starting in third grade. Other reading "experts" suggested that students not start reading until the age of nine. Despite the decline in research and the brewing controversies, students primarily utilized the look-say approach or sight-reading when learning to read during the initial decades of the 20th century. Formal assessments using a multiple-choice format began in the 1930s with its purpose to compare children's scores with national averages (Sarroub & Pearson, 1998). In the 1940s, informal assessments were developed to help monitor individual student's progress (Sarroub & Pearson).

Through the 1950s and up to the 1960s, reading research journals and books flooded the market after a lull during the previous two decades (Sears, 2006). While some researchers encouraged individual student reading through sight-reading and teachers began using children's literature, other researchers recommended a more stringent reading approach, especially in the area of phonics instruction. During this time, researchers were also at odds regarding the role of silent reading versus reading aloud, teaching alphabet knowledge before the teaching of words, and using student-dictated stories versus published primers as students' first readers (Quick, 1998). Standardized assessments that measured ability and achievement also became more visible in schools. While these controversies provided challenging questions for both researchers and teachers of early literacy skills, they ultimately resulted in improvements in teaching methodologies.

From the beginning of the century until the mid-1960s, research in early literacy skills was firmly confined within the scholarly domain of education departments (Kamil, Mosenthal, Pearson, & Barr, 2000). Gaffney and Anderson (2000) examined journals written in the mid 1960's through the early 1970's and found very few articles focusing on literacy skills in journals other than educational journals. During the late 1960s, some researchers published articles emphasizing the need for a multi-dimensional approach to teaching beginning reading. For example, Bond and Dykstra (1967) concluded that children learn differently and that teachers needed to be well versed in various reading approaches. They suggested that this multi-faceted approach provided an opportunity for teachers to reach more children, and at the same time it spawned other research in areas related to informal assessments, such as the assessment of visual discrimination,

identification of letters, and the evaluation of phonemic awareness (Quick, 1998). At this juncture, Goodmans's (1969) taxonomy of oral reading miscues gave way to Goodman, Yetta, and Burke's (1972) ideas about how to develop a miscue analysis inventory for teachers to critically assess individual student's reading. Moreover, criterion-referenced assessments proliferated, especially in basal reading materials, and became popular with teachers (Sarroub & Pearson, 1998). With the passage of the Elementary and Secondary Education Act (ESEA) in 1965, federal funds were tied to school performance, which formally began the accountability movement. ESEA was one reason why scholarship on the teaching of early literacy skills began to proliferate again in the 1960s and 1970s, and while it still remained the purview of education departments, that was about to change.

During the 1980's and 1990's, other disciplines joined education departments in studying the complex ways that children learned to read. For example, psychological researchers showed a strong interest in conducting research on reading, and a large number of scholarly articles began to inundate psychology journals. Neurologists; critical literacy theorists; and social sciences researchers, particularly anthropologists and political scientists, also expressed increasing interest in understanding the complexities associated with early literacy skills (Kamil et al., 2000). Integrating reading and writing with an emphasis on language experiences became a point of contention in reading research, and thus began the "reading wars," pitting the phonics approach against the whole language approach. Some reading experts suggested that teachers use children's literacy, i.e., using predictable and easy picture books, to teach early literacy skills. These reading experts also recommended that the incidental phonics approach be used to teach phonemic awareness and alphabetical principles in order to help students learn how to

decode words. Besides the miscue analysis inventory being used, Clay's (1985) running record also provided teachers with another informal assessment to track students' progress. These formative assessments provided teachers with information on how individual students were performing in reading and which skills were problematic that then could inform the teachers' instructional practices.

Starting in the late 1990s and continuing up to the present, researchers are once again recognizing that no single approach works effectively for all students, but certain early literacy skills are needed for students to become proficient readers. Equally important is the notion that assessments hold the key in deciding which approach is the most effective for teaching early literacy skills. For example, Bond and Dykstra's (1997) landmark research was updated and republished, which reinforced the importance of drawing on important and effective principles from a variety of theoretical perspectives. Cowen (2003) defines this eclectic, balanced approach to reading, emphasizing its flexibility and the importance of assessments:

> A balanced reading approach is research-based, assessment-based, comprehensive, integrated, and dynamic, in that it empowers teachers and specialists to respond to the individual assessed literacy needs of children as they relate to their appropriate instructional and developmental levels of decoding, vocabulary, reading comprehension, motivation, and sociocultural acquisition, with the purpose of learning to read for meaning, understanding, and joy. (p.10)

The first crucial step in developing the type of eclectic, balanced approach that Cowan describes is determining which early literacy skills need the most attention. Though historically assessments as early as the 1920s were determining students' early literacy

skill level, these assessments were not as comprehensive as today's assessments. The key

is to develop a comprehensive assessment system for each student that is timely, valid,

and reliable. Without this type of assessment, teaching reading becomes a guessing game

with children becoming the ultimate losers.

Choosing Early Literacy Skills to Assess

Because early literacy skills play such an important role in literacy development,

accurately assessing students' progress in a variety of areas is crucial. Some of these

areas include: "phonological processing, rapid naming, orthographic processing, oral

language, print awareness and concept of word, alphabet knowledge, single word

reading, oral reading in content, reading comprehension and written language" (Rathvon,

2004, p.14). Although each of these proficiencies is crucial in the development of early

literacy skills, assessing reading fluency through oral reading is the focal point of this

study because of reading fluency's crucial role in the predictability of achieving future

skills and its role in reading comprehension. Current studies on ORF indicate that ORF

can be a strong predictor of students passing state-wide reading achievement tests within

grade level and. These studies also indicate that ORF can help identify children in

younger grades who might be at risk of not passing state-wide reading achievement tests

(Baker, et al. 2008; Keller-Margulis, et al. 2008). Reading fluently is a dynamic and

complex process that involves the multi-dimensional skills of decoding and automatic

word recognition, which combine to "create a condition for expressive reading" or

interpretation of text (Rasiniski, 2004, p. 4). Thus, decoding, automatic word recognition,

and interpretation of text all play major roles in students' reading comprehension ability.

Studies have shown the correlation between reading fluency skills of decoding and word automaticity and reading comprehension. For example, Foorman, et al., (1997) research showed a .89 correlation between the ability to decode words and reading comprehension in first grade and a .83 correlation in the third grade. In addition, according to Markel and Deno (1997), third graders showed improvement on comprehension questions when students had the opportunity to practice fluency on frequent, one-minute reading passages.

To develop oral reading fluency, a study by Eldredge (2005) points to prerequisite skills that appear to enhance ORF. This includes phonemic awareness, alphabetic principles, and word recognition. His research shows that a relationship exists between acquiring the decoding skills of phonemic awareness, alphabetic principles, and word recognition and fluency (Eldredge). Thus, it becomes apparent that pre-requisite skills of phonemic awareness, alphabetical principles, and word recognition may need assessed for students having difficulty in ORF (Elliott, et al., 2001; Elliot & L. S. Fuchs, 1997; Good, Simmons, Kame'enui, Kaminski, & Wallin, 2002; Harn, Stoolmiller, & Chard, 2008; Hintze, et al., 1998; Kaminski & Good III, 1998; Levin, et al., 2006; Morris, et al. 2003; NRP, 2000).

In addition, letter naming appears to be an important prerequisite skill to assess. Numerous studies point to the importance of letter identification and its role in reading acquisition (Bishop, 2003; Hohn & Ehri, 1983; Levin, et al., 2006; & Morris, et al., 2003). For example, Levin et al.'s (2006) study suggested that letter knowledge in pre-school and kindergarten is one of the predictors of students' success in reading fluency.

It becomes clear from the results of these studies that students are more likely to stay on target in reaching oral reading fluency benchmarks when they master the early reading skills of letter identification, phonemic awareness, alphabetic principals, and word recognition. By using screening assessments that are timely, valid, reliable and ongoing, to assess these skills especially when students are struggling in ORF in first and second grade, these screening assessments may increase students' chances of becoming fluent readers. Reading fluently is important because if students fall behind in reading by third grade, they are less likely to catch up with their peers (Fletcher, et al., 1994; Moats, 2004). Assessing students who struggle with these skills, along with reading fluency, by using assessments that are timely, valid, and reliable becomes imperative if students are to become fluent readers.

Types of Assessments

Rathvon (2004) categorizes early reading assessments into two groups: early reading diagnostics and early reading screenings. "Early reading diagnostics assessments are designed to evaluate students' strengths and weaknesses in a variety of reading and reading related areas and to obtain information for developing interventions" (Rathvon, p. 13). These assessments can be administered after students have received a screening assessment or after struggling students have shown little to no improvement following interventions.

The early literacy screenings are used in kindergarten (pre-reading) and grades one and two (formal reading). These screenings provide predictive value that includes assessments to evaluate "large groups of children with relatively brief cost-effective measures to identify which students are at-risk for reading failure and require intervention

so they do not fall behind their peers" (Rathvon, 2004, p 12). Some early literacy screenings also can be used for weekly progress monitoring of skills, a process which provides teachers with ongoing data to support whether an intervention is working.

A brief universal screening assessment allows for teachers to identify students needing further intervention and is the first step in the response to intervention (RTI) model. RTI has assisted in improving at-risk students' skills in reading (Simmons, Coyne, Kwok, McDonagh, Harn & Kame'enui, 2008). The RTI model was developed to qualify students needing special education services under a specific learning disability. However, RTI also ensures that the outcomes of all students improve and that students needing further intervention begin receiving appropriate instruction at an earlier age; thus, the ultimate goal is to limit the number of special education referrals in the area of specific learning disability.

A number of RTI models exist; however, they all include tiers, or stages of interventions (Brown-Childsey & Steege, 2005; L. S. Fuchs & D. Fuchs, 2006; Ikeda, Grimes, Tilly, Allison, Kurns, & Stumme, 2002; NASDSE, 2006; Vaughn, Hickman, & Linam-Thompson, 2003). Starting at Tier 1, students receive universal instruction in the classroom, where the majority of students will demonstrate adequate growth. Universal screening assessments identify those students who are not making adequate progress in response to universal instruction. At that point, specific screening assessments monitor the deficit skill to determine whether the intervention impacted the student's learning. If the screening assessment determines that growth and progress are achieved, then the intervention continues with less monitoring.

However, if the screening assessment shows inadequate or no growth, the student would require more intensive intervention and monitoring. As students require more interventions, progress monitoring ostensibly determine the degree to which instructional strategies are effective. Once these determinations are made through effective assessment practices, the information can then be used to inform instructional decisions. This process continues until the intervention is so intense that it requires special education services (the final tier). Regardless of which tier the student needs, screening assessments are used to determine which students need further progress monitoring of deficit skills to make sure instruction is effective; therefore, the screening assessments must be dynamic, timely, valid, reliable, and proctored by a well-trained assessor (Coyne & Harn, 2006; L. S. Fuchs & D. Fuchs, 2006; Good III, et al., 2001; Johnson, Mellard, L. S. Fuchs, & McKnight, 2005; NRP, 2000; Paris, 2003; Reeves, 2004; Stecker, Fuchs, & Fuchs, 2005).

The purpose of conducting timely, ongoing, valid, and reliable brief screening assessments is to target specific skills and determine whether instruction impacts the progress of these skills; this assessment process suggests that the accountability focus shifts slightly from student performance to instructional methodology and its impact on student learning throughout the year, not just at one point in time (Jones & Wickstrom, 2002; Reeves, 2004). This shift in the accountability focus has already resulted in positive improvement on student achievement. Specifically, numerous studies confirm the effectiveness of using brief assessments to monitor student progress (Bishop, 2003; Daly, et al., 2002; Duhon, et al., 2004; L. S. Fuchs & D. Fuchs, 1993; Good III, et al., 2001; M. K. Hosp & J. L. Hosp, 2003; Jones & Wickstrom, 2002; Paris, 2003; Pemberton, Rademacher, Tyler-Wood, & Perez Cereio, 2006; Stecker, et al. 2005). For

example, Bangert-Drowns, Kilik, and Kulik's (1991) research concludes that brief and frequent assessments substantially impact students' learning. The authors suggest that if a brief assessment is given every week during a 15-week session, a 24.5 percentile gain in student academic achievement can be expected. By administering brief assessments frequently and regularly, teachers can then base instructional decisions on more precise student data, which positions students' needs as a top priority. In summary, brief assessments are effective in identifying and monitoring students' progress in early literacy skills.

Curriculum Based Measurement (CBM) is an example of a brief screening assessment that has become one of the most important early literacy skills assessments used in classrooms to inform educational outcomes today. The overall goal of CBM is to gather data in order to review, evaluate, and modify instructional practices.

CBM was developed in response to the inadequacies of prior assessments that were used in the 1970's. One of the problems with the earlier assessments was that students had to master one skill before going on to another skill. Another problem was that mastery of skills was based on established criterion scores that did not provide benchmarks that would permit teachers to accurately measure students' individual progress (L. S. Fuchs, 2004).

The implementation of CBM was the result of a special education initiative focused on the growth and development of each individual child. Due to accountability mandates from the No Child Left Behind Act and the Individuals with Disabilities Education Improvement Act is now utilized in the general education classrooms, which

enables teachers to change their focus from group monitoring to individual student monitoring (Bamoto, & Shinn, 2005).

Because CBM utilizes prescriptive materials and standardized procedures, CBM provides "sufficient reliability and utility of the data for individual and group comparisons across time" (Deno, 2003, p. 185). This type of constructive assessment provides data that can drive instructional decisions that require frequent modification rather than decisions that are made solely at the beginning and end of the year. In other words, CBM provides teachers, administrators, and counselors with a tool that is increasingly sensitive to changes in student progress. For example, Deno (2003) suggest that students show growth in oral reading fluency if a student reads 1.18 words more per work or L. S. Fuchs & D. Fuchs (1993) contain that students should improve 1.5 words per week and students who are at-risk for reading failure need to improve by 2.0 words per week to have any chance of catching up to their peers. From these weekly goals, instructional decisions can be made throughout the year.

Another important quality of CBM is its efficiency. It measures multiple skills using one assessment. For example, oral reading fluency (ORF) requires numerous skills, including phonemic awareness, alphabetic principles, and word recognition. Students struggling in grade-level ORF may need progress monitoring in phonemic awareness, alphabetical principles, or word recognition (Paris, 2003). CBM is versatile and therefore able to accomplish this type of monitoring. This versatility makes CBM an incredibly efficient tool for monitoring early literacy skills. Furthermore, a current study by Keller-Margulis, et al. (2008) shows a significant relationship between first-grade reading growth on CBM and third-grade state reading test performance. Another benefit of CBM

is that it now tracks students' individual progress in a wide range of curriculum areas, including math and writing. Perhaps most importantly, CBM provides information that is repeatable, measurable, and observable (L. S. Fuchs & D. Fuchs, 1993; Hintze, et al., 1998; M. K. Hosp & J. L. Hosp, 2003; Paris, 2003).

Although teachers using grade-level curriculum can create CBM assessments, studies demonstrate that generic materials show less measurement error. A study by Hintze and Christ (2004) indicates that measurement error can be reduced when materials are controlled and not randomly selected. These types of CBM assessments that use controlled materials are called general outcome measures, or dynamic indicators of basic skills (Deno, 2003).

One particular widely used outcome measure is the Dynamic Indicator of Early Literacy Skills (DIBELS) oral reading fluency (DORF). DIBELS is part of a set of web-based data assessments used as a universal screen to target students needing more frequent progress monitoring (Good III et al., 2001). Although Jenkins, Hudson, and Johnson's (2007) summarization of past studies on reading screens clearly indicates that no screens are perfect in sensitivity (students truly showing they are at risk) and specificity (students truly showing they are not at risk), these researchers do point out that DIBELS showed high sensitivity and specificity, especially the DIBELS Oral Reading Fluency assessment in second-grade pre- and post-DORF scores. It is extremely important that students' scores are conducive to a true test diagnosis that yields valid positives or valid negatives. However, if screenings are not conducted according to the assessment's protocol than false positives (students who test at-risk but are not) and false negatives (students who test not at-risk but are) may appear that could have students

receiving incorrect interventions in a timely and appropriate manner or not receiving any interventions (Jenkens et al, 2001 & Rathvon, 2004) .

To take the DORF screening assessment, students read aloud three different 60-second timed passages and then recount what they read. The assessor tabulates the number of errors committed during the reading and then subtracts that number from the total number of words read to calculate the raw score of how many words the student read per minute. The median scores are uploaded onto the DIBELS website. From there, teachers across the country have access to individual and class graphs and reports. For example, the website generates a whole-class graph reflecting second-grade students' DIBELS oral reading fluency scores, which teachers can then use to compare how students are doing in relation to the DORF benchmark. In addition, a report is available that converts the DORF scores into percentiles and provides instructional recommendations.

Numerous studies confirm the validity and reliability of DIBELS (Coyne & Harn, 2006; Elliott, et al., 2001; Hagan-Burke, et al., 2006; Hintze, et al., 2003; Rouse & Fantuzzo, 2006). For example, Good III, Wallin, Simmons, Kame'enui, & Kaminiski, (2002) found that the second-grade ORF has a concurrent validity median of .95 with the Test of Reading Fluency. DIBELS also shows a strong correlation with the Comprehensive Test of Phonological Processing in the areas of phonological awareness and memory (Hintze et al., 2003). DIBELS additionally shows a strong correlation with the Developmental Reading Assessment and the TerraNova (Rouse & Fantuzzo, 2006).

Kaminski, Good III, Baker, Cummings, Dufour-Martel, Fleming, Knutson, Powell-Smith, and Wallin (2007) strongly suggest that the goal of DIBELS assessments

should be evaluated apart from their content: "The powerful predictive validity of the measures does not mean that their content should become the focus of instruction. Each DIBELS indicator represents a broader sequence of skills and concepts to be taught" (Kaminski, et al., p. 1). The indicators include letter naming fluency (LNF), initial sound fluency (ISF), phoneme segmentation fluency (PSF), nonsense word fluency (NWF), retell fluency (RTF), and word usage fluency (WUF).

Using DIBELS to assess these early literacy skills is advantageous because of DIBELS' predictive ability. For example, if a first-grade student is not at winter benchmark in phoneme segmentation fluency, the student's probability of reaching ORF benchmark decreases unless an intervention plan is incorporated. This underscores the fact that teachers need to know which skill to assess and when it should be assessed. For example, in kindergarten, ISF, LNF, PSF, NWF, and WUF benchmark assessments proceed three times per year. However, in first grade, the ISF benchmark assessment is not administered, the LNF benchmark assessment is administered only in the fall, and the DORF benchmark assessment is administered only in the winter and fall. The PSF, NWF, and WUF benchmark assessments are administered three times per year. These skills are based on the "Big 5 Ideas of Reading" (IDEA, *Big Ideas of Reading*, 2009): phonemic awareness, alphabetic principles, fluency, comprehension, and vocabulary. The "Big 5 Ideas of Reading" originated from part of the National Reading Panel's (2000) meta-analysis on past and current research on the teaching of reading. Table 2 illustrates which skills should be measured throughout the year and the timeframe during which they should be measured (Good III, Simmons, et al. 2002).

Table 1

DIBELS Benchmark Testing Schedule

Grade	Fall Benchmark	Winter Benchmark	Spring Benchmark
Kdg	ISF, LNF, PSF, WUF	LNF, PSF, NWF, WUF	LNF, PSF, NWF, WUF
First	LNF, PSF, NWF,WUF	PSF, NWF, ORF, RTF, WUF	PSF, NWF, ORF, RTF, WUF
Second	NWF, ORF, RTF, WUF	ORF, RTF, WUF	ORF, RTF, WUF
Third	ORF, RTF, WUF	ORF, RTF, WUF	ORF, RTF, WUF

Note: ISF (Initial Sound Fluency); LNF (Letter Naming Fluency), PSF (Phoneme Segmentation Fluency), NWF (Nonsense Word Fluency), DORF (DIBELS Oral Reading Fluency), RTF (Retell Fluency), and WUF (Word Usage Fluency)

An important and crucial goal of DIBELS is to help ensure that students achieve benchmark progress at the three-times-per-year assessments. The importance of achieving benchmark progress has been documented through studies conducted by Good III, Simmons, Kame'enui, Kaminski, and Wallin (2002). In their studies, DIBELS scores from 2001-2002 were taken from all schools then downloaded into the DIBELS website, and benchmarks were established. For example, benchmarks for the second-grade beginning-of-the-year DORF were established from 13,612 second-grade students' scores that were downloaded into the DIBELS database (Good III, Simmons et al., p. 20). The researchers established "cutoffs and rules where the odds in favor of achieving subsequent goals meant that approximately 80% or more of students with the pattern would achieve the goal" (Good III, Simmons., p. 3). For example, if a second-grade student reads below 52 words per minute on the DORF end-of-the-year assessment, that

student would have only a three percent chance of reaching the second-grade DORF

benchmark unless he or she received intensive intervention (please see Table 3).

Table 2

Second Grade DIBELS Benchmark

Fall		Winter		Spring	
Scores	Status	Scores	Status	Scores	Status
NWF					
< 30	Deficit	No further testing		No further testing	
30 <, < 50	Emerging				
< = 50	Established				
DORF					
< 26	Deficit	< 52	Deficit	< 70	Deficit
26 <=, > 44	Emerging	52 <=, > 68	Emerging	70 <=, > 90	Emerging
>= 44	Established	> = 68	Established	> = 90	Established

Note. Established by Good III, Simmons, Kame'enui, Kaminski, and Wallin (2002).

In addition, if a student receives a score of 50 on the NWF assessment that is only

given in the first three months of second grade, he or she would be achieving at

benchmark, and no intervention or progress monitoring would be needed. If a student

receives a score between 30 and 50 on the NWF assessment, he or she would need some

intervention and monthly progress monitoring to ensure the student would attain a

trajectory that ultimately resulted in achieving at benchmark. If a student receives a score

below 30 on the NWF assessment, he or she would need intensive intervention, and

weekly progress monitoring would therefore be conducted (Harn, et al., 2008).

Thus, if students in second grade are struggling in DORF, second-grade teachers'

knowledge of the roles that LNF, ISF, PSF, and NWF play in oral reading fluency is

crucial because a student may lack some of these skills. As a result, a student may then need to be assessed and monitored in one or more of these skills because once students struggle with DORF, their trajectory widens more each year unless intervention takes place (please see Figure 2). Through frequent monitoring of the early reading skills of LNF, ISF, PSF and NWF and making sure that students reach benchmark by the beginning of second grade, students have an increased likelihood of being on target for reaching the second- and third-grade DORF benchmarks (Coyne & Harn, 2006; Elliott et al., 2001; Hagan-Burke et al., 2006; Hintze et al., 2003).

Considering the vital role that the DIBELS assessments play as part of an overall reading program, it is important to consider whether teachers possess the skills to administer such assessments and whether teachers understand the impact of assessments on students' reading development. If teachers lack appropriate and adequate understanding of how to administer, interpret, and implement the DIBELS oral reading fluency and its results, DORF may lose its effectiveness, resulting in lower sensitivity and specificity. As a consequence, false positives and true negatives could occur more frequently. This could result in placing students in interventions that may not be needed, or students who need interventions might not receive them.

One response to this situation is to suggest that effective professional development would assist teachers in understanding and correctly implementing assessments such as DIBELS. As a result of such professional development, teachers would ostensibly acquire the skills to administer DIBELS, which would increase the probability of accurately assessing students' skill levels.

Professional Development

Unfortunately, many schools do not have effective professional development programs in place. School districts "generally do not have a coherent, coordinated approach to professional development and instruction, at least not an approach that is effective in building consistency among their teachers" (Porter, et al., 2000, p. 64). And even if schools do have a professional development program in place, in many cases, teachers often receive ineffective professional development training and do not implement or use assessments correctly in their classrooms (Cohen & Hill, 2001; Garet, et al., 2001).

Many school districts' ineffectiveness in providing meaningful professional development could explain why students' reading scores across the nation have been stagnating or, in some cases, decreasing, even with substantial evidence supporting best practices for teaching early literacy skills, including the use of assessments. For instance, scores on the National Assessment of Educational Progress (NAEP) have shown little improvement. From 1992 until 2005, fourth-grade scores increased only two points on the average scale scores (NCES, 2005). The eighth-grade scores on the NAEP have decreased since 1998, and twelfth-grade scores have consistently decreased since 1992 (please see Figure 1). These results are predicative of what happens to students who fall behind in reading in the primary grades, i.e., they are less likely to catch up with their peers in reading (Fletcher, et al., 1994; Moats, 2004; Torgesen Alexander, Wagner, Rashotte, Voeller, Conway, & Rose, 2001). As a result, identifying students who struggle with early reading skills before third grade, based on screening assessments like DIBELS, is crucial if they are to catch up with their peers in reading.

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Because identifying these students plays such a crucial role in their later reading development, teachers should acquire a critical understanding of how to assess students' early reading skills. Emberger (2007) agrees that without a solid understanding of content knowledge, teachers are unable to teach students to understand topics in depth and are unable to assess the quality of student understanding. Hence, effective professional development becomes one of the crucial first steps in the process of accurately assessing early literacy skills in ways that promote benchmark achievement by second-grade students.

Issues concerning professional development. The lack of professional development coordination and instruction at many schools can be attributed to four possible factors. First, universities and colleges may not adequately prepare graduates for the classroom. Levine's (2006) survey of graduate education alumni revealed that three out of five respondents indicated that they felt unprepared to teach upon completion of their undergraduate degree. In addition, many undergraduate and graduate students of education do not feel adequately prepared to administer assessments (Emberger, 2007).

Secondly, a lack of professional development coordination and instruction can be attributed to the length of time teachers are employed. For example, the average teacher in the United States has 14 years of teaching experience in the classroom (Institute of Education Sciences U.S. Dept. of Education National Center for Education Statistics, 2005). If these teachers have not received adequate professional development through their school district during that time, they may lack the knowledge and understanding of how to implement newer innovations such as DIBELS.

Third, a lack of professional development coordination and instruction may stem from misunderstandings at the district level. Joyce and Showers (2002) explain why this could happen. First, district-level educators may not fully understand the change process and current best practices that are necessary in order for teachers to implement any new initiatives. Furthermore, educators at the district level may "find it difficult to make the hard decisions to narrow the district focus in any given period" (Joyce & Showers, p. 67). This could possibly be due to the lack of a thorough understanding of how to analyze data in order to decide what types of information teachers may need to modify and improve their instructional practices.

Fourth, a lack of professional development coordination and instruction among school districts can be attributed to financial restrictions. School districts are required under NCLB to provide professional development, but professional development can become a costly endeavor. This cost can include the following: "1) teacher time, 2) training and coaching, 3) administration, 4) materials, equipment, and facilities, 5) travel and transportation, and 6) tuition and conference fees" (Odden et al., 2002, p. 64). Despite the costs associated with implementing effective professional development programs, the costs of *not* implementing them can be even greater. Sanctions against school districts for students not making adequate growth in achievement can be financially detrimental to a district in terms of decreased funding. Furthermore, the outcome of ineffective or absent professional development can be individually, academically, and socially devastating if teachers are not prepared to meet individual student needs.

Characteristics of effective professional development. School districts would be wise to understand and recognize the characteristics of effective professional development. Even though "the system of professional development employed by most schools today ignores contextual variables that might aid in the institutionalization of improvement," school districts do have the capacity to provide effective professional development (Chard, 2004, p. 177). Throughout the last two decades, many professional development models have been advanced that exhibit characteristics of effective professional development. The current literature suggests that effective professional development models feature a number of characteristics.

First and foremost, effective professional development is based on the analysis of student data from which district- and building-level goals then are developed as part of a School Improvement Plan (SIP) (Engstrom & Danielson, 2006; Kelleher, 2003; Lieberman & Wilkins, 2006, Wood, et al., 1982). Through examining student data, Emberger (2007) maintains that students' needs are addressed and teachers' determine their needs by way of professional development. Thus, professional development becomes meaningful—a venue where teachers can share what they have learned how they incorporated their new instructional practices, and how the practices affected student learning (Joyce & Showers, 2002).

Secondly, professional development should provide in-depth learning on content knowledge, curriculum focus, and instructional strategies. The National Commission on Teaching & America's Future (NCTAF) (1996) states that teacher knowledge and action are the most important factors in students' academic success. This in-depth learning is especially crucial for students acquiring early literacy skills:

There is little doubt that teacher knowledge is a key element to improving reading outcomes for all children. In fact, without a knowledgeable teacher, the context variables described earlier would do little to help students learn to read. However, it is also important that teachers understand how and when to apply their knowledge to the assessment and instruction of individual readers. (Chard, 2004 p. 184)

By acquiring an in-depth understanding of a new innovation, the terminology associated with the innovation becomes a part of everyone's daily language. Effective professional development reinforces this language heard throughout the day in staff meetings and informal meetings, among teachers, and among teachers and building administrators (Engstrom & Danielson, 2006). To start the process of acquiring in-depth learning, teachers should attend professional development sessions presented by experts in the field of the innovation and with follow-up sessions for teachers to gain a deeper understanding of the innovation.

The third characteristic of effective professional development is the provision of adequate amounts of time. Providing adequate time for follow-up and ongoing professional development allows for a number of activities to occur that impacts the implementation of an innovation: peer coaching, study groups, observations, collaboration among staff, examining students' work, and reflection (Cohen & Hill, 1998, 2001; Garet et al., 2001; Joyce & Showers, 2002; Kinnucan-Welsch, et al., 2006; NSDC, 2001; Wood, et al., 1982). For example, teachers who use peer coaching show a greater tendency to have a more in-depth knowledge of the innovation, use the innovation correctly, include the innovation in their lesson plans, and are more likely to explain the innovation to students (Armstrong, et, al., 2008; Joyce & Showers, 2002). By providing

these types of experiences, teachers have a greater chance for "thorough knowledge, strong skill and transfer" of the innovation (Armstrong et al., 2008, p.78).

When examining time, two factors appear to influence effective professional development. First, the duration of time that professional development takes place heavily impacts whether innovations will be used correctly or even at all. Cohen and Hill's (2001) study of 559 second- through fifth-grade teachers concludes that students show gains in math achievement when professional development lasts for more than three consecutive days and when teachers have time and opportunities to study and learn how to implement math innovations. Cohen and Hill's study also concludes that teachers who participate in extensive professional development that spans more than three days produce students who show the most math achievement gains.

The second time-related factor that seems integral to successful professional development is the intervals at which professional development takes place throughout the year. Extended intervals refer to professional development in which training time is spread throughout the year, specific content is emphasized, and teachers' knowledge of skills is expanded. For example, Garet et al.'s (2001) survey of math and science teachers across the United States concludes that when teachers are provided with extended intervals, they are more likely to implement and use the innovation. S. G. Paris, A. H. Paris, and Carpenter (2001) also emphasize the importance of duration and frequency of professional development on early literacy assessments. The authors maintain that professional development needs to be sustained over time with consultation from experts and teams of teachers. Teachers need time to understand the assessments in order to use them in the proper manner so that the validity and reliability remain intact.

Failure to provide effective professional development may impact student achievement in oral reading fluency. For example, if an assessment is not conducted according to the authors' protocols, faulty data could lead to erroneous instructional decisions. In fact, Christ (2007) determined that standardized directions directly impact measurement results on student reading. Furthermore, if screening assessment's protocol is not followed, false positives (students who test at-risk but are not) and false negatives (students who test not at-risk but are) may appear that could have students receiving incorrect interventions in a timely and appropriate manner or not receiving any interventions (Jenkens et al, 2001 & Rathvon, 2004). Thus, effective professional development can be vital in maintaining the validity and reliability of assessments.

The fourth effective professional development characteristic addresses teachers' concerns throughout the process (Holloway, 2006). Two areas of teacher concerns need to be considered. First, when teachers attend an initial professional development session, time during the professional development session should be allowed for a question-and-answer period. Guskey (2002) describes this as a time for administrators to check on teachers' "happiness quotients" and should not be overlooked (Guskey, p. 46). This could include an evaluation of the physical setting of the professional development along with teachers' opinions and reactions.

Another area of teacher concern is the stages that teachers experience when an innovation is adapted. Studies indicate that teachers go through developmental stages of concerns when implementing a new innovation (Hall, et al., 1973; George, et al., 2006). The stages include 1) teachers not wanting involvement, 2) uncertainty about how the innovation will affect them, 3) managing the process when using the innovation in their

classroom, 4) focusing on how the innovation impacts student learning, 5) wanting collaboration with other teachers, and 6) exploring how to benefit further from using the innovation (George, et al., 2006). If these concerns are not addressed and these processes are not accommodated, many teachers are likely to ignore a new innovation, and many more may implement the new innovation incorrectly.

When the two areas of concerns are addressed, teachers are free to reflect and discuss their personal mastery and mental models. Personal mastery and mental models are part of Senge's et al (2000) fifth discipline keys of organizational learning. Both are highly personal and are based on a person's beliefs and experiences. As teachers reflect on where they are at and where they want to go, they develop their personal mastery. Through this process, teachers then can address their mental models that are perceived notions based on data collection. However, the data collected can be skewed unless a thorough understanding is available and time for discussion allows colleagues to clear up misunderstanding, thus, changing mental models. Then a shared vision comes into focus as team learning starts happening within groups of teachers until finally systems thinking emerge where teachers work together for a common goal (Senge et al., 2000).

The last characteristic of effective professional development is that professional development is a cyclical and continuous process based on the analysis of data (Good III, Kaminiski, et al., 2002; Hayes & Robnolt, 2007; Horsley & Loucks-Horsley, 1998; Kelleher, 2003; Liberman & Wilkins, 2006; Wood, et al., 1982). Thus, this cycle provides data that informs the decision about the needs for ongoing professional development and whether other innovations are warranted.

The collection of data, including student achievement, teacher needs, and available resources, is paramount to the effectiveness of the innovation. After this collection takes place, Guskey (2002) suggests the following: 1) choose innovations that feature proven methods and that increase student learning rather than jump on the bandwagon and trying to implement the most current trends, 2) determine whether the district- and building-level personnel can support the change with the necessary resources and materials, 3) determine which resources teachers need in order to gain the skills and knowledge to implement the change, and 4) decide what the professional development experience will look like.

Based on an exhaustive search of past and current professional development studies, Figure 3 combines the five characteristics into a professional development model developed by the author of this study. To begin the professional development cycle, student data is examined. The examination includes dialogue to begin the process of developing a shared vision through teachers reflecting on their personal mastery (where they are at and where they want to go) and metal models (preconceived notions) (Senge et al., 2000). As the shared vision emerges, professional development is determined. The professional development is divided into three phases: 1) initial phase to provide a thorough knowledge base to change mental models and to promote team learning between groups of teachers; 2) follow-up phase to continue the process of changing mental models and to further promote team learning; and 3) ongoing phase to eventual have a systems thinking where the innovation has become institutionalized and the begins again with the examination of student data.

PROFESSIONAL
DEVELOPMENT

*Student Data
Based*
Teacher's Concerns-
Systems Thinking

Student Data Based
Teachers' Concerns-
Personal, Mastery,
Mental Models,
Shared Vision

ONGOING PHASE

Teachers' Concerns-
Mental Models, Team
Learning
Time Based

INITIAL PHASE

Teacher's Concerns-
Mental Models, Team
Learning
Knowledge Based

FOLLOW-UP
PHASE
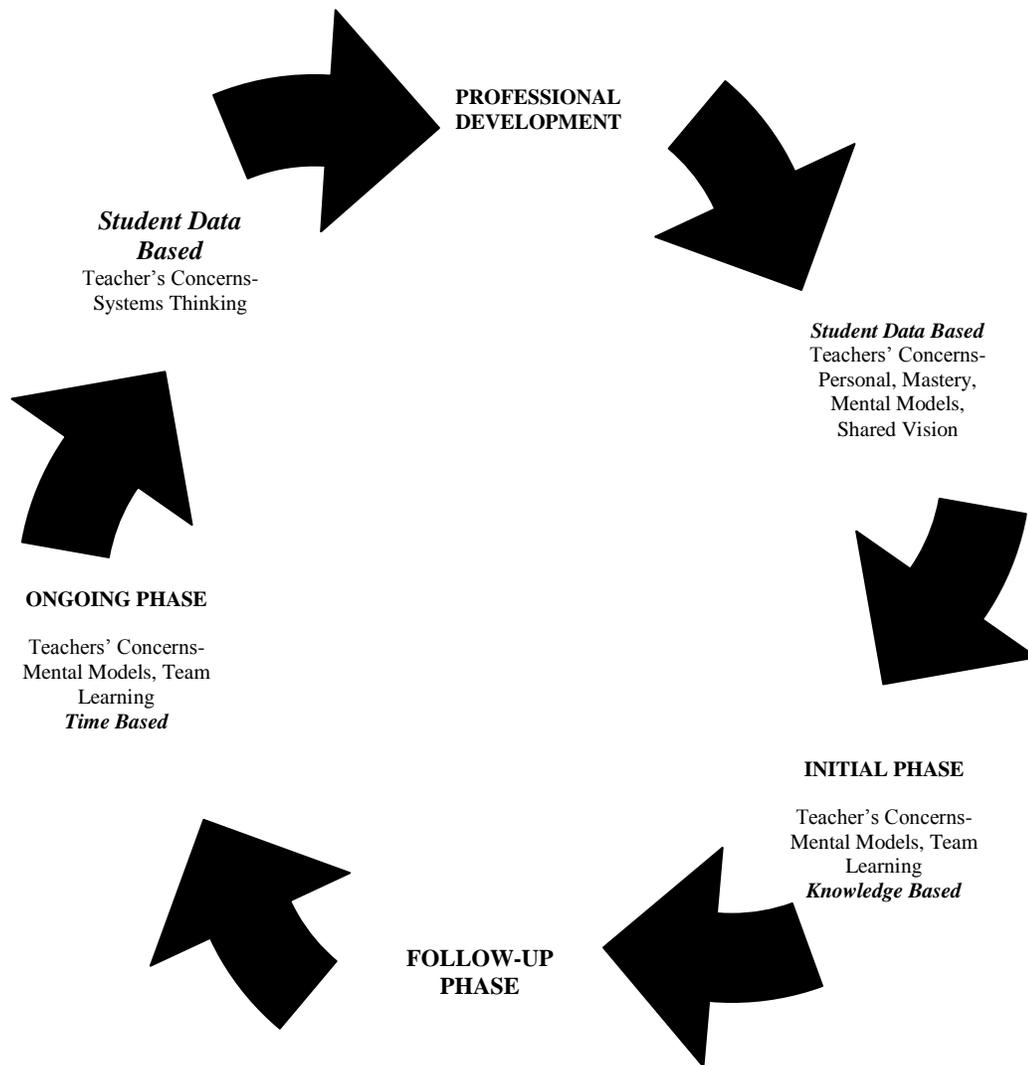
Figure 3. Professional development phases model based on the five
characteristics of effective professional development.

DIBELS Phases of Professional Development

The characteristics of effective professional development can be divided into three main phases based on the synthesis of past and current studies on effective professional development. Therefore, the researcher of this study defines the three phases as *initial, follow-up* and *ongoing*. How do these phases work when implementing an innovation such as DIBELS?   Once a school recognizes that DIBELS assessments are an essential component of improving students' early literacy skills based on student data and teachers' needs, a DIBELS expert would present the underlying principles of DIBELS to the entire faculty and administration. These principles would include the role DIBELS plays in a total reading program, the benchmark timelines, the progress monitoring system, the protocols for administering the benchmark assessments, the definition of important terms (e.g., ISF, LNF, NWF, PSF, and DORF), an explanation of the DIBELS reports (e.g., class graphs, summary reports, or individual student reports), and the "Big 5 Ideas of Reading." (IDEA, *Big Ideas in Beginning Reading*, 2009,*).*

The DIBELS follow-up phase includes providing adequate time to develop a deeper understanding of DIBELS through collaboration with colleagues and peers. More specifically, the follow-up phase includes the following important activities:

1. Practice and/or discuss the administration of each DIBELS assessments.
2. Discuss how to manage the classroom environment during the administration of DIBELS.
3. Discuss the role DIBELS plays in a total reading program.
4. Discuss teachers' concerns about DIBELS implementation.

5. Access reports on the DIBELS website, e.g., class charts, summary reports or individual student reports.

6. Identify students who need extra support based on DIBELS reports.

7. Discuss whether additional validations are needed to identify students who require extra support, e.g., DRA scores, miscue analysis, or writing samples.

The last phase, ongoing professional development, includes many aspects of the follow-up phase, such as time to meet with colleagues, reflection, examining student data, addressing teachers' concerns, and sharing new insights about DIBELS. However, the ongoing phase is sustained over time until active management and ongoing responsibility for the DIBELS assessment is transferred to the teacher and is fully implemented. At that point, student data and teachers' needs are reexamined to determine the best methods of addressing the ongoing professional development needs of teachers; thus, professional development becomes a cyclical and continuous process.

Summary

Chard (2004) maintains that it is of the utmost importance that teachers "understand how and when to apply their knowledge to the assessment and instruction of individual readers" (Chard, p. 184). This is especially crucial in the primary grades because students falling behind in reading have difficulty catching up with their peers. Assessments like DIBELS play a significant role as part of an overall reading program in monitoring these students' reading skills to ensure that students stay on trajectory to reach benchmark in early literacy skills. But if teachers are inadequately prepared or if they do not receive continuing and periodic professional development, they may be ineffective in administering and interpreting screening assessment results and therefore

less likely to help students reach reading proficiency in oral reading fluency, thus possibly affecting students' comprehension ability and potential.

A multitude of studies clearly indicates the importance of students acquiring early literacy skills before third grade in order to stay on target for becoming proficient readers. In addition, many studies indicate the importance of teachers receiving effective professional development. Unfortunately, a comprehensive literature review suggests that few if any studies explore the relationship between teachers' professional development experiences and student achievement scores on early reading skills assessments. Exploring this relationship is crucial because one of the ways to ensure that students reach benchmark in oral reading fluency is through timely, reliable, and valid progress monitoring of these skills. This may not happen unless studies such as this one examine the relationship between effective professional development during the initial, follow-up, and ongoing phases and students' improvement in early literacy skills.

Chapter Three

Methodology

Introduction

Chapter three describes the design and procedures of a survey instrument (please see Appendix A) that assessed second-grade teachers' total DIBELS professional development (DPD) experiences in the initial, follow-up, and ongoing phases. In addition, the survey examined the teachers' confidence level in their understanding and knowledge of DIBLES. This survey instrument determined whether a relationship existed between the second-grade teachers' DPD experiences and the percentage of their students showing yearly improvement from their pre- to post-DIBELS oral reading fluency (DORF) scores of 35 words, 45 words, and 60 words (dependent variables) and whether the teachers' professional development experiences significantly affected the dependent variables. This chapter includes the following sections: 1) Type of Research Design, 2) Sample Design, 3) Data Gathering Procedures, 4) Data Analysis 5) Procedures, and 6) Summary. The following procedures were approved by The University of Toledo Department for Human Research Protections, Social, Behavioral and Educational Institutional Review Board.

Type of Research Design

Most educational researchers divide non-experimental research into either causal-comparative or correlative research. However, Johnson (2000) maintains that causal-comparative and correlative research terms, for the most part, should be eliminated from

educational research textbooks. He argues that pre-conceived notions exist that causal-comparative research is superior to correlative research. However, his research indicates that neither research is superior because both can use ANOVA and multiple regression procedures. Moreover, Johnson makes a case that non-experimental research, regardless of whether it is causal-comparative or correlative, can determine what types of relationships exist. Johnson contends that non-experimental research should be classified into two dimensions: goals and time. The dimensions for goals include descriptive, predictive and explanatory, and the dimensions for time include cross-sectional, longitudinal, and retrospective.

Based in part on Johnson's (2000) classifications, this study employed two types of research design. First, a cross sectional, non-experimental, descriptive design was chosen. This research design was chosen based on Johnson's recommendations. The phenomena of the relationship between the second-grade teachers' DPD experiences and improvement in second-grade students' DORF scores was described and was characterized through documentation. In addition, the survey data were collected one time, and the pre- and post-DIBELS data were collected over a relatively short time frame of 6 to 8 months.

Secondly, a cross-sectional, predictive design was chosen. The cross-sectional design was chosen because of the one-time collection of data (survey) and the relative short span of DIBELS scores collection. The predictive design was chosen to determine whether any of the independent variables significantly predicted any of the dependent variables "without regard for cause and effect" (Johnson, 2000, p. 9).

As a result, this study examined the data in two statistical analyses. First, the study described whether a relationship existed between the experiences second-grade teachers encountered in their total DPD (initial, follow-up, and ongoing) and the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words. These DPD experiences were classified according to past and current research describing characteristics of effective professional development:

1. Professional development was based on the analysis of student data from which district- and building- level goals then were developed as part of a School Improvement Plan (SIP) (Engstrom & Danielson, 2006; Kelleher, 2003; Lieberman & Wilkins, 2006; Wood, et al., 1982).

2. Professional development provided in-depth learning on content knowledge, curriculum focus, and instructional strategies (Cohen & Hill, 1998, 2001; Engstrom & Danielson, 2006; Holloway, 2006; NCTAF, 1996).

3. Professional development was sustained over time, allowing time for peer coaching, observations, collaboration among staff, examination of students' work, and reflection until the innovation was transferred to the teacher and was fully implemented (Cohen & Hill, 1998, 2001; Garet et al., 2001; Holloway, 2006; Joyce & Showers, 2002; Kinnucan-Welsch, et al., 2006; NSCD, 2001; Wood, et al., 1982).

4. Professional development addressed teachers' concerns about new implementations or innovations (Guskey, 2002; George, et al., 2006; Hall, et al., 1973; Holloway, 2006).

5. Professional development was continuous and based on an analysis of student data (Good III, Kaminski, et al., 2002; Grant et al., 2001; Guskey, 2002; Hall, et al., 2006; Hayes et al., 2007; Holloway, 2006; Hord et al., 2006; Horsley & Loucks-Horsley, 1998; Liberman & Wilkins, 2006; Joyce & Showers, 2002; NSDC, 2001; Wood, et al., 1982).

In addition, this study examined whether initial DPD, follow-up DPD, ongoing DPD, or teachers' confidence level significantly predicted the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words.

The characteristics of effective professional development were then categorized into three phases: initial, follow-up and ongoing. Because of the importance placed on teachers' understanding of new innovations (Cohen & Hill, 1998, 2001), this study included teachers' confidence level as a way to measure their knowledge base. Therefore, the phases of effective professional development, along with the teachers' confidence levels, provided the bases for the following research questions to explore whether a significant and predictive relationship existed between 1) second-grade teachers' DIBELS professional development experiences (please see Appendix B) and 2) students' yearly screening DORF assessment scores (please see Figure 1):

1. Is there a relationship between second-grade teachers' initial DIBELS Professional Development (DPD) experiences and the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words?

H$_1$: The second-grade teachers' initial DPD will have a significant relationship with the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words.

H$_{01}$: The second-grade teachers' initial DPD will not have a significant relationship with the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words.

2. Is there a relationship between second-grade teachers' follow-up DIBELS Professional Development (DPD) experiences and the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words?

H$_2$: The second-grade teachers' follow-up DPD will have a significant relationship with the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words.

H$_{02}$: The second-grade teachers' follow-up DPD will not have a significant relationship with the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words.

3. Is there a relationship between second-grade teachers' ongoing DIBELS Professional Development (DPD) experiences and the percentage of their students

showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words?

H$_3$: The second-grade teachers' ongoing DPD will have a significant relationship with the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words.

H$_{03}$: The second-grade teachers' ongoing DPD will not have a significant relationship with the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words.

4. Is there a relationship between second-grade teachers' confidence level with DIBELS and the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words?

H$_4$: The second-grade teachers' confidence level DPD will have a significant relationship with the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words.

H$_{04}$: The second-grade teachers' confidence level DPD will not have a significant relationship with the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words.

5. Does second-grade teachers' initial DPD, follow-up DPD, ongoing DPD or teachers' confidence level significantly affect the percentage of their students

showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words?

H^5:The teachers' DPD experiences (initial, follow-up and ongoing) including the teachers' confidence level will significantly affect the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words.

H_{05}:The teachers' DPD experiences (initial, follow-up and ongoing) including the teachers' confidence level will not significantly affect the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words.

Population and Sample Design

A purposeful non-random convenience sample was used due to the availability of schools using DIBELS assessments in northwest Ohio. Non-random purposeful sampling afforded the possibility of selecting schools that were best suited for this research. Because no list existed of which schools used DIBELS, 50 principals in 25 public school districts were contacted in northwest Ohio. Of the 50 principals contacted, 17 principals from 13 districts agreed to participate. The principals also met the criteria to participate that included the following: the teachers used DIBELS for at least one full school year, had more than one second-grade classroom in the buildings, would attach the second-grade students' pre- and post-scores to their teachers' survey.

The typology of schools varied within the seven types of K-12 public schools described by the Ohio Department of Education (2007). The typology is based on median income, poverty level, student population, adult population with college degrees,

and occupations of adult population. The schools came from districts classified into the following groups:

1. One district- Rural/Agricultural- high poverty, low median income

2. Three districts- Rural/Agricultural- small student population, low poverty, and low to moderate median income

3. Three districts- Rural/Small Town- moderate to high median income

4. Two districts- Urban- low median income, high poverty

5. Two districts- Urban/Suburban- high median income

6. Two districts- Urban/Suburban- very high median income, very low poverty

The sample targeted 71 second-grade teachers because their benchmarks included three-times-per-year screening DORF assessments where the first-grade DORF assessments were only conducted two times per year. Though 71 surveys were the targeted sample, the actual sample comprised of 54 second-grade teachers who met the criteria for the inclusion for this study. The total number of second-grade students' pre- and post-DORF scores were 1055. Because a purposeful convenience sample was used, the generalizability of the results was extremely limited and the sampling error was larger than desired. The researcher did not consider the size and type of school as an essential component of this study. Rather, this study was concerned with professional development relative to the dependent variable: second-grade students' improvement in their DORF scores.

The sample was non-random and some schools could chose not to participate due to a concern over confidentiality. To address this issue, teachers, students, and schools remained anonymous and teachers were unidentifiable to everyone including the

researcher. For coding purposes, each school was assigned a number, and each teacher was assigned a letter. Surveying two teachers per school provided additional confidentiality as this prevented any one teacher from being identified.

Data Gathering Procedures

The data-gathering procedures started with a pilot survey using teachers from the author of this study's district. This included six second-grade teachers. The results of the pilot included changes in some of the items on the survey for clarity. In addition, the data analysis went through many changes especially in determining what constituted DORF improvement. Due to the pilot survey and students' DORF scores, Deno's, et al., (2001) and L. S. Fuchs and D. Fuchs' (1993) research provided the means for establishing the criteria for student improvement. The pilot study also resulted with teachers having the same professional development but scored measurably different on their surveys. This prompted for a better explanation of each of the professional development phases.

The data-gathering procedures consisted of surveying (please see Appendix A) second-grade teachers who used the three-times-per-year screening DIBELS assessments in their classrooms and then comparing the results with student data from the yearly screening DIBELS oral reading fluency (DORF) assessments. The survey included three primary subscales based on the characteristics of effective professional development: initial, follow-up and ongoing. In addition, the survey included a subscale measuring teachers' confidence levels

The author of this study suggested that building principals download the Class Progress Summary Report from the DIBELS website with students' yearly benchmark scores (please see Figure 4). Other reports that contained yearly DORF scores were

available; however, the Class Progress Summary Report provided the information on one

page and was the easiest to download. Though other assessments appeared on the Class

Progress Summary Report, such as nonsense word fluency, word usage fluency, and

retell fluency, only DORF scores were examined for the purposes of this study. The

teachers' Class Summary Progress Report with students' names removed (please see

Figure 4) were distributed to the participants (teachers) when they took the survey.

Building principals at each respective school oversaw this procedure. After completing

the survey, the teachers attached the Class Summary Report to their completed survey

and placed them into a large envelope; no one saw the teachers' names or associated

them with a particular report; thus, confidentiality was maintained throughout the data-

gathering procedure.

Figure 4. A typical second-grade DIBELS Class Progress Summary Report.

Improvement on the DORF scores consisted of meeting one of two criteria based on Deno et al.'s (2001) and L. S. Fuchs and D. Fuchs' (1993) research on the number of words read weekly. Though Good III et al.'s (2001) correlation studies established the benchmarks that second-grade students needed on the three-times-per-year screening assessments (please see table 3), the use of this criteria was problematic for this study. For example, students' DORF improvement was indicated by whether a student moved up a status on the DORF assessment as indicated by the raw scores on the Class Progress Summary Report (i.e., intensive intervention, strategic, or benchmark). However, a student may begin the year reading 15 words per minute according to the DORF and end the year reading 58 words per minute. In this scenario, the student did not show improvement according to the first criterion since he or she started the year in "intensive intervention" status and ended the year in "intensive intervention" status.

Table 3

Second-Grade DORF Benchmarks

Beginning of the Year Month 1-3		Middle of the Year Month 4-6		End of the Year Month 7-9	
Scores	Status	Scores	Status	Scores	Status
< 26	Deficit	< 52	Deficit	< 70	Deficit
$26 <=, > 44$	Emerging	$52 <=, > 68$	Emerging	$70 <=, > 90$	Emerging
$>= 44$	Established	$> = 68$	Established	$> = 90$	Established

Note. Recommendations from Good III, Simmons, Kame'enui, Kaminski, and Wallin (2002).

Deno et al.'s (2001) study maintains that students improving 1.18 words per week (rate), or 35 words per year (rate) based on 30 weeks of school, show adequate yearly

growth in oral reading fluency. Therefore, students demonstrating a 35-word-per-minute yearly rate of growth on the DORF indicated improvement for the purposes of this study.

L. S. Fuchs and D. Fuchs (1993), on the other hand, takes a more aggressive weekly improvement rate of 1.5 words for students not struggling or making oral reading fluency benchmark, and 2.0 weekly word improvements for students not at benchmark in oral reading fluency. L. S. Fuchs and D. Fuchs maintain that if students are to catch up with their peers, a more persistent approach must be maintained. Thus, students demonstrating a 45- and 60-words-per-minute yearly growth rate on the DORF indicated improvement.

The survey and data collection took place after the third set of benchmark assessment data was entered into the DIBELS website. The researcher called participating principals to explain the proposal, the survey, and how potential second-grade teachers would be identified as participants in this study. The principal then informed the second-grade teachers about the study with the understanding that the study was voluntary. Teachers choosing to participate received a $1.00 scratch-off lottery ticket. The principal distributed the surveys to the teachers. In the envelope sent to the schools, the principals received a letter reminding them of the directions for administering the survey (please see Appendix B). Also, teachers received an explanation of the survey (please see Appendix C) and a copy of their Class Progress Summary Report with students' names removed so that these students could not be associated with their schools or principals (please see Figure 1). Upon completion of the survey, the teachers stapled their Class Progress Summary Reports to the surveys and placed both

forms into a large self-addressed/stamped envelope to be returned to the author of this study.

Data Analysis Procedures

The DPD experiences were established based on the characteristics of effective professional development and described in three phases: initial, follow-up, and ongoing. In addition, teachers' confidence levels about their in-depth knowledge and understanding of DIBELS was examined. This section describes the method of data analysis used for each research question. Appendix D displays the coding process used to analyze the data for all of the research questions.

1. *Is there a relationship between second-grade teachers' initial DIBELS professional development experiences and the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words*?

A Pearson product-moment correlation was used to test whether significant relationships existed between the teachers' total initial DPD experiences (independent variable) and the percentage of their students showing yearly improvement from their pre to post DORF scores of 35 words, 45 words, and 60 words (dependent variable). On the teacher survey, the combined score on items 4, 5, 6, 7, 8, 9, 10, and 11 was the independent variable, and the total percentage of students showing improvement on the DORF assessments was the dependent variable.

2. *Is there a relationship between second-grade teachers' follow-up DIBELS professional development and the percentage of their students showing*

yearly improvement from their pre- to post-DORF scores of 35 words, 45

words, and 60 words?

Research Question 2 also used a Pearson product-moment correlation to determine if a relationship existed between the teachers' total follow-up DPD experiences (independent variable) and the percentage of their students showing yearly improvement from their pre to post DORF scores of 35 words, 45 words, and 60 words (dependent variable). On the teacher survey, the combined score on items 12, 13, 14, and 15 was the independent variable.

3. *Is there a relationship between second-grade teachers' DIBELS ongoing*

   professional development and the percentage of their students showing

   yearly improvement from their pre- to post-DORF scores of 35 words, 45

   words, and 60 words?

A Pearson product-moment correlation was used to determine if a relationship existed between the teachers' total ongoing DPD experiences (independent variable) and the percentage of their students showing yearly improvement from their pre to post DORF scores of 35 words, 45 words, and 60 words (dependent variable). Total scores on items 16, 17, 18, 19, and 20 (independent variable) were analyzed with the

4. *Is there a relationship between the teachers' confidence level with*

   DIBELS and the percentage of their students showing yearly improvement

   from their pre- to post-DORF scores of 35 words, 45 words, and 60

   words?

To answer the question, a type of linear, numeric scale called a multiple-rating list was used (Alreck & Settle, 2004). This type of scale was selected because "the responses

form a visual pattern, so the juxtaposition of the responses on a horizontal spectrum is a closer mapping to the way people actually think about the evaluations they're making" (p. 138). In addition, the multiple-rating list divulged interval data. Thus, Item 21's combined score was the independent variable, and the percentage of their students showing yearly improvement from their pre to post DORF scores of 35 words, 45 words, and 60 words was the dependent variable.

5. *Does initial DPD, follow-up DPD, ongoing DPD or teachers' confidence level significantly predict the percentage of their students showing yearly improvement from their pr- to post-DORF scores of 35 words, 45 words, and 60 words?*

A multiple regression analysis was used to test the degree and significance of the relationship between the teachers' total DPD experiences and the percentage of their students showing yearly improvement from their pre to post DORF scores of 35 words, 45 words, and 60 words. This analysis "measured the degree and direction of the influence of the independent variables on the dependent variable and assessed the statistical significance of the relationship" (Alreck & Settle, 2004, p. 329). Each of the independent variable was analyzed with each of the dependent variables using a multiple regression for the inferential statistics. This statistical procedure described whether the experiences in the initial DPD had any statistically significant impact on the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words.

Summary

      Two non-experimental designs were used for this study: a cross sectional, non-experimental, descriptive design and a cross-sectional, predictive design. The use of a teacher survey and pre- and post-DORF data collected from DIBELS assessments was used to answer five research questions. The first four questions explored whether a relationship existed between the DPD experiences of second-grade teachers and the percentage of their students showing yearly improvement from their pre to post DORF scores of 35 words, 45 words, and 60 words. These experiences were divided into three phases: initial professional development, follow-up professional development, and ongoing professional development. Because of the importance of teachers' knowledge when implementing new innovations, teachers' confidence level was added to the research questions. Thus, Research Question 4 examined the relationship between the teachers' confidence level with DIBELS and the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words. Furthermore, a multiple regression analysis was conducted to determine whether any DPD phases (initial, follow-up and ongoing) and teachers' confidence level significantly predicted the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words. Chapter 4 presents and discusses the results of this study.

Chapter Four

Analysis of the Data

Introduction

Accountability systems mandated from the federal and state governments in the area of reading have put pressure on school districts to make sure all students are making adequate progress, starting with early literacy skills. Screening students' early literacy skills with assessments that are timely, valid, and reliable is the first step in determining whether students are making adequate progress. Screening assessments, such as the Dynamic Indicators of Early Literacy Skills oral reading fluency (DORF), provide teachers with timely feedback to determine which students need interventions. To determine whether the interventions are impacting student performance, the screenings are also used to weekly progress monitor students' performance, a process which assists teachers in making instructional decisions.

Unfortunately, many teachers have not received adequate training in these types of screening assessments. As a result, professional development becomes an important process that enables teachers to fully understand how to administer early literacy skills screenings and how to use the results of these screenings to inform and guide their instructional choices. Research on effective professional development suggests that teachers receive professional development that includes the following characteristics:

1. Based on the analysis of student data, from which district- and building-level goals are then developed as part of a School Improvement Plan (SIP) (Engstrom

& Danielson, 2006; Kelleher, 2003; Lieberman & Wilkins, 2006; Wood, et al., 1982).

2. Provides in-depth learning on content knowledge, curriculum focus, and instructional strategies (Cohen & Hill, 1998, 2001; Engstrom & Danielson, 2006; Holloway, 2006; The National Commission on Teaching & America's Future, 1996)

3. Sustained over time until the innovation is fully implemented and transferred to the teacher, allowing time for peer coaching, study groups, observations, collaboration among staff, examination of students' work, and reflection (Cohen & Hill, 1998, 2001; Garet et al., 2001; Holloway, 2006; Joyce & Showers, 2002; Kinnucan-Welsch, et al., 2006; NSCD, 2001; Wood, et al., 1982)

4. Addresses teachers' concerns about new implementations or innovations (Guskey, 2002; George, et al., 2006; Hall, et al., 1973; Holloway, 2006)

5. Continuous and based on the analysis of student data ((Good III, Kaminski, et al., 2002; Grant et al., 2001; Guskey, 2002; Hall, et al., 2006; Hayes et al., 2007; Holloway, 2006; Hord et al., 2006; Horsley & Loucks-Horsley, 1998; Liberman & Wilkins, 2006; Joyce & Showers, 2002; NSDC, 2001; Wood, et al., 1982).

Purpose of the Study

The purpose of this study was two-fold. First, the study examined if any significant relationship existed between second-grade teachers DIBELS professional development (DPD) phases of initial, follow-up and ongoing including the teachers' confidence level and the percentage of their students showing yearly improvement from their pre to post DORF scores of 35 words, 45 words, and 60 words. Second, the study

explored if any of the teachers' DPD phases including their confidence level significantly predicted the percentage of their students showing yearly improvement from their pre to post DORF scores of 35 words, 45 words, and 60 words. Though, analyzing significant predictability of variables is done to establish casual relationships, the intent of this purpose was to further identify possible discussion topics and recommendations for future research.

Data Gathering Procedures

To maintain consistency with the prior research conducted on professional development, the second-grade teacher survey used for this study was constructed based on the characteristics of effective professional development and divided into three phases: initial, follow-up, and ongoing. Because teacher knowledge and understanding about how to implement screening assessments such as DIBELS is extremely important, a confidence level was added. The survey was developed by the author for this study, thus, it was a non-norm-referenced survey. However, the survey was reviewed by an expert jury and deemed valid.

DORF screening assessments were chosen as the means of determining student improvement in oral reading fluency. Studies have determined the validity and reliability of the DIBELS oral reading fluency screen assessment (Rouse & Fantuzzo, 2006). Of the total number of surveys sent (71), 76% fit the criteria for the study (54). Problems that surfaced included missing data on the survey, incomplete DORF scores, and surveys that were returned without DORF scores.

Demographics

The sample used for this study was second-grade teachers who used the DIBELS screening assessments in northwest Ohio. Upon completion of the surveys, teachers mailed the survey along with students' pre- and post-DORF scores to the author of the study. The teachers were located in 21 elementary buildings in 13 school districts that were located in northwest Ohio and featured a broad and diverse demographic sample. The Ohio Department of Education (2007) classified school districts into different categories based on average median income, poverty level, college graduates, and number of students to make comparisons of similar groups of school districts (see Table 4).

Table 4

Classification of Ohio School Districts

Number of School Districts	Typology
0	Kelly's Island LSD, North Bass Island LSD, Middle Bass Island LSD, Put-in-Bay LSD, College Corner LSD
1	Rural/Agricultural- high poverty, low median income
3	Rural/Agricultural- small student population, low poverty, low to moderate median income
3	Rural/Small Town- moderate to high median income
2	Urban- low median income, high poverty
0	Major Urban- very high poverty
2	Urban/Suburban- high median income
2	Urban/Suburban- very high median income, very low poverty
0	Joint Vocational School Districts

The average class size included 19 students, and the total number of students sampled was 1,055.

The majority of the teachers surveyed ($n = 31$, 57%) had 15 or more years of teaching experience, and 31% ($n = 17$) had 15 or more years of experience teaching at the second-grade level. The ranges used to identify the number of years teaching were created specifically for the survey and then labeled with a number in order to calculate the mean and standard deviation. For example, the mean for teachers' total years of teaching was 4.26, ($n = 54$, $sd = 0.99$) or in the range between 8-15 years. The mean for the teachers' total number of years teaching at the second-grade level was 3.78, ($n = 54$, $sd = 1.02$) or in the range of 4-7 years. Figure 5 compares teachers' total number of years teaching with the number of years teaching at the second-grade level. Since no teachers recorded 0 experience for total years teaching and total years teaching at the second-grade level, that data was not included in Figure 5.
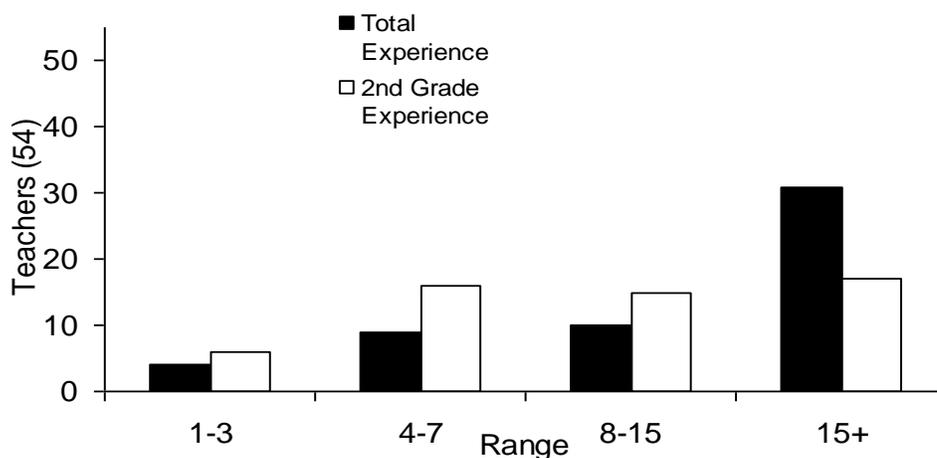
Figure 5. Comparison of teachers' total teaching experience and years teaching at the second-grade level.
Note. N = 54

The teachers were also asked how many years of experience they had using DIBELS in their classrooms. Though ranges were created for the survey and assigned a numerical number to calculate the mean, the ranges differed from the total number of

years teaching and the total number of years teaching at the second-grade level. The mean for teachers' total years of experience using DIBELS was 3.15, or 3-4 years (n = 54, sd = 0.81). The majority of the teachers (n = 36, 67%) had 3-4 years of experience using DIBELS. Figure 5 displays the range of the number of years teachers have used DIBELS. Because no teacher recorded zero years of experience using DIBELS, that data was not included in Figure 6.
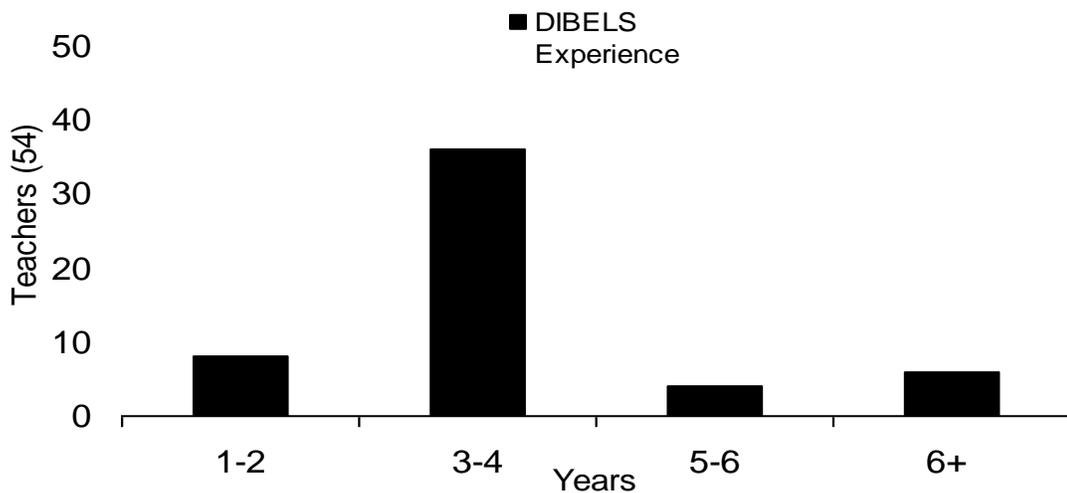
Figure 6. Range of teacher' total years experience using DIBLES.
Note. N = 54

This demographic information is consistent with information from the Institute of Education Sciences U.S. Dept. of Education National Center for Education Statistics (2005), which shows that the average teacher in the United States in 2005 had 14 years experience in the classroom. In addition, the majority of teachers' DIBELS experiences were 3-4 years; however, the majority of teachers had over 15 years of teaching experience which meant that their DIBELS training came from other sources besides their teacher education program. This was consistent with Emberger's (2007) study, which contends that teachers have not been exposed to different types of assessment training upon completion of teacher education programs.

Description of the Independent Variables

The independent variables consisted of second-grade teachers' perceptions of their initial, follow-up, and ongoing DIBELS professional development experiences. These perceptions comprised of the independent variables and were used to define the relationship between second-grade teachers' professional development experiences and students' improvement on their DORF pre- and post-test scores. More specifically, the independent variables included the following: 1) the second-grade teachers' total response score (25 points) on their surveys in the initial DIBELS professional development (IDPD) section, 2) the second-grade teachers' total response score (19 points) on their surveys in the follow-up DPD (FDPD) section, 3) the second-grade teachers' total response score (19 points) on their surveys in the ongoing DPD (ODPD) section, and 4) the second-grade teachers' total response score (84 points) on their surveys on the teacher confidence level (TCL) section.

The independent variables had different maximum scores based on the indicators for that area as specified on the coding score sheet (please see Appendix F). As a result, the means varied in value; therefore, the most accurate indicator of the variance in each category was the standard deviation (please see Table 5).

Table 5

DPD Independent Variables Descriptive Analysis

	N	M	SD	% of variance
Initial DPD	54	13.7	5.8	23
Follow-up DPD	54	5.8	5.8	30
On-going DPD	54	4.3	3.8	20

The follow-up DPD variable had the largest percentage of variance (30%) of the four

independent variables. As a result, the standard error of measurement was the largest in

the follow-up DPD variable. Consequently, there is less confidence in the accuracy of the

data for the follow-up DPD independent variable.

Ranges were created to display the results of teachers' total scores in each DPD

phase: initial (25 total points), follow-up (19 total points), and ongoing (19 total points).

Figure 6 presents how the teachers scored in each phase. Because the IDPD phase

equaled more points, no teachers' FDPD and ODPD scores fell into the last range. In the

IDPD scoring, the largest group of teachers (n = 12, 39%) scored in the 14-17 point

range. Both the FDPD (n = 21, 43%) and the ODPD (n = 18, 33%) scoring had the largest

group of teachers scoring in the 0-1 point range. (Please see Figure 7.)
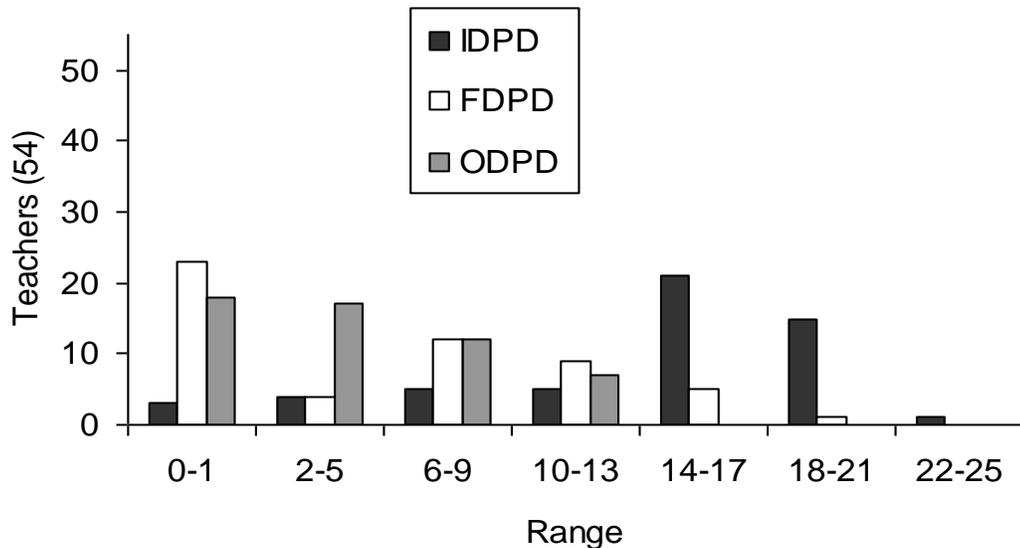
Figure 7. Teachers' total points scored on initial (IDPD), follow-up (FDPD), and ongoing
(ODPD) DIBELS professional development.
Note. N = 54, IDPD=25 points, FDPD= 19 points, ODPD= 19 points

The confidence level (m = 53.5, sd = 19.8) was determined by using a linear

numeric scale called a multiple-rating list to measure how confident teachers felt in

explaining DIBELS to other teachers—in particular, explaining DIBELS to newly hired teachers (Alreck & Settle, 2004). The scale ranged from one to seven, with one indicating "not at all" and seven indicating "to a great extent." Ranges were developed to reveal the scoring trends of the teachers' confidence level. The most scores were in the 61-72 points (n= 16). (Please see Figure 8.)
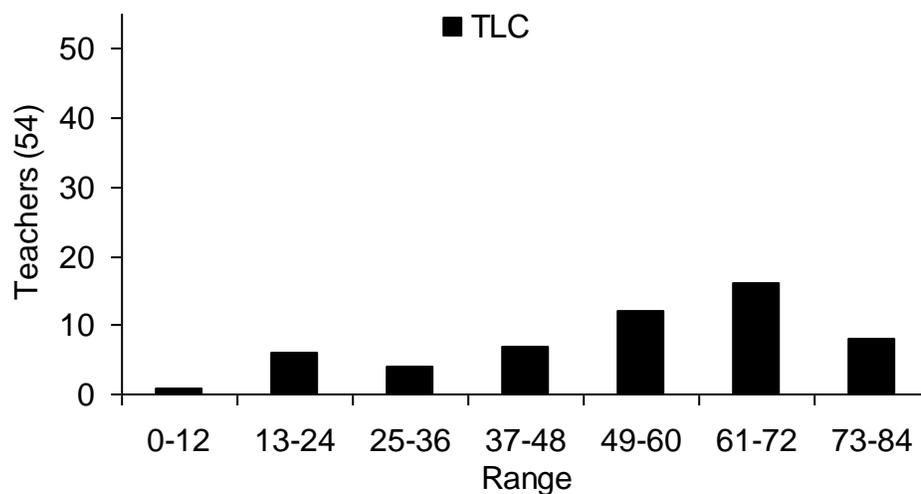
Figure 8. Teachers' confidence level scoring (total 84 points) ranges.
Note. N = 54

Description of the Dependent Variables

The dependent variables included the following: 1) the percentage of students who increased at least 35 words from their pre- to post-test second-grade DORF scores (m = 62.1, sd = 19.7), 2) the percentage of students who increased at least 45 words from their pre- to post- second-grade DORF scores (m = 36.6, sd = 16.6), and 3) percentage of students who increased at least 60 words from their pre- to post-second-grade DORF scores (m = 12.1, sd = 9.3).

In addition, the average percentage of students increasing 35 words per year was 62% (12) per class. The average percentage of students improving 45 words per year was 40% (8) per class. The average percentage of students improving 60 words per year was

12% (2) per class. Figure 9 displays ranges of the percentage of students making growth

in 35 words, 45 words or 60 words per year from pre- to post-DORF scores. The results

revealed the following: the largest range of students improving 35 words was the 59-73

percentage range (n = 19, 35%); the largest range of students improving 45 words was the

29-43 percentage range (n = 21, 39%); and the largest range of students improving 60

words was the 0-13 percentage range (n = 29, 54%).

Figure 9. Teachers' percentage of students showing yearly improvement from their pre-
to post-DORF scores of 35 words, 45 words, and 60 words.
Note. N = 54

When examining students' pre- to post-DORF scores based on their DORF status (deficit, emerging or established), the students' status showed some positive and negative changes. More students (n= 163, 15%) ended in deficit status than started in deficit status n= 125, 11%), fewer students ended in emerging status (n= 221, 21%), and fewer students ended in established status (n= 671, 64%) than started in established status (n= 686, 65%). Figure 10 compares the results of the percentage of students in each status category from the pre- to the post-DORF scores.
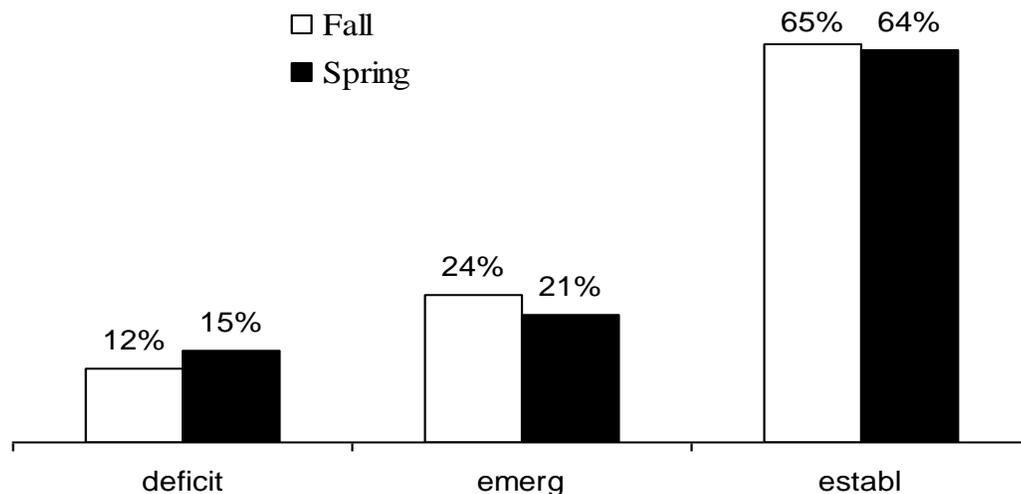
Figure 10. Percentage of student improvement based on DORF pre- and post-scores from the DIBELS fall and spring status categories.
Note. N = 1,055

Analysis of the Research Questions

Inferential statistical analysis using SPSS described in Chapter 3 was the method used to explore the five research questions developed for this study. Questions 1-4 used the Pearson product-moment correlation to analyze data, and Question 5 used multiple regressions to analyze the data. To determine if any statistical significance existed in all five questions, an alpha level of .05 was used as the criterion.

Research question 1. Is there a relationship between second-grade teachers' initial DIBELS professional development (DPD) experiences and the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words?

> H_1:The second-grade teachers' initial DPD will have a significant relationship with the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words.

> H_{01}:The second-grade teachers' initial DPD will not have a significant relationship with the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words.

There was no significant ($p \leq .05$) relationship between teachers' initial DPD and the percentage of students showing yearly improvement of 35, 45 and 60 words on their pre- and post-DORF scores (please see Table 6). As a result, the null hypothesis was accepted that 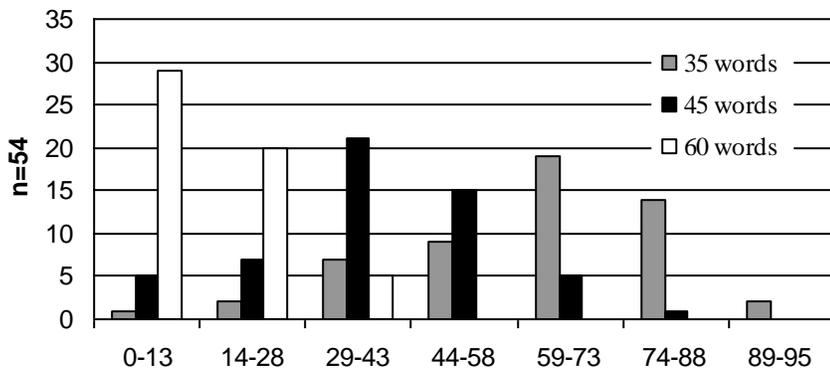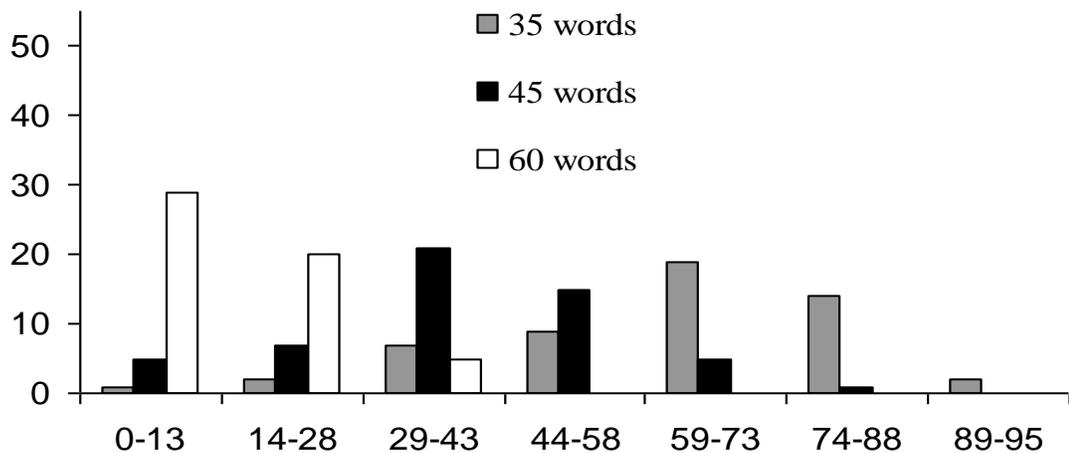there was no relationship between the teachers' initial DPD experience and the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words.

Table 6

Initial DPD and DORF Improvement

	N	r	P
35 words	1055	-.140	.313
45 words	1055	-.032	.820
60 words	1055	.046	.734

To further explore whether any significant relationship existed between the initial DPD phase and DORF improvement in any of the three dependent variables, low and high groups were created from the total score teachers could report (25 points). The low group consisted of teachers scoring zero to nine points on the initial phase section of the survey, and the high group consisted of teachers scoring ten points and higher on the initial phase section of the survey. As indicated in Table 7, there was a significant relationship ($p \leq .034$) between initial DPD and student improvement of 35 words per year. This supports the research hypothesis that a significant positive relationship exist between teachers' initial DIBELS professional development and the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words per year. However, the results did not hold true for the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 45 words and 60 words.

Table 7

Group Differences—Initial DPD

| | Low | | High | | | |
DV	M	SD	M	SD	*t*	*P*
35 words	72.68	13.04	59.12	20.23	2.18	.034
45 words	46.28	19.38	37.70	15.27	1.61	.115
60 words	13.56	10.22	11.63	9.09	.633	.529

Note. Low range = teachers' scoring 0-9 points. High range = teachers' scoring $>= 10$ points.

  Research question 2. Is there a relationship between second-grade teachers' follow-up DPD experiences and the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words?

    H_2: The second-grade teachers' follow-up DPD will have a significant relationship with the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words.

    H_{02}: The second-grade teachers' follow-up DPD will not have a significant relationship with the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words.

  No statistical significance occurred between teachers' follow-up DPD and the percentage of their students' pre- and post-test score improvement of 35 words, 45 words and 60 words (please see Table 8). As a result, the null hypothesis was accepted that no

significant relationship existed between second-grade teachers' follow-up DPD and the

percentage of their students showing yearly improvement from their pre- to post-DORF

scores of 35 words, 45 words, and 60 words.

Table 8

Follow-up DPD and DORF Improvement

	N	r	P
35 words	1,055	-.125	.368
45 words	1,055	-.125	.367
60 words	1,055	-.113	.416

Note. Low range = teachers' scoring 0-9 points.
High range = teachers' scoring > = 10 points.

Like the first research question, low (0-9) and high (10+) groups were established

based on teachers' total scores on the survey's follow-up phase (19 points). This led the

researcher to again accept the null hypothesis that no significant relationship existed

between teachers' follow-up DPD and the percentage of their students showing yearly

improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words

(please see Table 9).

Table 9

Group Differences Follow-up DPD

	Low		High			
	M	SD	M	SD	t	P
35 words	62.29	19.91	59.11	19.35	.696	.489
45 words	40.81	16.91	36.46	15.85	.861	.393
60 words	12.93	9.27	9.78	9.26	1.12	.267

Note: Low range = teachers' scoring 0-9 points. High range = teachers' scoring > = 10
points.

Research question 3. Is there a relationship between second-grade teachers'

ongoing DPD experiences and the percentage of their students showing yearly

improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words?

H_3: The second-grade teachers' ongoing DPD will have a significant

relationship with the percentage of their students showing yearly

improvement from their pre- to post-DORF scores of 35 words, 45 words,

and 60 words.

H_{03}: The second-grade teachers' ongoing DPD will not have a significant

relationship with the percentage of their students showing yearly

improvement from their pre- to post-DORF scores of 35 words, 45 words,

and 60 words.

No statistical significance existed between second-grade teachers' ongoing DPD

experiences and the percentage of their students' pre- to post-DORF score improvement

of 35 words, 45 words and 60 words (please see Table 10).

Table 10

Ongoing DPD and DORF Improvement

	N	r	P
35 words	1,055	-.238	.083
45 words	1,055	-.134	.332
60 words	1,055	-.163	.240

In addition, low (0-4.99) and high (5+) groups were established from the total

possible score of 19 points from the follow-up DPD section on the teachers' survey. As a

result, no significant relationship existed between the second-grade teachers' ongoing

DPD experiences and the percentage of their students' pre- to post-DORF score

improvement of 35 words, 45 words and 60 words (please see Table 11).

Table 11

Group Differences Ongoing DPD

| | Low | | High | | | |
	M	SD	M	SD	*t*	*P*
35 words	64.73	20.17	58.35	17.80	1.18	.245
45 words	40.75	17.00	37.94	16.20	.610	.545
60 words	13.20	9.80	10.40	8.43	1.09	.280

Note: Low range = teachers' scoring 0-9 points.
High range = teachers' scoring $>= 10$ points.

Research question 4. Is there a relationship between second-grade teachers'

confidence level using DIBELS and the percentage of their students showing yearly

improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words?

H_4: The second-grade teachers' confidence level DPD will have a

significant relationship with the percentage of their students showing

yearly improvement from their pre- to post-DORF scores of 35 words, 45

words, and 60 words.

H_{04}: The second-grade teachers' confidence level DPD will not have a

significant relationship with the percentage of their students showing

yearly improvement from their pre- to post-DORF scores of 35 words, 45

words, and 60 words.

The Pearson product-moment correlation determined that a statistical significant

difference existed between second-grade teachers' confidence level and the percentage of

their students' pre- to post-DORF score improvement of 35 words (.031) and 45 words

(.001). As a result, the null hypothesis was rejected. However, no statistical significance existed between second-grade teachers' confidence level and the percentage of their students' pre- to post-DORF score improvement of 60 words. Thus, the null hypothesis was accepted. Table 12 displays the results. Because a statistically significant relationship was determined, low and high tests were not conducted.

Table 12

Confidence Level DPD and DORF Improvement

	N	r	P
35 words	1,055	-.293	.031
45 words	1,055	-.425	.001
60 words	1,055	-.229	.095

Research question 5. Does second-grade teachers' initial DPD, follow-up DPD, ongoing DPD or teachers' confidence level significantly affect the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 6 0 words?

H^5: The teachers' DPD experiences (initial, follow-up, and ongoing), including the teachers' confidence level, will significantly affect the percentage of their students showing yearly improvement from pre- to post-DORF scores of 35 words, 45 words, and 60 words.

H_{05}: The teachers' DPD experiences (initial, follow-up and ongoing), including the teachers' confidence level, will not significantly affect the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words.

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A linear regression analysis was conducted, and no significant model was generated between the second-grade teachers' initial, follow-up, and ongoing DPD experiences and the percentage of their students' pre- to post-DORF score improvement of 35 words, 45 words, and 60 words. However, when teachers' confidence level was added, significance was determined with the percentage of students improving 45 words per year. The confidence level accounted for 8.6% of the variance in the percentage of students who met the 45-words-per-year improvement rate ($R=.294$, $R^2 =.086$, R^2_{adj} $+.069$, $F=4.907$, $p=.031$) $y=-:292 X + 77.75$). No predictability model was generated for the percentage of students' pre- to post-DORF score improvement of 35 words and 60 words.

When examining teachers' DPD only with percentage of their students' pre- to post-DORF score improvement of 45 words, no model was generated. When adding teachers' confidence level, a model was generated (please see Table 13). The final model accounted for 25.1% of the variance in percentage of students who improved 45 words per year. No model was generated at percentage of students improving 35 words and 60 words per year with all DPD variables and when the teachers' confidence level was added.

Table 13

Independent Variables Predictability

	+45			
	R	R^2	R^2_{adj}	R^2_{chg}
Step 1 (Confidence level)	.397	.158	.142	.158
Step 2 (Initial DPD)	.501	.251	.222	.093

$F(2, 51) = 8.545, p = .001$
$y = -.111X_1 + .229X_2 + 10.51$

Conclusion

Fifty-four second-grade teachers throughout northwest Ohio returned surveys describing their DPD experiences along with their students' pre- and post- DORF scores. This included 1,055 second-grade students' DORF scores. The majority of teachers had more than 15 years of teaching experience and three to four years of experience using DIBELS assessments. Improvement was indicated by the percentage of students who improved 35 words read per year, 45 words read per year, and 60 words read per year.

The Pearson product-moment correlation was applied to determine whether a relationship existed between the independent variables of teachers' DPD phases (initial, follow-up, and ongoing) and the teachers' confidence levels and their students' percentage of improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words read per year. The analysis indicated that no significant relationship existed between the DPD phases and students' DIBELS improvement; however, there was a significant relationship between teachers' confidence level using DIBELS and the percentage of students who achieved a 35-word-per-year DORF improvement.

To further determine whether any relationship existed between variables, low and high scores within each DPD phase were established. A positive significant relationship was found between the initial DPD phase and the percentage of students who achieved a 35-word-per-year DORF improvement but not with a 45- and 60-word-per-year improvement. No significant relationship was found between teachers' follow-up and ongoing DPD and students' DORF improvement and the percentage of students who achieved a 35-, 45-, and 60-word-per-year DORF improvement.

The second purpose was to determine whether any DPD phases (initial, follow-up, and ongoing) significantly affected students' DORF improvement by conducting a multiple regression analysis. No model was generated with any of the DPD phases and students' improvement percentage rates of 35 words, 45 words or 60 words. However, when adding teachers' confidence level, a model was generated with the students' improvement percentage rates of 45 words. The final model accounted for 25.1% of the variance in the percentage of students who improved 45 words per year.

Discussion of the results and recommendations for further research are presented in Chapter V. Additionally, Chapter V contains a discussion of the implications and contributions of the research.

Chapter Five

Discussion and Conclusion

Introduction

Chapter 5 is divided into six sections. The first section summarizes the academic and professional literature related to early literacy skills, assessments, and professional development. The second and third sections review the purposes of the study and examine the results of the statistical analysis. The fourth section considers the implications of the results, and the fifth section conveys the limitations of the study. The fifth section further provides recommendations for further research exploring the connection between professional development and methods to increase students' early literacy skills.

Summary

Literature review. With the passage of the NCLB Act, a more stringent accountability system was mandated. The Act called for the creation of "assessment systems that track the achievement of all students" and that were based on state grade-leveled standards and benchmarks that included assessing early literacy skills (Jorgensen & Hoffman, 2003, p. 6). The challenge of identifying the specific early literacy skills that needed to be assessed and subsequently assessing them has a long and varied history. But despite historical controversies, contemporary research confirms the importance of teaching and assessing the following early literacy skills: "phonological processing, rapid naming, orthographic processing, oral language, print awareness and concept of word,

alphabet knowledge, single word reading, oral reading in content, reading comprehension and written language" (Rathvon, 2004, p.14). To determine whether students are effectively acquiring these early literacy skills, screening assessments need to be used that are timely, reliable, and valid. One of these screening assessments is the Dynamic Indicators of Basic Early Literacy Skills (DIBELS), which became a popular form of assessment within the educational arena in the past decade.

Unfortunately, many teachers have not received adequate training in the relatively new area of screening assessments (Emberger, 2007). This lack of training can be linked to the amount of time the average teacher has been in the teaching profession since his or her college graduation. The majority of teachers in the United States has 14 years of teaching experience (Institute of Education Sciences U.S. Dept. of Education National Center for Education Statistics 2005), which is a significant amount of time in which professional development may or may not have not taken place.

Therefore, professional development is crucial but can become ineffective unless school districts provide professional development with the following characteristics:

1. Is based on the analysis of student data, from which district- and building-level goals are then developed as part of a School Improvement Plan (SIP) (Engstrom & Danielson, 2006; Kelleher, 2003; Lieberman & Wilkins, 2006; Wood, et al., 1982)

2. Provides in-depth learning on content knowledge, curriculum focus, and instructional strategies (Cohen & Hill, 1998, 2001; Engstrom & Danielson, 2006; Holloway, 2006; NCTAF, 1996)

3. Is sustained over time until the innovation is fully implemented and transferred to the teacher, allowing time for peer coaching, study groups, observations, collaboration among staff, examination of students' work, and reflection (Cohen & Hill, 1998, 2001; Garet et al., 2001; Holloway, 2006; Joyce & Showers, 2002; Kinnucan-Welsch, Rosemary, & Grogan, 2006; NSDC, 2001; Wood, et al., 1982)

4. Is designed to address teachers' concerns about new implementations or innovations (Guskey, 2002; George, et al., 2006; Hall, et al., 1973; Holloway, 2006)

5. Is continuous and based on the analysis of student data ((Good III, Kaminski, et al., 2002; Grant et al., 2001; Guskey, 2002; Hall, et al., 2006; Hayes et al., 2007; Holloway, 2006; Hord et al., 2006; Horsley & Loucks-Horsley, 1998; Liberman & Wilkins, 2006; Joyce & Showers, 2002; NSDC, 2001; Wood, et al., 1982).

Based on past and present research in the area of professional development, as well as the organizational learning theory developed by Senge, Combron-McCabe, Lucan, Smith, Dutton, and Kleiner (2000), a professional development model was created by the author of this study that divides professional development into three phases: initial, follow-up and ongoing (please see Figure 3). The initial phase begins after student data is thoroughly analyzed and staff determines what their professional development needs are. Then the initial professional development phase begins the in-depth learning on content knowledge, curriculum focus and instructional strategies. As staff acquires in-depth learning, participants' mental models evolve and student data is once again analyzed with a new perspective. When adequate time is allowed, teachers have time to discuss their concerns.

The concerns then begin the follow-up phase and the amount of time provided for this phase may determine if a "thorough knowledge, strong skill and transfer" takes place (Armstrong et al., 2008, p. 78). This phase allows for peer coaching, study groups, observations, collaboration among staff, examining students' work and reflection (Cohen & Hill, 1998, 2001; Garet et al., 2001; Joyce & Showers, 2002; Kinnucan-Welsch, et al., 2006; NSDC, 2001; Wood, et al., 1982). Providing time for this phase continues the process of teachers changing their mental models, and team learning is reinforced (Senge, et al., 2000).

As teachers' needs are addressed and team learning takes hold, the ongoing phase begins. The success of this phase is also determined by the amount of time allowed for it to develop. Many of the activities described in the follow-up phase also can take place. However, as colleagues meet and student data is collected and analyzed, a shared vision comes into focus where a systems thinking emerges and teachers work together for a common goal (Senge, et al., 2000). Thus, as the new innovation becomes entrenched, new data materializes, and the whole process starts again.

Purpose of the study. The literature review provided the impetus for this study. One purpose was to examine the relationship between second-grade teachers' DIBLES professional development (DPD) experiences and the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words. The second purpose was to investigate whether any of the DPD phases (initial, follow-up and ongoing) and teachers' confidence levels significantly predicted the percentage of their students showing yearly improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words.

This present study focused on second-grade students because of the importance of early literacy skills in reading (Elliott, et al., 2001; Elliot & L. S. Fuchs, 1997; Good, Simmons, Kame'enui, Kaminski, & Wallin, 2002; Harn, Stoolmiller, & Chard, 2008; Hintze, et al., 1998; Kaminski & Good III, 1998; Levin, et al., 2006; Morris, et al. 2003; NRP, 2000). In addition, students who fall behind in reading by third grade rarely catch up to their peers unless intense interventions are provided (Fletcher, et al., 1994; Moats, 2004). More specifically, the DIBELS oral reading fluency screening assessment was chosen because of its predictive value, reliability, and validity (Coyne & Harn, 2006; Elliott, et al., 2001; Hagan-Burke, et al., 2006; Hintze, et al., 2003; Rouse & Fantuzzo, 2006).

This study was also undertaken because limited research is available in the area of professional development and student achievement on early literacy skills. Chard (2004) discovered that the National Reading Panel found few studies on professional development and early reading outcomes during their extensive search.

> The National Reading Panel (2000) conducted an extensive meta-analysis of reading research. More than 300 studies on the topic of professional development were identified. However, only 21 studies met the methodological criteria for inclusion in their review. Because of the wide range of variables studied in those 21 studies, meta-analytic approaches to data analysis could not be used. Thus, a meta-analysis of professional development practices in early reading outcomes providing findings and their impact is not available. (Chard, p. 176)

As a result, much research is needed in the area of professional development and its effect on early literacy skills. In response to this need, the present study will assist in

filling the gap between teachers' professional development experiences and student

achievement in early literacy skills of oral reading fluency.

Discussion of the Results

Based on an extensive literature review, five research questions emerged. Four of

these questions examined whether a relationship existed between 1) second-grade

teachers' phases of professional development, including initial, follow-up, and ongoing,

and their confidence level and 2) the percentage of their students showing yearly

improvement from their pre- to post-DORF scores of 35 words, 45 words, and 60 words.

The final question examined whether any of the phases of professional development that

teachers experienced and their confidence level predicted growth in the percentage of

their students showing yearly improvement from their pre- to post-DORF scores of 35

words, 45 words, and 60 words. To answer these questions, the study was conducted

using a teacher survey that was 1) organized into sections focusing on the initial, follow-

up, and ongoing phases of professional development and 2) based on effective

professional development characteristics. To examine teachers' knowledge, a section was

added to the survey that rated their confidence level in their understanding of DIBELS.

The demographics data coincide with issues concerning professional development

in the literature review. The majority of teachers (57%) had more than 15 years of

experience. This demographic information concurred with information from the Institute

of Education Sciences U.S. Dept. of Education National Center for Education Statistics

(2005), which showed through its studies that the average teacher in the United States in

2005 had 14 years experience in the classroom. Furthermore, despite the fact that

DIBELS was first introduced in 2001, 81% of the teachers had used DIBELS for four

years or fewer while only 11% of the teachers reported more than six years of experience using DIBLES. Misunderstandings at the district level in using data to determine the needs of the school district and the cost involved in professional development could account for the reason why the large majority of teachers had fewer than five years of experience using DIBLES (Joyce & Showers 2002; Odden et al., 2002).

Relationship between independent and dependent variables. A Pearson product-moment correlation indicated that no significant relationship existed between the teachers' DIBELS professional development (DPD), including initial, follow-up and ongoing phases, and the percentage of students improving 35, 45, and 60 words per year. However, when low and high groups were created in each of the independent variables, there was a significant relationship between teachers' initial DPD and the percentage of students reaching a 35-word improvement as indicated between their pre- to post-DIBELS oral reading fluency scores. The 35-word improvement substantiated Deno's (2001) recommendation that students improve in a year.

Furthermore, a significant relationship existed between the teachers' confidence level and the percentage of students improving 35 and 45 words per year. This substantiated studies conducted by Cohen and Hill (2001) on the relationship between teachers acquiring a deep understanding and knowledge of new innovations and student achievement. In addition, the National Commission on Teaching & America's Future (1996) concluded that teacher knowledge was important in students' reading improvement.

Thus, the results indicated that the initial DIBELS professional development appears to influence teachers' understanding of DIBELS. The correlation between initial

DPD and confidence level was the highest of the DPD phases. The assumption then could be made that when teachers received effective initial professional development, their confidence level increased in the understanding of DORF.

Predictors of the dependent variables. The last research question examined whether any of the DPD phases (initial, follow-up, and ongoing) and confidence level significantly predicted second-grade students' improvement of 35 words, 45 words, or 60 words per year. Using a forward stepwise regression, only the confidence level predicted the variance in the percentage of students that improved 45 words per year. The confidence level accounted for 25.1% of the variance. Though not a large variance, confidence level once again proved its importance on the students' DORF improvement.

Underlying results. The foundation of DIBLES was to screen students to determine which students not meeting benchmark received strategic or intensive interventions in some of the early literacy skills. Once it was determined which skill needed the intervention, weekly to bi-weekly progress monitoring was incorporated to confirm whether the intervention was positively impacting the student's growth. As the student reached grade-level benchmark, less progress monitoring was needed, and the intervention was no longer needed. However, if the student was not making adequate progress, then other interventions would take place and be progress monitored. Thus, the data collected on the students' growth would drive the teachers' instruction and provide students with the skills needed to make adequate growth, with the end result being that the students start to catch up with their peers (Kaminski & Good, 1998). Unfortunately, this was not the case for students making progress in DORF scores. When examining the students' pre- to post-DORF scores, and where these scores placed them according to

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DIBELS benchmark status (deficit, emerging, established), there were few students who improved in the deficit and emerging status as suggested by Deno, et al. (2001) and L. S. Fuchs and D. Fuchs (1993). Of the 198 students scoring in the strategic and intensive category on their fall DORF scores, only 5% of the students improved by 60 words or more on their post-DORF scores, 14% of the students improved 45 words, and 24% of the students improved 35 words as indicated by their pre- to post-DORF scores.

This data was important because no teacher received the total number of 145 points on the survey; the highest score was 113 points. The mean score was 77 points, or 53% of the total professional development experience. In other words, it appeared that no school district provided teachers with the optimal effective DIBELS professional development experience based on the Professional Development Phases Model (see Figure 3). Not providing optimal DPD could, perhaps, explain why a relationship existed with teachers' initial DPD and percentage of students improving 35 words. However, the vast majority of students were already well beyond benchmark in the fall (>=44 words read per minute) while the students with the lowest fall DORF scores showed the least improvement. The initial DPD provided teachers with some understanding and knowledge of DIBELS as the results indicated, but not having time to meet, discuss the data, and determine what to do with the data may have impacted the scores of those students needing the most improvement.

Implications of the results. Several important implications emerged from this study. First, because there was a significant relationship between initial DPD and students' improvement on the DORF, the initial professional development phase becomes an important part of any professional development program. In addition, there was a

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correlation between the initial phase and teachers' confidence level, and a relationship

existed between teachers' confidence level and DORF student improvement of 35 and 45

words per year, emphasizing again that the initial DPD phase is important. The initial

professional development should be based on student data, presented by a trained expert,

address teachers' concerns, and provide for adequate time.

Secondly, follow-up and ongoing phases resulted in no relationships with any of

the students' improvement rates. An inference could be made that lack of follow-up and

ongoing phases of professional development could impact at-risk students' DORF

improvement since students who scored needing intensive and strategic interventions on

their pre-DORF screenings showed little improvement. School districts should attend to

student data to determine whether the follow-up and ongoing phases of professional

development are warranted or need revamping if already implemented. Follow-up and

ongoing phases allow time for teachers to fully implement new innovations through

consulting with experts and the use of peer coaching (Armstrong, Cusumano, Todd, &

Cohen, 2008; Cohen & Hill, 2001; Garet et al., 2001; Joyce & Showers, 2002). The data

analysis should also be the impetus for administrators to address teachers' concerns and

implementation difficulties. Not allowing time for both the follow-up and ongoing phases

could seriously impact how teachers' mental models evolve, therefore ultimately

effecting the development of a shared vision, which will prevent systems thinking to

occur and affect student achievement (Senge, et al., 2000).

In addition, the use of a multiple regression, as was used for Research Question 5,

stands the risk of implying causal relationships. Though the teacher confidence level did

demonstrate a predictive relationship with the percentage of students improving 45 words

from their pre- to post-DORF scores, the relationship was rather weak. Therefore, the analysis was intended to raise questions for further research into the area of predictive relationships between professional development and students' early literacy skill achievement.

Limitations

Several limitations surfaced while conducting this study. First, the sample size was small in comparison to the population. The small sample size was due in part to time and expense but also because no database was available that contained information on which schools used DIBELS.

Another limitation was that the survey was not norm-referenced. Extensive research to find a norm-referenced survey in the area of early literacy skills that met the needs of this study was unsuccessful. A panel of experts validated the use of the survey for this study.

In addition, it is difficult to know whether the principals followed directions correctly when administering the survey. They were to ensure that the teachers completed the survey independently and that the students' pre- and post-DIBELS scores were attached to the survey. However, some of the surveys were not completed correctly, and pre- and post-test scores were not always attached.

One final limitation is the fact that other variables can affect students' improvement in oral reading. Teachers could impact student achievement through management style, interactions with students, familiarity with reading instructional methods, and willingness to modify instruction for students based on data (Pericola Case, Speece, & Molloy, 2003).

Recommendations for Future Research

There are a number of recommendations for future research. First, further studies need to examine schools whose professional development includes all three phases and their students' improvement in early literacy skills. Secondly, a qualitative study focusing on teachers whose students started as needing intensive and strategic intervention and reached benchmark at the end of the year could provide insight into the nature and extent of their professional development. Both of the above recommendations could include case studies. Third, although the size, location, and socio-economic status of the schools in this study were not considered, these variables could be the focus of future studies, and perhaps stratified sampling would be needed. Fourth, a qualitative study that focuses on those teachers whose confidence level was very high but whose overall DPD was very low might provide insight into why their confidence level was so high despite the fact that they received little DPD. Fifth, a study for future research would include assessing teachers' knowledge and level of implementation after each phase was completed. This information could assist administrators in determining where the breakdown may occur, especially if the student data indicates less-than-desired results. Sixth, more research needs to focus on interventions after students are determined to need them, e.g., what interventions are appropriate, how they are implemented, and how they are assessed.

Finally, in addition to surveying teachers, surveying principals and superintendents could provide useful information about how professional development is conducted and determine which phase of professional development needs attention based on the Professional Development Phases Model (see Figure 3). From this study, only three principals sent the Student Progress Report, and the others relied on the teachers to

find the data. One could then infer that administrators may not know how to upload the

report or how to examine the reports since so many struggling readers experienced such

small growth. This survey could also focus on principals' management styles, how the

management styles affect the professional development experiences for teachers, and

how the combination affects students' reading growth.

Conclusion

The results of this study indicate that a relationship existed between 1) teachers'

initial professional development experiences and teachers' confidence level and 2)

students' improvement on DORF. Furthermore, the study concluded that teachers'

confidence level predicted students improving 45 words per year. The results suggest that

the initial professional development provides teachers with a deep understanding and

knowledge of a new innovation.

However, the results from this study also suggest that the lack of a complete

effective professional development experience could partially explain that even though

students showed improvement, students needing the most improvement (DORF pre-test

of 43 words read per minute and below) showed the least amount of improvement. This

lack of effective professional development included the majority of the teachers' surveys

and indicated a lack of effective professional development in both the follow-up and

ongoing phases. The lack of follow-up and ongoing professional development should not

be ignored and prompts further investigation into the area of teachers receiving all phases

of professional development and students' early literacy skill achievement.

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Teacher Survey

Teacher Survey

School (Number) _____   Teacher (Letter) _____

Please read each question carefully and circle your answer.

Demographic Data
1. I have been a teacher for: (Circle one.)
    a.   Less than 1 year
    b.   1 to 3 years
    c.   4 to 7 years
    d.   8 to 15 years
    e.   More than 15 years

2. I have taught at my current school for: (Circle one.)
    a.   Less than 1 year
    b.   1 to 3 years
    c.   4 to 7 years
    d.   8 to 15 years
    e.   More than 15 years

3. DIBELS assessments have been used in my classroom for: (Circle one.)
    a.   Less than 1 year
    b.   1 to 2 years
    c.   3 to 4 years
    d.   5 to 6 years
    e.   More than 6 years

Initial DIBELS Professional Development (DPD)
4. DPD was determined based on student data and teachers' needs. (Circle one.)
    a. No   b. Yes

5. My concerns about the implementation of DIBELS were addressed. (Circle one.)
    a. No   b. Yes

6. The DPD was attended by all of my colleagues.
    a. No   b. Yes

7. The following people or person presented my initial DPD: (Circle all that apply.)
    a.   No initial DPD was made available
    b.   One of the creators of DIBELS e.g., Good or Kaminski

    c. School psychologist
    d. School administrator
    e. Teacher
    f. Other_____ (Please explain.)

8. During my initial DIBELS Professional Development (DPD), I attended or participated in at least: (Circle one.)
    a. 0 sessions
    b. 1-3 sessions
    c. 4-6 sessions

9. The number of hours per session (on average) was: (Circle one.)
    a. 0
    b. 1
    c. 2
    d. 3
    e. 4 or more

10. The period of time over which my initial DPD took place was: (Circle one.)
    a. 0
    b. ½ day to 1 full day
    c. 2-3 consecutive days
    d. 3-4 consecutive days
    e. 2-5 times throughout the year

11. During the initial DPD at my school, the following topics were presented. (Circle all that apply.)
    a. I did not attend an initial PDP
    b. The role DIBELS plays in a total reading program
    c. The benchmark timelines
    d. The progress monitoring
    e. The protocol of administering the benchmark assessments
    f. The definition of the following terms: ISF, LNF, NWF, PSF, and DORF
    g. The explanation of the DIBELS reports, e.g., class graphs, summary reports, or individual student reports
    h. The "Big Idea" of reading

Follow-up DIBELS Professional Development (DPD)
12. After the initial DPD, I attended or participated in: (Circle one.)
    a. 0 sessions
    b. 1 session
    c. 2 sessions
    d. 3 sessions
    e. 4 or more sessions

13. The number of hours per session (on average) was: (Circle one.)

a. 0
b. 1
c. 2
d. 3
e. 4 or more

14. The period of time over which my follow-up DIBELS Professional Development (DPD) took place was: (Circle one.)
    a. 0
    b. ½ day to 1 full day
    c. 2-3 consecutive days
    d. 3-4 consecutive days
    e. 2-5 times throughout the year

15. My follow-up DPD sessions included: (Circle all that apply.)
    a. No follow-up DPD occurred
    b. Worked on my own
    Met with colleagues to:
    c. Practice and/or discuss the administration of each DIBELS assessments
    d. Discuss how to manage the classroom environment during the administration of DIBELS
    e. Discuss the role DIBELS plays in a total reading program
    f. Discuss teachers' concerns about DIBELS implementation
    g. Access reports on the DIBELS website, e.g., class charts, summary reports or individual student reports.
    h. Identify students who needed extra support based on DIBELS reports
    i. Discuss whether additional validations were needed to identify students who required extra support e.g., DRA scores, miscue analysis, or writing samples

On-going DIBELS Professional Development (DPD)
16. Ongoing DPD includes: (Circle one.)
    a. 0 sessions
    b. 1 session
    c. 2 sessions
    d. 3 sessions
    e. 4 or more sessions

17. The number of hours per session (on average) is: (Circle one.)
    a. 0
    b. 1
    c. 2
    d. 3
    e. 4 or more

18. The period of time over which my ongoing DPD takes place is: (Circle one.)
    a. 0

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b. ½ day to 1 full day
c. 2-3 consecutive days
d. 3-4 consecutive days
e. 2-5 times throughout the year

19. Future DPD is determined based on students' data and teachers' needs. (Circle one.)
   a. No   b. Yes

20. My ongoing DIBELS Professional Development (DPD) sessions include: (Circle all that apply.)
   Meet with colleagues to:
   a. No on-going DPD occurs
   b. Work on my own
   c. Practice and/or discuss the administration of each DIBELS assessments
   d. Discuss any concerns and share ideas
   e. Access reports on the DIBELS website, e.g., class charts, summary reports, or individual student reports
   f. Discuss students who need extra support based on DIBELS reports
   g. Discuss whether additional validations are needed to identify students who require extra support e.g., DRA scores, miscue analysis, or writing samples

Confidence Levels
21. To what extent do I feel confident to explain each of the following concepts to a newly hired colleague? (Circle one number for each statement.)

	Not at all						To a great extent
a. The rationale for administrating the benchmark assessments	1	2	3	4	5	6	7
b. The timelines for the benchmark assessments	1	2	3	4	5	6	7
c. How to administer the benchmark assessments	1	2	3	4	5	6	7
d. The rationale for progress monitoring	1	2	3	4	5	6	7
e. How to determine which students' progress should be monitored	1	2	3	4	5	6	7
f. How to determine what is progressed monitored	1	2	3	4	5	6	7
g. How to record the progress monitoring assessments	1	2	3	4	5	6	7

h. How to administer progress monitoring   1   2   3   4   5   6   7
   assessments during class time

i. The "Big Idea" of reading   1   2   3   4   5   6   7

j. How to access reports from   1   2   3   4   5   6   7
   the DIBELS website

k. How to interpret information   1   2   3   4   5   6   7
   on the DIBELS reports

l. The role DIBELS plays in a total reading 1   2   3   4   5   6   7
   program

Appendix B

Letter to the Principals

September 20, 2008

Dear Principals,

Again, thank you so much for allowing your second-grade teachers to participate in this study. In this envelope you will find the second-grade teacher survey, an explanation of the survey, an envelope, one lottery ticket for each teacher and you, and a self-addressed, stamped envelop to return the completed surveys with the teachers' last year's second-grade class of DIBLES oral reading fluency (DORF) pre- and post-DORF scores attached.

On the survey, I have given each building and second-grade teacher a school number and a teacher letter. Please remove any last year's second grade students' names on the DORF pre- and post-scores. These measures are to ensure confidentiality. I also ask that the DORF scores be attached to the correct teacher survey. One way to do this is provide the teacher with her/his last year's student' scores and the teachers attach the DORF scores to their survey. The teacher places this in the provided envelope and the envelope is given to you to place in the self-addressed, stamped envelop. If possible, please return the envelope as soon as possible.

Please contact me if you have any questions. Thanks so much for your time and help in this study.

Sincerely,

Martha Turnwald-Fether
Principal Crim Elementary
Bowling Green Local School District
419.354.0400
mfether@bgcs.k12.0h.us

Appendix C

Letter to the Teacher

Dear Participant:

I invite you to participate in a survey. This survey is part of a doctoral dissertation project sponsored by the University of Toledo in Toledo, Ohio. The purpose of this survey is to explore the relationship between second-grade teachers' DIBELS professional development (DPD) experiences and students' DIBELS oral reading fluency (DORF) improvement. School districts are always examining ways to provide professional development that will ultimately improve student achievement. This study will hopefully help administrators make informed decisions about how to best organize and provide professional development that will make it more meaningful to you. I have taken a number of steps to make your responses, as well as your identity, confidential. You may choose to participate or choose to stop at any time without prejudice to your relationship to the University of Toledo or your employer.

Most of the questions are self-explanatory. However, below are explanations for some of the terms used.

Questions 4-11 use the phrase "initial DPD."   This term refers to the introductory DIBELS training you received from a DIBELS authority or expert. This training may have included an explanation of the DIBELS assessments, reasons for using the DIBELS assessments, the timeline for administering the assessments, how to interpret DIBELS data, and other administrative applications associated with DIBELS.

Questions 12-15 use the phrase "follow-up DPD." This term refers to the process of meeting with colleagues after the initial DPD to further discuss the initial DPD, using a peer coach to help better standardize the administration and use of DIBELS, participating in study groups and other similar activities.

Questions 16-19 use the term "ongoing DPD." This term refers to any DPD that takes place currently. It could include similar activities found in the follow-up DPD.

If you agree to participate, please attach your survey to the DIBELS report and check to see that all names have been removed. Place this in the envelope that is provided, seal it, and return to your building principal. Attached is a small gift of appreciation for your help.

Thank you for your time and participation.

Sincerely,

Martha Turnwald-Fether
Principal, Crim Elementary
Bowling Green Local Schools
419.354.0400   mfether@bgcs.k12.oh.us

Appendix D

Coding

Coding

Item	Code	Key	Variable	Analyze	Code	Key	Variable
1	Total	Ratio	IV	DORF	% of students	Ratio	Dependent
2	Total	Ratio	IV	DORF	reaching		
3	Total	Ratio	IV	DORF	35 words, 45 words, and 60		
RQ1 **25pts** 4	1 2	Ratio	IV	DORF	words per year in a classroom for each **RQ**		
5	1 2	Ratio	IV	DORF			
6	1 2	Ratio	IV	DORF			
7	a=0,b=2,c-f=1	Ratio	IV	DORF			
8	a=0, b=1,c=2	Ratio	IV	DORF			
	a=0,b=1,c=2	Ratio	IV	DORF			

9	d=3,e=4						
10	a=0,b=1,c=2 d=3,e=4	Ratio	IV	DORF			
11	a=0, b- i=total 1 pt	Ratio	IV	DORF			
RQ2 **19pts** 12	a=0,b=1,c=2 d=3,e=4	Ratio	IV	DORF			
13	a=0,b=1,c=2 d=3,e=4	Ratio	IV	DORF			
14	a=0,b=1,c=2 d=3,e=4	Ratio	IV	DORF			
15	a=0, b- i=total 1 pt	Ratio	IV	DORF			
RQ3 **19 pts** 16	a=0,b=1,c=2 d=3,e=4	Ratio	IV	DORF			
17	a=0,b=1,c=2 d=3,e=4	Ratio	IV	DORF			
18	a=0,b=1,c=2 d=3,e=4	Ratio	IV	DORF			
	1 2	Ratio	IV	DORF			

19							
20	a=0, b-i=total 1 pt	Ratio	IV	DORF			
RQ4 **84 pts** 4-21	Total of Item 21	Ratio	IV	DORF			
RQ5	Total from each RQ 1-4	Ratio	IV	DORF			