READING BEYOND THE DATA:

AN EXAMINATION OF TEACHERS' DATA USE DURING TIER 1 READING

INSTRUCTION IN THE INTERMEDIATE GRADES

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Austen S. Hecker, B.S., M.Ed.

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University of Virginia
School of Education and Human Development Registrar
Office of Admissions and Student Affairs

Ehd-registrar@virginia.edu
Ridley Hall 102D
417 Emmet Street
Charlottesville, VA 22903

Capstone Approval Form

Student Full Name: Hecker, Austen

Department Name:

Degree Program: Curriculum & Instruction (EDD)

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Approved Title of Doctoral Capstone:

Reading Beyond the Data: An Examination of Teachers' Data Use During Tier 1 Reading Instruction in the Intermediate Grades

	Name	Department/University	Signature
Chair	Tisha Hayes	CISE/EHD/UVA	*Tisha Hayes* (DocuSigned by) A49CFA0775684D7...
Co-Chair (if applicable)			
Committee Member	Julie Cohen	CISE/EHD/UVA	*Julie Cohen* (DocuSigned by) 1EEC89B9E2BA4C2...
Committee Member	Jennifer Pease	CISE/EHD/UVA	*Jennifer Pease* (DocuSigned by) 4E91A72AAB4D43B...
Committee Member			
Committee Member			
Committee Member			
Committee Member			
Student	Austen Hecker		*Austen Hecker* (DocuSigned by) 4ED3317E4C234E5...

Abstract

Flat trends in national assessment data indicate that many students in the intermediate grades are not making adequate progress in reading (National Center for Education Statistics, 2022). Designing and differentiating reading instruction to better meet the diverse needs of students in grades 3-5 requires knowledge of content, pedagogy, and especially of the students themselves. Teachers, therefore, use data to gain insight into students' literacy skills and needs. However, the process of translating data into practice is complex. Data-based decision making (DBDM) involves the collection, interpretation, and translation of data into instructional practice, so that all students receive equitable access to grade-level expectations for learning. While teachers continuously make decisions during the design and delivery of instruction, the ways in which teachers employ data to inform their decision making vary. At a suburban charter school in South Carolina, school leaders identified this variance in data use across third, fourth, and fifth grade classrooms as a source of inconsistencies in student performance and growth from year to year. This qualitative case study sought to address this problem of practice by examining how teachers at the charter school used data while planning and delivering reading instruction in grades 3-5. Data collection included the IES Teacher Data Use Survey, structured think-alouds on student reading data, observations of literacy instruction, and follow-up interviews. Findings from this study informed recommendations for school leaders regarding how to support teachers' data use during Tier 1 reading instruction.

Keywords: reading, literacy, data use, data-based decision making (DBDM), Tier 1, instruction

Dedication

This dissertation is dedicated to my daughter, Esperanza Grace, who is proof that with time,

dedication, and prayer, all things are possible.

Acknowledgements

When I started this journey in 2019, I was a different person, and in many ways, the world was a different place. My husband and I were living and teaching in a rural community in Virginia, and after meeting Dr. LaTisha Hayes during a one-day visit to the University of Virginia, I determined that I wanted to learn from her in this doctoral program. I had no idea how little I knew back then—about how children learn to read, about the process of pursuing a doctorate in education, about the coming pandemic, and ultimately, about myself. This dissertation is not my own in so many ways, and I owe a debt of gratitude that could consume more than the five chapters contained within this work, but I will try to be brief.

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Chapter 1: Introduction

Data from the National Assessment of Educational Progress (NAEP) reveals that reading

scores at grades 4 and 8 have declined since 2018 (National Center for Education Statistics,

2022). The average reading score at fourth grade was lower than all previous assessment years

going back to 2005, with scores comparable to the initial NAEP reading scores in 1992. The

decline in scores occurred across all regions of the United States. While the Covid-19 pandemic

interrupted traditional schooling for most students, NAEP reading data reveals flat trends in

reading achievement prior to the 3-point decline from 2019 to 2022 (National Center for

Education Statistics, 2022). Greater declines were reported across most subgroups of culturally

and linguistically diverse students including students of color. This data necessitates further

examination of reading instruction and equitable instructional practices in literacy.

Teachers' data use plays a critical role in the design, delivery, and differentiation of Tier 1

reading instruction (Harlacher et al., 2015). Tier 1 reading instruction refers to the literacy

teaching and support provided to all students within a classroom. Assessment data offers a means

of identifying students' literacy needs, determining the appropriate instructional response, and

monitoring student learning following instruction. In order to effectively employ assessment data

to accomplish these objectives, teachers must be data literate or possess the requisite skills,

dispositions, and knowledge for data use (Mandinach & Gummer, 2016).

Core Reading Instruction in Grades 3-5: The Importance of Data Use

In response to the reauthorization of the *Elementary and Secondary Education Act* (ESEA),

the U.S. Department of Education's Policy and Program Studies Service sponsored the national

Study of Education Data Systems and Decision-making (Means et al., 2010). This study

examined the implementation of student data systems and the broader set of practices regarding teachers' use of data. The report from the national Study of Education Data Systems and Decision-Making highlights the importance of using data to inform instructional decision-making. However, Means et al. (2010) report that within districts considered leaders in data-driven decision-making, practitioners most frequently reported using data to develop goals for school improvement or curriculum planning, with very few examples of teachers using data to determine aspects of their teaching.

Effective data use requires certain competencies and beliefs on the part of the educator (Mandinach & Gummer, 2016). To improve the use of data to drive instructional practice, the broader system must value and prioritize the attributes of data literate practitioners (O'Conner & Freeman, 2012). Within reading instruction, this entails building practitioners' knowledge of literacy assessment and leveraging resources to align with research on evidence-based literacy instruction.

Defining Data Use within Tier 1 Reading Instruction

Within the present investigation, data refers broadly to information about students. This information could be quantitative or qualitative. Data can be gleaned from a variety of sources including formal assessment measures and informal observations. The DOE Office of Planning, Evaluation and Policy Development Policy and Program Studies Service defines data-informed decision-making as follows:

In an education context, data-informed decision-making is the analysis and use of student data and information concerning education resources and processes to inform planning, resource allocation, student placement, and curriculum and instruction. The practice entails

regular data collection and ongoing implementation of an improvement process (Gallagher et al., 2008, p. 2).

This definition underscores the significant role that data should play in decision-making at multiple levels within the school system. While teachers are responsible for using data in the design and delivery of reading instruction, multiple stakeholders are involved in resource allocation, student placement, and the selection of curriculum materials. Thus, key elements of data-informed decision-making are defined, in part, by context. In other words, teachers' data-based decision making (DBDM) is often constrained or limited by the decision-making of district and school-level leadership. Teachers may be required to implement a certain curriculum or their ability to identify certain students for intervention may be limited by an assessment selected by the district.

In 2020, the U.S. Department of Education funded the publication of a guide to essential practices for intensifying literacy instruction (St. Martin et al., 2020). The authors describe evidence-based practices for effective reading instruction, including knowledge and use of a learning progression for developing readers, ongoing DBDM, and adaptations to intensify intervention based on student data. In defining DBDM, the authors explain the need for teachers of reading to understand the distinct purposes for different types of assessment data including universal screeners, progress monitoring tools, and diagnostic assessments. In addition to understanding the purpose for each assessment, St. Martin et al. (2020) underscore the need for teachers to translate assessment data into instructional decision-making to better meet the needs of all learners within their classrooms.

The most recent reauthorization of the ESEA was the Every Student Succeeds Act (ESSA) which replaced the No Child Left Behind (NCLB) Act in 2015. ESSA emphasizes the use of data as a part of a multi-tiered system of support (MTSS; Bailey et al., 2020). MTSS is defined as "a comprehensive continuum of evidence-based, systemic practices to support a rapid response to students' needs, with regular observation to facilitate data-based instructional decision-making" (Every Student Succeeds Act, 2015, Sec 8101(33)) and encompasses both behavioral and academic supports. A multi-tiered system for academic support is often operationalized in schools as a response to intervention (RTI) framework.

An effective tiered system of support is predicated upon the health of Tier 1, or core, instruction. All students receive Tier 1 instruction, and the provision of effective Tier 1 instruction should be sufficient for meeting the instructional needs for the majority of students (Harlacher et al., 2015). To design and differentiate instruction to meet the needs of most students, Fuchs et al. (2012) describe the roles and responsibilities of the teacher as including the following: implementing a Tier 1 program, establishing and maintaining classroom routines, differentiating instruction, providing accommodations that allow students to access the curriculum, and problem-solving strategies for student behavior and motivation. Meeting these demands requires data use, insofar as teachers must know their students in order to scaffold instruction, establish relevant routines, and differentiate effectively. Universal screening ensures students are placed within an appropriate tier of support, so that resources are allocated effectively (Fuchs et al., 2012). Data from other forms of assessment, such as formative checks for understanding, can help guide pacing and differentiation. An ongoing system for collecting

and interpreting assessment data is critical to ensuring and maintaining the quality and effectiveness of Tier 1 instruction (Hamilton et al., 2009).

Despite the widespread adoption of the MTSS framework, NAEP data reveals that thirty-seven percent of fourth graders performed below NAEP Basic in reading, indicating performance below the NAEP benchmarks for grade-level proficiency (National Center for Education Statistics, 2022). Much higher percentages of students performed below NAEP Basic within culturally and linguistically diverse subgroups. Whereas Tier 1 reading instruction represents the first line of defense in preventing reading difficulties, it is imperative to explore the ways in which data can be utilized to improve the quality and equity of Tier 1 instruction. Within the current investigation, quality refers to the ability of the Tier 1 program to meet students' literacy needs, and equity refers to the responsiveness of instruction to social, cultural, and linguistic diversity (Piazza et al., 2015).

Challenges to Data Use in Reading Instruction for Grades 3-5

According to the Institute of Education Sciences (IES) Practice Guide, teachers and schools should develop and implement a systematic process for data use as a means of improving student learning (Hamilton et al., 2009). Despite the recommendations of the IES Practice Guide, the use of data within schools has largely focused on systems for organizing and improving standardized test scores as a result of accountability concerns, rather than using data to diagnose areas in which teaching could be improved (Means et al., 2010). In their paper synthesizing the findings of a research study from the RAND Corporation, Marsh et al. (2006) conclude that across research sites, "achievement test scores clearly receive[d] the most systematic attention" (p. 4). Evidence demonstrates that teachers report improved use of assessment data when the purpose

for the data is informative rather than evaluative (Curry et al., 2016). It is, therefore, imperative to review the factors that can encourage data use as a means of informing, rather than evaluating reading instructional practice.

In addition to the focus on accountability, teachers' data use within literacy instruction is also limited by contextual factors as well as the teachers' belief systems and background knowledge concerning data use (Bailey et al., 2020). In order to accurately identify students' literacy needs and appropriately address those needs through evidence-based instructional practices, teachers must have access to data, knowledge and support for its interpretation, and resources to facilitate the translation of data into practice (Bailey et al., 2020). These challenges to data use are especially apparent within grades 3-5 as students transition from learning to read to reading to learn (Chall, 1983).

Once students reach grade 3, the focus of literacy instruction shifts to reading comprehension. Unlike the component skills involved in fluent reading, comprehending text is not comprised of a set of discrete skills or strategies that can be mastered and applied across contexts (Oakhill et al., 2015). The RAND study group defines reading comprehension as "the process of simultaneously extracting and constructing meaning through interaction and involvement with written language," (Snow, 2002, p. xiii). Interacting with text to construct meaning is a complex process, and teaching students how to actively engage in that process across a variety of text genres requires an in-depth understanding of students' background knowledge and literacy needs (Oakhill et al., 2015). This necessitates data collection and analysis as a means of learning about students' existing knowledge and literacy needs.

The Context: Data Use within Tier 1 Reading Instruction in South Carolina

National concerns regarding the quality and equity of Tier 1 reading instruction are echoed

at the state-level in South Carolina. In 2011, the South Carolina Department of Education and the

South Carolina Literacy Panel identified four major literacy challenges that affect student

reading achievement, including: (a) low achievement scores in reading and writing; (b) literacy

achievement gaps between demographic subgroups; (c) summer learning loss in literacy; and (d)

a "limited number of exemplary literacy classrooms," (SC Department of Education, 2021, p. 5).

These challenges informed the Read to Succeed legislation in 2014. In accordance with the Read

to Succeed (R2S) Act, the state created a reading plan for districts and schools with provisions

for summer reading camps, preservice and in-service educator endorsements in literacy, literacy

interventions for students at-risk of reading difficulties, and literacy coaches to support districts

with R2S requirements (SC Department of Education, 2021). The Read to Succeed Act also

requires retention of students in grade 3 if they fail the state's summative reading assessment (SC

Ready). While certain students may be exempted from this requirement, the school must provide

evidence of intervention and continued support for any students who score within the lowest

achievement range. This component of R2S was designed in response to research indicating that

once students fall behind in literacy skills within the early grades, they often fail to reach

proficiency with reading comprehension in the later grades (SC Department of Education, 2021).

Similar to student performance on the NAEP reading assessment in 2022, data from South

Carolina's summative reading assessment, SC Ready, demonstrates a decline in overall literacy

achievement. Table 1.1 depicts the percentage of students tested in South Carolina who

performed within each of the achievement levels for grades 3-5 in the spring of 2021 as well as

the change in the percentage of students who fell into the "Meets" or "Exceeds" achievement levels from the 2018-2019 school year to 2020-2021.

Table 1.1

SC Ready ELA Results for Grades 3-5, 2020-2021

Grade	Does Not Meet	Approaches	Meets	Exceeds	Meets or Exceeds	Change from 2018-2019
3	31.8	24.9	23.9	19.3	43.3	-6.4
4	32.5	21.4	20.3	25.7	46.1	-5.1
5	27.9	33.2	24.2	14.7	38.9	-2.1

Note: Adapted from Table 3 *South Carolina State Reading Plan and Annual Proficiency Update* by SCDE, 2021 (https://ed.sc.gov/data/reports/literacy/scde-literacy-reports/state-reading-plan-and-proficiency/2021-reading-plan-and-proficiency-report/).

As illustrated by Table 1.1, there was a significant decline in the percentage of students who passed the SC Ready English language arts (ELA) assessment across grades 3-5 in 2021 as compared to 2019, with the greatest decline in grade 3. Student performance on the 2021 SC Ready ELA assessment also reveals persistent achievement gaps between demographic subgroups; however, the state's department of education notes that results by subgroup should not be compared to the results of other years "due to the testing limitations as a result of the pandemic" (SC Department of Education, 2021, p. 15).

As a part of South Carolina's state reading plan as outlined by the R2S Act, the Department of Education provides an annual update regarding student reading performance (SC Department

of Education, 2022). The most recent update provides data from the 2021-2022 school year. Table 1.2 depicts the percentage of students tested in South Carolina who performed within each of the achievement levels for grades 3-5 in the spring of 2022 as well as the change in the percentage of students who fell into the "Meets" or "Exceeds" achievement levels from 2021 to 2022.

Table 1.2

SC Ready ELA Results for Grades 3-5, 2021-2022

Grade	Does Not Meet	Approaches	Meets	Exceeds	Meets or Exceeds	Change from 2020-2021
3	29.0	23.0	23.6	24.4	48.0	+4.7
4	28.0	21.6	19.8	30.6	50.4	+4.3
5	22.1	29.7	27.9	20.4	48.3	+9.4

Note: Adapted from Table 3 *South Carolina State Reading Plan and Annual Proficiency Update* by SCDE, 2022 ([https://dc.statelibrary.sc.gov/bitstream/handle/10827/47534/DOE_State_ Reading_Plan_Annual_Proficiency_Update_2022-11.pdf?sequence=1&isAllowed=y](https://dc.statelibrary.sc.gov/bitstream/handle/10827/47534/DOE_State_Reading_Plan_Annual_Proficiency_Update_2022-11.pdf?sequence=1&isAllowed=y)).

The South Carolina Department of Education reports that while student performance improved from 2021 to 2022, average scores remain lower than they were pre-pandemic. Additionally, the rate of growth was much slower for students in grades 3 and 4, and the percentage of students who performed within the *Does Not Meet* range remains high. Gaps in performance between demographic subgroups persist as well.

Table 1.3 illustrates the percentage of students from various demographic subgroups who scored within the *Meets* or *Exceeds* ranges on the 2022 SC Ready ELA assessment. This data highlights the disparities in reading achievement for culturally and linguistically diverse students. While 61.7% of participating White students in the third grade passed the SC Ready ELA assessment in 2022, 29.5% of Black or African American students in the third grade scored within the passing range. These gaps in performance were consistent across grades 3-5. In order to address these gaps in reading achievement and improve overall student performance, it is imperative to support teachers in the provision of effective and equitable reading instruction that is responsive to students' literacy abilities and needs.

Table 1.3

Percentage of Students in Grades 3-5 Scoring Meets or Exceeds on SC Ready ELA Assessment

by Subgroup, 2021-2022

	Grade 3	Grade 4	Grade 5
All Students	48.0	50.4	48.3
Economically Disadvantaged	36.5	38.4	35.9
Students with Disabilities	18.8	18.2	14.6
White	61.7	64.8	63.1
Black or African American	29.5	30.7	28.2
Hispanic or Latinx	37.4	40.7	37.7
Asian	70.5	75.1	76.8
Native Hawaiian or Other Pacific Islander	51.5	44.2	48.6
Native American	41.8	36.5	51.1
Two or More Races	48.8	51.3	48.8
English Learners	35.8	33.1	29.6

Note: Adapted from Table 5 *South Carolina State Reading Plan and Annual Proficiency Update* by SCDE, 2022 (https://dc.statelibrary.sc.gov/bitstream/handle/10827/47534/DOE_State_ Reading_Plan_Annual_Proficiency_Update_2022-11.pdf?sequence=1&isAllowed=y).

While the teacher education requirements of the R2S Act offer a means of supporting evidence-based literacy instruction including the use of data to guide instructional decision-making, state policy cannot ensure the consistency and quality of teacher preparation programs and in-service professional learning opportunities. According to the law, teachers must "analyze data to inform reading instruction," and reading specialists are responsible for training teachers

in data analysis, but the details regarding what comprises literacy data remain vague (South Carolina Read to Succeed Act, 2015, Sec 59-155-110(1)). In-service teachers can complete courses designed by the SC Department of Education, or they can apply for the R2S endorsement using previously completed undergraduate or graduate coursework, so not all teachers receive the same training regarding literacy instructional practice. Additionally, teachers are given ten years to apply for the endorsement which introduces further variability in the amount of teacher training and experience. It is, therefore, up to the schools to ensure consistency by supporting teachers' knowledge and implementation of evidence-based literacy instruction.

Assessment data provides critical insight regarding the literacy needs of students. In South Carolina, student performance on the SC Ready ELA assessment reveals the need for effective and equitable reading instruction to improve overall reading achievement and close gaps in performance between demographic subgroups. This work centers on the teacher's ability to translate data into practice to support individual student needs.

Problem of Practice

Ideally, within an RTI model, 80% of students would demonstrate grade-level proficiency in response to Tier 1 reading instruction or Tier 1 (Batsche et al., 2005; Harlacher et al., 2014; Jimerson et al., 2007). However, data from the National Assessment of Educational Progress (NAEP) reveals a flat trend in reading achievement with 30-35% of students demonstrating proficiency at the fourth and eighth grade levels for the past fifteen years (National Center for Educational Statistics, 2019). It is, therefore, imperative to evaluate the efficacy of Tier 1 instruction. Prior research, however, has largely focused on effective reading intervention within Tier 2, at the expense of Tiers 1 and 3 (Baker et al., 2010). A robust model for tiered support is

dependent upon an effective system for prevention and intervention (Baker et al., 2010).

Whereas data-based decision making underpins these systems, teachers' data literacy plays a

significant role in designing, implementing, and differentiating reading instruction to meet the

needs of all learners (Al Otaiba et al., 2019).

According to South Carolina's Annual School and District Report Card System, third

through fifth grade students at Little River Charter School (LRCS)[1] demonstrated Below Average

student progress across demographic subgroups for reading in 2022. Additionally, data from the

Measure of Academic Progress (MAP) reading assessment reveals that 50% of students did not

make the anticipated growth across the intermediate grades during the 2021-2022 school year,

and 27% of students demonstrated no growth. Whereas teachers' data literacy plays a significant

role in designing, implementing, and differentiating reading instruction to meet the needs of all

learners (Al Otaiba et al., 2019), evaluating teachers' data use represents a critical first step

towards improving the quality and equity of Tier 1 literacy instruction.

Located in a suburban school district in South Carolina, LRCS is a coveted school of

choice for many families in the community. Unlike many of the schools in the surrounding

district, LRCS does not employ a standardized curriculum for any of the Tier 1 subject areas.

School leaders emphasize and promote teacher autonomy, particularly when it comes to

instructional design. However, without a standardized curriculum for reading instruction,

students receive a wide range of experiences with reading and writing, and this variability

becomes especially apparent within the intermediate grades as reading becomes a means to

learning content, rather than comprising the content itself (Fuchs & Vaughn, 2012). This

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[1] All names are pseudonyms

variability among students further necessitates the use of formal and informal assessment tools to determine how to design reading instruction that would meet the diverse needs of students in grades 3-5.

Prior research on Tier 1 instruction has largely focused on foundational literacy skills, but literacy achievement data demonstrates the need to re-examine how students are supported as they progress from learning to read to reading to learn (Barnes et al., 2019; Fuchs & Vaughn, 2012). Additionally, the intermediate grade levels are characterized by a wider range of student reading abilities, which necessitates the use of data to inform effective differentiation (Firmender et al., 2013). As a part of the school's charter, LRCS will *support academic excellence for all students*. Thus, as a means of ensuring the quality of reading instruction for all students in grades 3-5 at LRCS, this study seeks to illuminate the ways in which teachers currently interpret and utilize data to design and implement instruction. To this end, the research questions are as follows:

- How do teachers in grades 3-5 at Little River Charter School use data when designing Tier 1 reading instruction?
- How do teachers in grades 3-5 at Little River Charter School use data when delivering Tier 1 reading instruction?
- What factors do grade 3-5 teachers at Little River Charter School identify as facilitating or hindering effective data use?

Purpose of the Current Study

In South Carolina, the R2S act was "created to address literacy performance in [the] state and put in place a comprehensive system of support to ensure South Carolina's students graduate

on time with the literacy skills they need to be successful in college, careers, and citizenship"

(SC Department of Education, 2022, p. 5). While the legislation endorses teachers' data use as a

means of guiding effective instructional practice, consistent implementation of an ongoing

system for data use is ultimately left to the districts and individual schools. At LRCS, student

performance on reading growth measures affirms the variability in student literacy needs within

the intermediate grades, as well as the need for an understanding of how teachers assess and

address students' needs through Tier 1 reading instruction.

As a result of my study, I hope to support teachers' data use within grades 3-5 at LRCS.

First, I will examine how teachers interpret and translate data within the design and delivery of

reading instruction. Then, I will explore how contextual variables facilitate or hinder teachers'

use of data to inform instruction. LRCS was purposefully selected for this study following my

previous experience teaching there and my conversation with an instructional leader regarding

this problem of practice.

Conceptual Framework

The original construct for DBDM is rooted in organization and management theory

(Deming, 1986). According to early business models, data, information, and knowledge form a

continuum, in which data is transformed into action (Ackoff, 1989; Mandinach et al., 2006).

Using these business models as guides, Mandinach et al. (2006) developed and adapted a

conceptual framework for DBDM in education. Within their model, Mandinach et al. (2006)

highlight the role of the context on data use. Elements of the constructivist paradigm are implicit

within these early models. For example, Mandinach et al. (2006) posit that actionable knowledge

is created through the transaction between individual characteristics with proximal and distal

factors. Within this study, a constructivist approach underpins assumptions about how teachers make meaning from raw data.

In addition to considering the epistemological assumptions of constructivism, this study draws upon Hamilton et al.'s data use cycle (2009), Coburn and Turner's framework for data use (2011), and Mandinach and Gummer's conceptual framework for teachers' data literacy (2016). As depicted by Hamilton et al. (2009), data use is conceptualized as cyclical. As explained by Coburn and Turner (2011), teachers are influenced by other stakeholders when engaging in the data use cycle, and as described by Mandinach and Gummer (2016), more intrinsic elements also factor into teachers' decision-making. These frameworks are discussed in greater detail within the next sections. The conceptual framework which underpins this investigation combines these fundamental principles to provide a more comprehensive model of teachers' DBDM (Figure 1).

Theoretical Framework: Constructivist Learning Theory

Historically, constructivism has its roots in the work of Immanuel Kant who challenged empiricism by asserting that humans construct their own knowledge based on processing individual and social experiences (Mertens & Wilson, 2019). Constructivist learning theory is premised upon the following assertions: learning is an active process, prior knowledge influences the construction of new knowledge, and meaning making is interpretive (Narayan et al., 2013). These tenets informed several critical assumptions within the current study, including the following: DBDM is contextually embedded, DBDM is interactive and dynamic, and the teacher's experience matters. These tenets underpin the approach and design of the current study, and thus, warrant further discussion within the next sections.

DBDM is contextually embedded. Based on the constructivist paradigm, learning is conceived as a cultural exchange, in which meaning is negotiated through interaction and reflexivity (Narayan et al., 2013). When considering DBDM, the teacher is influenced by interrelated systems and stakeholders with varying degrees of proximity to the immediate environment of the teacher's classroom. To fully understand how and why decisions are made, it is, therefore, necessary to understand the individual's broader context, including school leadership, district leadership, and the influence of the surrounding community. While the current study focuses on teachers' DBDM within the classroom, hundreds of stakeholders outside of the classroom utilize student data for various purposes, and a teacher's DBDM is subject to these contextual and temporal influences. In other words, decision making at the building-, district-, and state-level often directly or indirectly affects what happens in the classroom, and it is up to the teacher to determine how these external influences manifest within instructional practice (Mandinach et al., 2006).

The interactive and dynamic nature of DBDM. According to the constructivist paradigm, learning is active and "meaning is indexed by experience," (Narayan et al., 2013, p. 169). Constructivists oppose the notion that learners passively acquire knowledge from their environment, instead the learner actively assigns meaning to experiences and engages in the learning process (Narayan et al., 2013). The constructivist classroom represents a dynamic system in which the teacher is constantly responding to variable conditions. As new information becomes available, teachers must determine what to prioritize and how to translate data into actionable knowledge (Mandinach et al., 2006). A large body of empirical evidence demonstrates the critical role that data plays within instructional design and delivery (Baker et al., 2010; Burns

et al., 2014; Hamilton et al., 2009). However, the type of data that is collected, how the data is interpreted, and the tools available for responding to student data are subject to contextual and temporal factors (Mandinach et al., 2006). All of these variables are dynamic, and consequently, teachers' DBDM evolves and changes based on the interplay of multiple systems over time.

The teacher's experience matters. As extolled by constructivists, when considering the process of learning, the role of previous experience cannot be understated. Teachers' experiences within and outside of the classroom shape their beliefs about data and how data gets translated into practice (Mandinach, 2012). Teachers' beliefs and dispositions about data use are considered critical factors to data literacy (Mandinach & Gummer, 2016). Evidence demonstrates that teachers' beliefs influence their interpretation and implementation of DBDM (Barnes et al., 2019). Therefore, it is critical to consider teachers' experiences and beliefs about data use as a means of understanding how teachers translate data into action.

How constructivism informs the current study. Several conceptual models for data literacy and data use provide a comprehensive means of considering the variables within the current study, and constructivist assumptions underpin these conceptual frameworks (Coburn & Turner, 2011; Mandinach, 2012). Constructivism is often misperceived as a theory of teaching, as opposed to a theory of learning (Narayan et al., 2013). For example, constructivism is frequently translated into notions about the role of the educator within a constructivist classroom, but "translating theory to practice is difficult and imprecise" (Narayan et al., 2013, p. 173), and these notions lack relevance within the current investigation. The current objective is to make explicit the meaning-making process involved within teachers' DBDM during Tier 1 literacy instruction. This is significant to note here because the teachers are being examined as learners.

Given the subjective nature of data use and of learning in general, triangulating qualitative data from interviews, observations, and survey responses provides a more comprehensive means of exploring how teachers apply these varied bodies of knowledge during instructional design and delivery. The constructivist paradigm endorses immersion within the study context as a means of "uncovering hidden meanings and complexities" (Mertens & Wilson, 2019, p. 135). The use of qualitative methods and a multiple case study design, therefore, aligns with the theoretical framework of constructivism.

Conceptual Model for Data Use

The conceptual model for data use employed within this study combines elements from Hamilton et al.'s data use cycle (2009), Coburn and Turner's framework for data use (2011) and Mandinach and Gummer's conceptual framework for teachers' data literacy (2016). By integrating elements of these three models into a single framework, the relationship between factors becomes just as significant as the factors themselves. Whereas Hamilton et al. (2009) illustrate the cyclical nature of data collection, interpretation, and application to practice, Coburn and Turner (2011) expand the model to account for the full range of data users from a systems perspective. Meanwhile, in their framework for teachers' data literacy, Mandinach and Gummer (2016) focus their attention on the individual and on the bodies of knowledge that teachers integrate when interpreting and applying assessment data. Figure 1 illustrates a combined model for data use which incorporates elements of all three existing frameworks. This combined framework is intended to demonstrate the centrality of students, the cyclical nature of data use, the requisite knowledge and access to data, as well as the contextual variables that influence how data is utilized within instruction.

Figure 1

A Combined Framework for Data Use in Literacy Instruction

In many ways, the combined model in Figure 1 offers a visual representation of how constructivism informs and underpins data use. The combined model attempts to capture the complex interactions between the teacher, the students, and the environment, insofar as DBDM draws upon multiple bodies of knowledge, and attention to these variables guides the decision-making process. Several key principles informed the design of this combined model for data use in literacy instruction and merit further consideration, including the significant role assigned to knowledge of the students, the cyclical and interactive nature of data use, the contribution of contextual variables, and the need for shared knowledge, access to resources, and dispositions for data use.

Knowledge of students is central to data use. As illustrated in Figure 1, knowledge of students is at the center of the combined framework for data use in literacy instruction. In their conceptual framework for teachers' data literacy, Mandinach and Gummer (2016) include "knowledge of learners and their characteristics" as one of the seven key knowledge areas that teachers must possess in order to effectively use data for teaching (p. 369). The knowledge areas identified by Mandinach and Gummer in their conceptual framework are adapted from Shulman's conception of the forms of knowledge essential to quality teaching (Shulman, 1987). Mandinach and Gummer (2016) illustrate each of these knowledge areas as inputs integrated in equal measure into the data use framework. While these bodies of knowledge play a part in teachers' DBDM, Figure 1 highlights the critical role that knowledge of students plays within the cycle of data use. Knowledge of students informs each component within the data use cycle. For example, knowing a multilingual learner's linguistic background may impact which literacy assessment tools are utilized, how the results get interpreted, and how that information is operationalized in practice. If data use is the wheel, knowledge of students comprises the axle upon which the wheel turns.

In addition to placing knowledge of students at the center of the cycle for data use, Figure 1 depicts the reciprocal relationship between each component of the data use cycle and knowledge of students. The arrows pointing in both directions are intended to illustrate the way in which data informs knowledge of students, and knowledge of students simultaneously informs the data use process. Knowledge of students plays a critical role in the selection of tools for assessment, the interpretation of qualitative and quantitative assessment data, and the translation of data into practice.

Data use is cyclical. According to the Institute of Education Sciences (IES) Practice Guide, teachers and schools should employ a systematic process for data use in order to improve student learning. The authors developed a model for this data use cycle (Hamilton et al., 2009). The cyclical design is intentional insofar as data use is ongoing, and the steps are not indicative of a single starting point. In other words, teachers can engage at any point in the data use cycle based on available information and their desired purpose. The three steps or components of Hamilton et al.'s cycle for data use include:

- The "collect[ion] and [preparation] of data about student learning from a variety of relevant sources, including annual, interim, and classroom assessment data" (Hamilton et al., 2009, p. 9).

- The analysis of data and the development of hypotheses regarding the factors that contributed to student performance as well as actions that can be taken to meet student needs (Hamilton et al., 2009).

- The implementation of changes in instructional practice as a means of testing the previously developed hypotheses (Hamilton et al., 2009).

Figure 1 summarizes these steps as data collection, data interpretation, and data application. This aligns with research from Dunn et al. (2013) demonstrating that teachers themselves distinguish between interpreting and applying assessment data to inform instruction. Dunn et al. (2013) define interpreting data as "teachers' beliefs in their abilities to successfully analyze and interpret student data," whereas data application refers to "teachers' beliefs in their abilities to successfully connect or apply their interpretation of data findings to classroom instruction" (pp. 94-95). The distinction between these steps is significant, in that teachers may be able to interpret

data with accuracy and specificity, yet they may still struggle to translate this information into instructional practice (Demchak & Sutter, 2019; Mandinach, 2012). This necessitates the use of observation as well as reflective dialogue to examine how teachers engage in each component of the data use cycle.

While Figure 1 summarizes the steps within the data use cycle with succinct titles, each step involves its own process drawing upon stakeholder knowledge and structural supports. For example, the data collection step involves selecting or preparing appropriate assessment tools based on the purpose for the assessment (e.g., screening, progress monitoring, diagnostic, mastery), implementing the tool, collecting data, and preparing the data for analysis. Similarly, data interpretation and application require drawing from multiple bodies of knowledge in order to engage in the decision-making process. Teachers' data literacy plays a critical role within each step of this data use cycle. Data literacy refers to the teacher's ability to integrate disparate bodies of knowledge regarding their students, the content, the pedagogy, the context, and the assessment data into instructional changes to improve student learning (Mandinach & Gummer, 2016). Teachers continuously engage in this cycle for data use with varying degrees of success. Each time formative assessments are employed or student responses are elicited, teachers receive the opportunity to adapt to this new knowledge of students. However, data literacy varies from teacher to teacher, and contextual variables influence decision-making (Castillo et al., 2018).

The context matters. As conceptualized by constructivists, the classroom comprises a dynamic and complex system of interdependent parts (Narayan et al., 2013). The learning environment, the quality of the curriculum, and the needs of individual students all influence the teacher's decision making. The combined framework for data use illustrated in Figure 1 extends

this premise insofar as the culture within the school and division plays an integral part in teachers' DBDM (Castillo et al., 2016; Keuning et al., 2017). Whereas data is open to interpretation, Mandinach (2012) contends that data is defined within its context, and in order to apply DBDM in the classroom, teachers must be supported by leadership with shared values and priorities.

Mandinach and colleagues (2008) developed a conceptual model for DBDM in which data evolves along a continuum from its raw state into information and eventually into knowledge. Their model frames the process within a series of concentric circles representing the classroom, the school, and the division (Mandinach et al., 2008). However, the authors contend that "many variables at the federal, state, and local levels can and will impact local decisions" (Mandinach et al., 2008, p. 26). Similarly, the combined model for data use in literacy instruction depicted in Figure 1 positions the data use cycle within the context of the classroom, the school, and the district. While social and political variables at the state and federal level impact how data is utilized (e.g., federal legislation has informed the use of data for accountability purposes), the focus of the current study is how data is conceptualized locally.

Stakeholders at different levels of the school hierarchy will pose different questions and may need different types of data (Mandinach et al., 2008). Within most systems, top-down decisions and initiatives occur frequently, and teachers are usually charged with the collection of the data and its use for guiding instruction and differentiation (Mandinach et al., 2008). Mandinach and colleagues (2008) contend that teachers' proximity to students increases the instructional validity of their decision-making; however, the quality of a teacher's instructional

decision-making (i.e., the ability of instruction to meet students' literacy needs) depends on their knowledge of individual students and their ability to translate raw data into actionable decisions.

The process of data use is interactive. Raw data is given meaning via its interpretation into action. As previously established, this interpretation process is complex, multidimensional, and contextually embedded. While the teacher generally has the closest proximity to the data, their use and interpretation of data is dependent upon the interaction between the stakeholders at various levels of the system in which data is being collected. For example, division-wide leadership may introduce a quarterly assessment to be utilized across the division's elementary schools to monitor student progress in reading. School-level leadership is then responsible for creating a testing schedule and ensuring that staff understand how to implement the assessment tool. Additionally, school administrators decide how the resulting data will be employed at the building-level (e.g., initiatives for instruction or support for a specific grade-level team). Teachers are charged with administering the assessment, collecting the data, and using the data to identify and intervene with specific students who need additional support. The interaction between stakeholders at each level of the system ultimately determines whether or not data is effectively interpreted and put into action.

In their model for data use, Coburn and Turner contend that interpreting data into action is a socially embedded process dependent on the interaction between individuals at varying levels of the organizational context. In this way, Coburn and Turner's framework aligns with the constructivist paradigm. Coburn and Turner (2011) define the process of data use as what happens when "individuals interact with assessments, test scores, and other forms of data in the course of their ongoing work" (p. 175). In other words, data is given meaning through an

interpretative process which is dependent on the nature of the relationship between individual

stakeholders and the data itself.

While Coburn and Turner's conceptual model illustrates the process of data use, their

framework also underscores the significance of data literacy. In order for the individual

stakeholders to engage meaningfully with assessment data, they each must possess an

understanding of the assessment tool, the construct or skill being measured, and the implications

of the assessment results (Coburn & Turner, 2011). Data literacy refers to an individual's ability

to integrate these disparate bodies of knowledge regarding the students, the content, the

pedagogy, the context, and the assessment into instructional changes to improve student learning

(Mandinach & Gummer, 2016). Data literacy underpins the combined framework for data use

depicted in Figure 1, insofar as the stakeholders must be data literate in order for the data use

cycle to result in productive modifications to instructional practice.

Leaders and teachers must share knowledge, resources, and dispositions for data use.

In Figure 1, across the concentric circles depicting the contextual systems of data use, there are

several dimensions that are shared by stakeholders at each level. These dimensions include:

- Knowledge of the reading science or the research regarding how students develop as

  proficient readers and writers;

- Knowledge of evidence-based literacy practices (i.e., pedagogy);

- Access to resources and materials for instruction and assessment; and

- Dispositions for data use.

Mandinach and Gummer (2016) used Shulman's forms of knowledge as inputs within their

conceptual model for teachers' data literacy, and while the conceptual model presented here

offers a broader depiction for data use, several of the bodies of knowledge overlap and inform how data is interpreted and applied across systems.

Recent research affirms that learning to read is complex, and "learning to teach reading requires extensive knowledge and skills across the components of word recognition, language comprehension, spelling, and writing" (Moats, 2020, p. 6). Teachers are responsible for applying these bodies of knowledge when "interpreting errors, giving corrective feedback, selecting examples to illustrate concepts, explaining new ideas in several ways, and connecting word recognition instruction to meaningful reading and writing" (Moats, 2020, p. 6). While teachers must apply this knowledge within the classroom, school and division leadership are responsible for creating and sustaining supportive structures (e.g., purchasing the Tier 1 curriculum and setting the schedule) to facilitate teachers' knowledge of reading science and application of evidence-based literacy practices (O'Connor & Freeman, 2012). In other words, stakeholders at the division and school levels play a critical role in creating and sustaining the supportive structures for evidence-based literacy instruction to occur within the classroom.

Just as school and division leaders play a critical role in facilitating teachers' knowledge of reading science, in order to for DBDM to drive instruction across a system, all stakeholders must prioritize the use of data (Van Geel et al., 2017). Evidence demonstrates that teachers' beliefs about assessment data and its purpose frame their interpretation and use of data within instruction (Barnes et al., 2019). Affective factors encompass these beliefs and dispositions. Existing research affirms the role of affective factors including self-efficacy, beliefs about the purpose of assessment, and perceptions of support influence how teachers interpret and apply data (Barnes et al., 2019; Coombs et al., 2018; Mandinach & Gummer, 2016). Thus, in order to

effectively engage in the data use cycle, teachers and leaders must cultivate a data-driven culture within schools and districts (Keuning et al., 2017).

In addition to sharing knowledge and dispositions for data use, teachers and stakeholders at the school and division levels must share access to resources and materials to facilitate instructional decision-making. In their analysis of teacher think-aloud responses concerning graphs of CBM (curriculum-based measure) data, Espin et al. (2017) conclude that teacher expertise is determined, in part, by access to relevant data. Often assessment data is aggregated using a digital mechanism, and in order to make effective decisions, teachers and stakeholders require access to this data system, as well as knowledge of how to identify the necessary information from within the system to determine the nature of students' literacy needs.

How the Conceptual Model Applies to LRCS

As a public charter school, stakeholders at LRCS include a board of directors, grade-level leadership teams, and the school board for the local division. These stakeholders mandate certain assessments to monitor progress, and as a condition of the charter, 50% of LRCS students must demonstrate growth each year on the Measures of Academic Progress (MAP) assessment in reading and math. However, recent data demonstrates that many students are not showing growth in reading. As a charter school, LRCS values teacher autonomy, and subsequently, the school lacks a Tier 1 curriculum for reading. Without a common curriculum, it is necessary to ascertain what data sources teachers utilize and how that data is translated into practice prior to exploring potential recommendations for improving literacy instructional practice. To this end, the research questions for the current study are as follows:

- How do teachers in grades 3-5 at Little River Charter School use data when designing Tier 1 reading instruction?

- How do teachers in grades 3-5 at Little River Charter School use data when delivering Tier 1 reading instruction?

- What factors do grade 3-5 teachers at Little River Charter School identify as facilitating or hindering effective data use?

Definition of Terms

This section contains a list of key terms used throughout the context of this capstone.

- **Achievement Tests:** Tests designed to measure learning outcomes following instruction.

- **Affective Factors:** The beliefs, dispositions, and perceptions related to data use.

- **Constructivist Learning Theory:** A theory of learning premised on the following assertions: learning is an active process, prior knowledge influences the construction of new knowledge, and meaning making is interpretive (Narayan et al., 2013).

- **Core Instruction:** Classroom instruction provided to all students; also referred to Tier 1.

- **Curriculum-Based Measures (CBMs):** A standardized measurement tool that assesses a broad sampling of skills taught over the course of an entire school year (Berkeley & Riccomini, 2017). CBMs are frequently used to measure student progress.

- **Data:** Information that is systematically collected and organized to promote understanding of a selected construct. For the purpose of this study, data can refer to both qualitative and quantitative information that is collected and utilized by teachers or other stakeholders.

- **Data-Based Decision Making (DBDM):** The "systematic collection, analysis, examination, and interpretation of data to inform practice and policy in educational settings," (Mandinach, 2012, p. 71). For the purpose of this study, data-based decision making (DBDM) is used interchangeably with data use.

- **Data-Driven Instruction (DDI):** The "strategy of using assessment and other data to inform teachers' instruction," (Gleason et al., 2019). The terms data-based decision making, data use, and data-driven instruction all refer to the same process. While I utilize the terms data use and data-based decision making, several research studies use DDI.

- **Data Literacy:** The requisite skills, dispositions, and knowledge for effective data use (Mandinach & Gummer, 2016).

- **Data Use:** The process of collecting, interpreting, and applying data for a specific purpose. For the purpose of this study, data use is used interchangeably with data-based decision making (DBDM).

- **Diagnostic Assessment:** Measures designed to provide in-depth information regarding a student's understanding and skills within a certain area as a means of informing instruction or intervention.

- **Differentiation:** Adaptations to instruction based on the following precepts: people differ as learners, these differences matter, and teaching is most effective when these differences inform instructional decision-making (Tomlinson & Imbeau, 2013).

- **Explicit Instruction:** Instruction that is direct, precise, and unambiguous. Explicit instruction follows a gradual release model in which responsibility for demonstrating a skill or concept is systematically transitioned from the teacher to the student. Explicit

instruction involves modeling and guided practice prior to independent practice (Archer & Hughes, 2011).

- **Multi-Tiered Systems of Support (MTSS):** A framework that many schools employ as a means of providing targeted support for students. MTSS is intended to provide a comprehensive continuum of support for students, addressing both academic and non-academic needs.

- **Progress Monitoring:** A type of assessment used to measure student growth in response to instruction or intervention. Progress monitoring tools are designed to be sensitive to change over short periods of time with multiple equivalent probes to compare student progress.

- **Reading Science:** Research regarding the requisite skills and knowledge involved in literacy development and reading comprehension.

- **Response to Intervention (RTI):** A structured approach to MTSS, in which universal screening is employed to identify students at-risk within a certain academic discipline. RTI involves multiple tiers of support depending on the severity of student need as evidenced by assessment data. Student progress in response to instruction is systematically assessed using progress monitoring measures.

- **Scaffolding:** Temporary adjustments or modifications to instruction so that the lesson objectives are made accessible to all learners. As students reach mastery, scaffolds are systematically removed.

- **Screening:** Assessment measures designed to identify students who are at-risk of later reading difficulty.

- **Systematic Instruction:** Teaching that is logically sequential in its progression of skills from least to most complex (Archer & Hughes, 2011).

- **Tier 1:** Classroom instruction provided to all students; also referred to as Tier 1 Instruction.

Chapter Summary

In this chapter, I contextualized the problem of practice at the national and state level by citing achievement data illustrating the need for more equitable and effective Tier 1 reading instruction in grades 3-5. I also explained the critical role that data plays in the design and delivery of effective Tier 1 reading instruction. In discussing the local problem of practice, I described the lack of clarity and consistency regarding how teachers employ data to inform Tier 1 reading instruction in grades 3-5 at LRCS. To explore this problem of practice, I situated my capstone project within the constructivist paradigm. I applied this theoretical lens as I combined conceptual models into a comprehensive framework for teachers' data use in literacy instruction. Finally, I concluded this chapter with a list of key terms and their definitions, as a means of establishing clarity for the reader. In the next chapter, I will review the extant literature related to the problem of practice.

Chapter 2: Literature Review

The reauthorization of the Individuals with Disabilities Education Improvement Act (IDEA) in 2004 prompted the widespread adoption of a new approach for identifying and supporting students with learning disabilities. This approach involved measuring a student's response to evidence-based instruction or response to intervention (RTI) within a multilevel system of support (Fuchs et al., 2012). RTI is currently employed as a school-wide system for prevention and intervention of academic difficulties.

Whereas an effective system for RTI is predicated upon a robust system for assessment as well as the provision of evidence-based instruction, teachers play a critical role in the requisite interpretation and translation of assessment data into instructional practice (Baker et al., 2010; Spear-Swerling & Cheesman, 2012). However, evidence reveals variability in teachers' approaches to assessment and uncertainty regarding how to design instruction in response to student data (Coombs et al., 2018; Means et al., 2010). This is a current concern within grades 3-5 at Little River Charter School (LRCS). While the field suggests that effective Tier 1 instruction should meet the needs of 80% of students (Batsche et al., 2005; Harlacher et al., 2014; Jimerson et al., 2007), student performance on the Measure of Academic Progress (MAP) assessment in grades 3-5 reveals that nearly a third of the students did not demonstrate growth in reading during the 2021-2022 school year. Thus, it is necessary to examine potential reasons for this lack of growth in response to Tier 1 instruction, as a means of informing future endeavors to improve data-driven Tier 1 reading instruction at LRCS.

In order to build teachers' capacity for data-based decision making (DBDM) within Tier 1 reading instruction, it is imperative to further explain the role and importance of DBDM in Tier 1

(Burns et al., 2014). Therefore, prior to exploring LRCS teachers' perspectives and experiences, this study will examine the conditions and attributes which characterize effective DBDM within Tier 1 literacy instruction. To this end, the following sections provide a review of the extant literature regarding the types of data that may guide DBDM in Tier 1, the elements of Tier 1 literacy instruction that are subject to DBDM, the underlying skills which comprise DBDM, and the factors that facilitate or hinder DBDM. Tenets from the constructivist paradigm underpin each of these sections, insofar as DBDM is dependent upon the interaction between the teacher, their context, and the teacher's prior knowledge or experience with data use. The extant literature is, thus, organized in a way that highlights the role of the practitioner, the influence of context, and the component skills or areas of knowledge that inform DBDM.

Defining DBDM

In order to effectively select, implement, differentiate, and evaluate Tier 1 instruction, educators must possess knowledge of data interpretation as well as application (Dunn et al., 2013). In her examination of DBDM as an essential component of instruction, Mandinach defines DBDM as the "systematic collection, analysis, examination, and interpretation of data to inform practice and policy in educational settings" (2012, p. 71). Mandinach (2012) describes the variability in how assessment data is used and interpreted. Whereas data is open to interpretation, Mandinach contends that data is defined, in part, by its context, and in order to apply DBDM in the classroom, teachers must be data literate or possess the ability to translate data into action. According to Mandinach, this entails a multi-step process involving (1) identifying the existence of a problem, (2) verifying the source of the problem, (3) generating potential problem-solving

strategies, and (4) implementing these problem-solving strategies and monitoring student response or outcome.

DBDM relies upon a comprehensive system for assessment, including universal screening, diagnostic assessments, progress monitoring, and outcome measures. Universal screening assessments are administered to all students as a means of identifying students at-risk of reading difficulties. Diagnostic assessments are measures designed to provide in-depth information regarding a student's understanding and skills within a certain area as a means of informing instruction or intervention. Generally diagnostic assessments are administered to students identified as at-risk by the screener. Progress monitoring tools are designed to be sensitive to change over short periods of time with multiple equivalent probes to compare student progress in response to instruction or intervention. Due to their comprehensive scope, CBMs are frequently used to monitor student progress. While all of these assessments provide critical information for planning instruction aligned across tiers of support within an RTI framework, universal screeners and CBMs provide the most directly relevant data for Tier 1, insofar as screeners and CBMs assess the broader scope of the Tier 1 curriculum, and all students receive instruction in Tier 1 (Berkeley & Riccomini, 2017; Burns et al., 2014; Stecker et al., 2005). As previously established, educators need a firm grasp of how to interpret assessment data and translate data into practice in order to improve the effectiveness of Tier 1 reading instruction (Dunn et al., 2013). This involves knowledge of various forms of assessment and their purpose as well as their utility for informing DBDM.

Data Sources for Tier 1 Literacy Instruction

The Center on Response to Intervention (2015) defines Tier 1 instruction as the "district curriculum and instructional practices that are evidence-based, aligned with state or district standards, and incorporate differentiated instruction" (Multi-Level Prevention System section). Despite the goal of RTI to improve student learning and performance through early identification and the provision of tiered quality instruction, evidence demonstrates widespread variability in its implementation (Fuchs & Fuchs, 2017; Oslund et al., 2021). Whereas data in an RTI system is commonly used to guide the identification of students for interventions at Tiers 2 and 3, far less attention has been given to the health of reading instruction within Tier 1 (Harlacher et al., 2015).

DBDM offers a means of ensuring that Tier 1 instruction is responsive to students' literacy needs (Burns et al., 2014). By using data to guide the design and delivery of instruction within Tier 1, fewer students may be falsely identified as needing Tier 2 support due to insufficient support within Tier 1 (Hill et al., 2012). Prior to exploring the potential decisions that teachers may make during the design and delivery of Tier 1 instruction, it is imperative to identify the data sources that teachers may utilize to guide their decision-making.

Effective DBDM involves the simultaneous consideration of multiple data sources when designing and differentiating instruction (Mandinach & Gummer, 2016; Pashler et al., 2007). Broadly these data sources can be categorized as formal assessments and informal checks for understanding (Pashler et al., 2007). Formal assessments comprise the tools that teachers use to evaluate student knowledge in relation to standards or norms at a given point in time. Meanwhile, informal checks for understanding involve more formative tools for evaluating student performance and typically lack standardized grading criteria. Formative assessment tools

are defined as "activities undertaken by teachers— and by their students in assessing themselves — that provide information to be used as feedback to modify teaching and learning activities" (Black & Wiliam, 2010, p. 82). While both formal and informal data sources can be used for formative purposes, formal assessment tools tend to be more summative or cumulative in their evaluation of student knowledge (Dixson & Worrell, 2016). Formal assessments, including curriculum-based measures (CBMs) and screening tools, as well as informal checks for understanding, play a significant role in the design and delivery of effective Tier 1 instruction (Gersten et al., 2009). Therefore, the next sections examine each of these data sources as a means of informing decision-making within Tier 1 literacy instruction.

Formal Assessment Data: Curriculum-Based Measures (CBMs)

CBMs represent an important data source insofar as educators can evaluate student progress in relation to grade-level benchmarks or standards using frequently administered probes (Espin et al., 2017). CBMs are standardized measurement tools that assess a broad sampling of skills taught over the course of an entire school year (Berkeley & Riccomini, 2017). The data from CBMs can indicate areas of needed support within a classroom or across a grade-level (Espin et al., 2017).

Hosp et al. (2016) characterize CBMs by the following attributes:

- Alignment of the assessment with the content and materials used for instruction
- Technical adequacy of the measure (i.e., its reliability and validity)
- Standardized procedures for administration and scoring

- Performance sampling provides a means of assessing student behavior on a clearly defined task while minimizing the need for conjecture about a student's score (e.g., a fluency CBM may indicate the number of words read correctly within a minute)

- Efficiency of administration

- Equivalent probes for repeated measurement over time to gauge student progress

While many Tier 1 curricula include CBMs within their instructional materials, additional CBMs for reading are available independent of a prescribed curricular program. Reading CBMs for the intermediate grades typically assess oral passage reading and maze passage reading (Hosp et al., 2016). Examples of curriculum-based measures for grades 3-5 include Dynamic Indicators of Basic Early Literacy Skills (DIBELS), AimsWeb Plus, FastBridge, and EasyCBM. Curriculum-based measures provide critical information regarding whether or not the Tier 1 instructional program is sufficient to support student growth over time (Hosp et al., 2016).

Teachers' Use of CBMs. Curriculum-based measures offer an efficient means of measuring student progress and determining when instruction should be modified to better meet students' literacy needs (Berkeley & Riccomini, 2017). In this way, CBMs play a critical role in DBDM. However, in alignment with the constructivist paradigm, the data from a CBM is assigned its value and meaning by the practitioner, and it is, therefore, important to consider both the source of the data as well as the individual charged with its interpretation.

In their review of experimental-contrast studies in reading and math, Stecker et al. (2005) described the significant gains in student achievement produced by teacher's use of CBMs. However, the authors noted several critical variables that were associated with enhanced student achievement. Significant growth occurred when CBM data informed instructional decision-

making. On its own, frequent progress monitoring did not improve student achievement. When teachers used CBM data in addition to data-based decision rules or peer-assisted learning strategies, research indicated significant gains in student achievement (Stecker et al., 2005). This research again underscores the role of the teacher in translating CBM data into changes in practice.

Espin et al. (2017) conducted an exploratory study to examine teachers' understanding and interpretation of graphs illustrating student performance on a CBM for oral passage reading. Teachers' think-aloud responses were evaluated for coherence, specificity, reflectivity, and accuracy. While the study was limited in its sample size of 14 teachers from grades 3-5, the results indicated variability in the teachers' ability to interpret the CBM graph with accuracy and specificity. The authors concluded that replication of their results within future studies would suggest that there is "much work to do in the way of helping teachers to improve understanding and interpretation of CBM data," (Espin et al., 2017, p. 19).

Formal Assessment Data: Screening Assessments

Many CBMs can be employed as screening assessments, as well as tools for progress monitoring. Screening assessment data plays a significant role in designing and delivering Tier 1 reading instruction to meet the needs of individual learners. In the Institute of Education Sciences (IES) Practice Guide for RTI, Gersten et al. (2009) recommend the use of assessment data to guide differentiated reading instruction in Tier 1. This includes screening assessment data. Gersten et al. (2009) identify a moderate body of research supporting the use of screening assessments for the purposes of prevention and progress monitoring (Gersten et al., 2009). Screening assessments are designed "to identify students who are likely to experience poor

academic outcomes if their instruction is limited only to classroom (Tier 1) instruction" (Fuchs &

Fuchs, 2017, p. 255). Universal screeners represent a critical component of prevention

frameworks, such as RTI; however, the data that can be obtained from a screener can also

provide important information on class-wide literacy needs (Burns et al., 2014). In this way,

screening assessment data provides a means of monitoring the quality of Tier 1 instruction and

identifying patterns of need across classrooms or grade levels (Jimerson et al., 2007).

Teachers' Use of Screening Data. Prior to data collection, it is important that screening

tools are vetted for validity and reliability (Bailey et al., 2020). The National Center on Intensive

Intervention (NCII) provides a screening tools chart which can assist educators in understanding

the existing evidence for their school's screening metric (Bailey et al., 2020). However,

educators also need to understand that no screener is 100% accurate, which is why the MTSS

Center recommends using at least two data sources to identify a student's risk status (Bailey et

al., 2020). Similarly, in reviewing the literature on RTI, Fuchs and Vaughn (2012) warn that the

use of a single screening tool is often problematic due to issues with classification accuracy. In

order to prevent the over-identification of students for Tier 2 support, Fuchs and Vaughn (2012),

therefore, suggest the use of a multistage screening process as a means of confirming the need

for support. This approach aligns with the constructivist paradigm, insofar as multiple sources

contribute to an educator's decision-making process.

When considering screening assessments for students in the intermediate grades, research

underscores the need for a comprehensive system for assessment that can detect the nature of a

student's literacy needs and effectively monitor the student's response to instruction or

intervention (Bailey et al., 2020). Within this comprehensive assessment system, universal

screening comprises one component of a larger system which includes diagnostic, progress monitoring, and outcome measures. Whereas screening tools for students in the early elementary grades typically assess foundational literacy skills, such as phonemic awareness and letter-sound knowledge, students in the intermediate grades are typically screened using measures of reading comprehension and fluency (Flanagan & Hayes, 2023). This means that when a student in the intermediate grades is identified as at-risk, it is necessary to administer additional assessments to determine the nature of the student's literacy needs. In other words, further assessment data may be necessary in order to ascertain whether the student needs support for word reading skills (e.g., phonemic awareness and phonics) or if the student needs support for skills involved in language comprehension (e.g., vocabulary and language structures). It is, therefore, important to invest in valid and reliable screening assessment tools that are aligned with a comprehensive assessment system, so that students' literacy needs are accurately identified.

Fuchs and Fuchs (2017) explain that effective screening is fundamental to the successful implementation of RTI. However, data collection by itself does not support students. Educators must analyze and interpret screening data to identify students at-risk and intervene effectively (Burns et al., 2014). In addition to identifying students who are at-risk, the analysis of screening data should inform Tier 1 instructional decision-making and service delivery (Burns et al., 2014). By reviewing screening data from across a group of students, educators can identify common areas of needed support and prioritize instruction accordingly (Gersten et al., 2009).

Teachers need to understand how to access and interpret the data, in order to determine the appropriate next steps for further assessment, instruction, and possible intervention. Savitz et al. (2022) surveyed 209 secondary educators (grades 6-12) regarding RTI implementation in literacy

and found that most of the teachers combined teacher recommendations and formal assessments (i.e., screeners or student performance on state or district assessments) to identify students who needed intervention. Survey responses indicated that many research-based recommendations for RTI were being implemented; however, significant regional differences were reported regarding how and who implemented RTI. Savitz et al. (2022) found that teachers were given minimal support in interpreting assessment data and using assessment data to guide instruction within their classrooms. This is problematic given the more intensive literacy needs of struggling readers in the upper grades (Brozo, 2011). Savitz et al. (2022) recommend clearer guidance and ongoing professional learning opportunities for educators as they interpret assessment data and implement RTI for literacy.

Informal Checks for Understanding

In addition to data from formal assessments, teachers respond to students' needs as they become apparent in response to informal checks for understanding throughout instruction. Informal checks for understanding may include observations of student behavior, checklists, writing samples, exit tickets, or a variety of other informal tools that teachers use to gauge student understanding during instruction (Bailey et al., 2020). When designed with intention, informal checks for understanding can help teachers to "identify learning goals, provide students feedback, and then plan instruction based on students' errors and misconceptions" (Fisher & Frey, 2014, p. 2).

Teachers' Use of Checks for Understanding. Eliciting frequent student responses is a tenet of explicit evidence-based literacy instruction (Archer & Hughes, 2011). However, not all checks for understanding are effective, in that not all checks for understanding elicit meaningful

data regarding students' understanding of the intended content or skill (Fisher & Frey, 2014). For example, asking students whether or not they "get it," does not necessarily provide useful information, insofar as students may be too confused or embarrassed to respond truthfully, or the students may think they understand when in reality, they are off base (Fisher & Frey, 2014). To be effective, informal checks for understanding should assess students' progress towards the lesson's objective or learning target.

Like formal assessment data, informal checks for understanding are assigned meaning and value by the practitioner. Fisher and Frey (2014) discuss the importance of using checks for understanding within a flexible 3-phase process that mirrors the data use cycle illustrated in Figure 1. Fisher and Frey's formative assessment system involves designing checks for understanding, providing feedback to students, and using data from the checks for understanding to make instructional changes. In order to respond to checks for understanding with effective feedback and instructional modifications, teachers must possess knowledge of individual students as well as the content (Mandinach & Gummer, 2016).

While informal checks for understanding represent a critical component within an ongoing cycle of data use, they are not technically validated for reliability and validity. Thus, checks for understanding should not be the exclusive source of information used to guide instructional decision making (Bailey et al., 2020). By triangulating data from multiple sources, teachers can differentiate Tier 1 reading instruction to better meet the needs of all learners (Swanson et al., 2017). This aligns with the constructivist tenet that learning is dynamic, in that the teacher responds to new data as it becomes available during the design and throughout the delivery of Tier 1 reading instruction.

DBDM in Practice

Having discussed potential data sources, it is important to consider the observable changes to instructional practice that may result from DBDM. As depicted in the Combined Framework for Data Use (Figure 1), once data has been collected and interpreted, the teacher is responsible for turning information into action (Swanson et al., 2017). The following section provides a brief explanation of the types of instructional modifications that teachers may employ in response to DBDM during Tier 1 reading instruction. Table 2 summarizes these data sources and how their interpretation could inform instructional decisions within Tier 1 reading instruction. The table is organized to reflect the stages within the data use cycle as depicted in the conceptual framework (Figure 1).

Table 2

Data Sources and Potential Implications for Instructional Practice

Data Source	Potential Information from Interpretation	Possible Applications or Changes to Instructional Practice within Tier 1
Formal Assessments (CBMs/ Screeners)	• Identifying students at risk of reading difficulties • Identifying patterns of need across a classroom or grade level • Monitoring student progress in relation to standards or goals • Monitoring student progress in response to instruction	• Adjustments to instructional time (re-teaching or progressing within scope and sequence) • Adjustments within scope and sequence (where to begin and where to go next) • Organization of student groupings during reading instruction (differentiation)
Informal Checks for Understanding	• Identifying common sources of error • Identifying individual needs • Monitoring student engagement • Monitoring student understanding throughout instruction	• Adjustments to instructional time (re-teaching, providing more practice, or progressing within a lesson) • Targeted feedback • Differentiation and scaffolding

Adjustments to Explicit Instruction

Once a common area of need has been identified using assessment data, the data literate

teacher responds to that need through changes in instructional design and delivery (Mandinach &

Gummer, 2016). One way of responding to student data is by enhancing the explicit nature of

literacy instruction. Within the intermediate grades, the focus of literacy instruction becomes

advanced word reading skills and comprehension. While there is a larger body of research

regarding the use of explicit instruction to teach foundational literacy skills, guidance on explicit

instruction applies to comprehension instruction as well (Coyne et al., 2009; Swanson et al.,

2017). In their analysis of the elements of explicit instruction included within two programs of

intervention for reading comprehension, Coyne et al. (2009) conclude that explicit or direct

instruction supports students' comprehension across grade bands and achievement levels. Coyne

and colleagues identify examples of the following principles of explicit instruction within each

of the reviewed intervention programs: conspicuous strategies (the explicit teaching of

comprehension strategies), mediated scaffolding, strategic integration (making connections

between new and previously learned content), activated background knowledge, and cumulative

review. Similarly, in their analysis of the salient features of effective Tier 1 instruction, Baker et

al. (2010) posit that there are 6 features of effective Tier 1 instructional design including the

provision of explicit direction with modeling, explanation of connections between new and

previous content, the activation of background knowledge, a gradual release model of

responsibility, sufficient time for practice, and systematic review. These features align with

Archer and Hughes' (2011) characterization of explicit instruction as systematic, relentless, and

engaging. These three attributes provide potential mechanisms for enhancing explicit instruction in response to student data.

Systematic. Systematic instruction is defined as logically sequential in its progression of skills from least to most complex. Assessment data informs where to begin and where to go within a logical scope and sequence. Checks for understanding and CBMs may be used to inform when to progress within a scope and sequence and which content to prioritize or reteach (Hosp et al., 2016). Within individual lessons, Archer and Hughes (2011) describe systematic instruction as following a gradual release model, in which the teacher models a new skill or concept prior to guided and independent practice. In this way, responsibility for the cognitive work is gradually and systematically transferred from the teacher to the students (Hattie & Timperley, 2007). Using data from informal checks for understanding can inform teachers' decision making regarding how quickly and how much responsibility is released to students.

Relentless. Archer and Hughes (2011) characterize explicit instruction as relentless, in that students are given frequent opportunities for practice, so that students are taught to mastery. Distributed practice and cumulative review are key components of this framework for explicit teaching. These practice opportunities provide formative data regarding student understanding and whether or not more practice opportunities are needed.

Engaging. Lastly, Archer and Hughes (2011) describe explicit instruction as engaging. This aligns with the constructivist theoretical paradigm, in that learning is considered active. Explicit instruction involves student interaction and includes frequent opportunities for student practice. Archer and Hughes (2011) recommend a brisk pace, so that student engagement is maintained throughout instruction. With its quick and engaging pace, explicit instruction

provides ongoing formative assessment data regarding student learning. Using this formative data, teachers can make decisions regarding pacing and the degree of support given to individual students.

Differentiation and Scaffolding

In their overview of the accomplishments and persistent questions regarding the implementation of RTI, Fuchs and Vaughn (2012) contend that differentiated instruction represents the most agreed-upon tenet of Tier 1 instruction. As depicted in the Combined Framework for Data Use in Literacy Instruction (Figure 1), the effective implementation of strategies for differentiation is predicated upon the teacher's knowledge of individual students which necessitates the ongoing use of assessment data. Tomlinson and Imbeau (2013) define the idea of differentiation as "addressing individual variance in teaching" (p. 1097). Teachers gain insight into the individual needs of their students from informal and formal data sources. Based on patterns of performance, Baker et al. (2010) offer several specific strategies for differentiating whole-group instructional design, including the use of visual models, consistent language, and increased opportunities for student practice. The authors also highlight the importance of academic feedback and systematic review of previously learned content (Baker et al., 2010). While their recommendations are addressed to teachers in the early grades, these evidence-based practices for differentiation are applicable across grade bands.

When considering the significance of comprehension instruction in the intermediate grades, it is important to note that evidence supports the use of differentiation to grant all students access to complex texts (Fisher & Frey, 2014). This form of differentiation requires that teachers know a repertoire of evidence-based practices, such as the following: setting a purpose

for multiple rereads, building background knowledge, pre-teaching relevant vocabulary, employing different types of grouping throughout instruction, the use of visual tools such as graphic organizers, and setting intentional stop points throughout a text for student questioning (Liang & Dole, 2006; RAND Reading Study Group, 2002). In addition to knowing a repertoire of evidence-based practices, differentiation involves knowing when and with whom to implement these strategies for differentiation. This necessitates teachers' data use to identify students' literacy needs (Fuchs & Vaughn, 2012).

Scaffolding is a form of differentiation. Like the scaffolds utilized on construction sites, scaffolding during reading instruction should be temporary and adjustable. As students reach mastery, scaffolds should be systematically removed. Rupley et al. (2009) describe scaffolding as inherent within an effective framework for explicit instruction. Teachers scaffold instructional delivery by gradually releasing responsibility for learning to the student (Rupley et al., 2009). During reading instruction, scaffolding temporarily transitions the responsibility away from the student and back to the teacher until the student demonstrates mastery of the desired concept or skill. In this way, the gradual release model serves as a continuum of support, in which the teacher systematically shares responsibility for demonstrating a skill or concept with students. Formative data guides decision-making regarding when and how much responsibility is transferred from the teacher to the student.

Feedback

Feedback refers to any response given to student performance or behavior. Arguably, feedback represents another form of differentiation and scaffolding, insofar as corrective feedback in response to student errors temporarily transfers a measured amount of cognitive

responsibility from the student back to the teacher. Wood (2002) describes this range of feedback as a continuum of contingent interventions, in that the teacher's response is measured to match the support needed. In other words, the feedback matches the students' needs in terms of the content and their level of mastery (Hedin & Gaffney, 2013). Affirmative and corrective feedback should be specific, explicit, and immediate. By providing specific, explicit, and immediate feedback to student responses during instruction, teachers can prevent inaccurate practice and increase the rate of student mastery (National Center on Intensive Intervention, 2019). Effective feedback "reduces the discrepancies between current understandings and performance and a goal," (Hattie & Timperley, 2007, p. 84). In order to reduce this discrepancy, teachers must understand where students are in relation to the desired destination or learning objective (Hattie & Timperley, 2007). The provision of feedback, therefore, involves DBDM, in that teachers must interpret student performance and respond in a way that is tailored to the individual student's needs.

Elements of DBDM

The translation of raw data into explicit and differentiated instructional practice involves interpretation as depicted within Hamilton et al.'s cycle for data use (2009). While the previously discussed data sources can provide useful information regarding whether literacy issues are specific to the individual or if there are patterns in performance across classrooms or grade levels, certain conditions and skills are involved in the recognition and interpretation of student performance (Burns et al., 2014). Thus, the following sections review the skills and conditions that facilitate the interpretive elements of DBDM, the common barriers to DBDM, as well as the

research on how to address these challenges and build teachers' capacity for DBDM within Tier 1 instruction.

Conditions for DBDM

While the terms data-based decision making (DBDM) and data literacy may seem interchangeable, the distinction becomes significant when considering the elements of DBDM. Whereas DBDM refers to the process of using student data to guide instructional practice, data literacy refers to the skills, knowledge, and dispositions necessary for teachers to implement DBDM (Mandinach & Gummer, 2016). Data literacy, therefore, plays a critical role in the effective implementation of DBDM.

In their conceptual framework of teachers' data literacy, Mandinach and Gummer (2016) identify the component skills of data literacy as the following: content knowledge, pedagogical knowledge, knowledge of learners and their characteristics, curriculum knowledge, and knowledge of the context (Mandinach & Gummer, 2016). Designing and delivering Tier 1 literacy instruction that addresses students' needs involves combining these bodies of knowledge to guide decision making. Whereas students' needs are dynamic, it is imperative to frequently reflect on student data and adjust instruction accordingly (Gersten et al., 2009).

While teachers' data literacy plays a critical role in the implementation of DBDM, it does not exclusively determine the efficacy of DBDM. Van Geel et al. (2016) provide a schematic overview of the steps involved in DBDM at the board level, school level, and class level. Component steps include evaluating and analyzing assessment results, setting measurable and rigorous goals, determining a strategy for goal accomplishment, and executing the strategy for goal accomplishment. Within their empirical study of DBDM, Van Geel et al. (2016) investigated

the effects of a DBDM intervention on student achievement in math at 53 primary schools in the Netherlands. The authors found positive results, especially in schools which served in predominantly low-SES communities. While the researchers investigated the effects of DBDM within math instruction, several of the authors' conclusions are relevant for reading, as well, including the necessary preconditions for effectively implementing DBDM. Van Geel et al. (2016) cite evidence supporting the use of coaching and classroom support in addition to the implementation of a specific plan for the analysis of data and goal setting, in order to effectively implement DBDM in practice.

In their analysis of the factors that support and hinder effective DBDM implementation, Keuning et al. (2017) examined why the same school-wide intervention to improve DBDM resulted in positive intervention effects on student achievement in some schools and minimal or even negative intervention effects in other schools. 101 primary schools participated in the DBDM intervention which entailed two years of systematic team meetings and professional learning regarding skills for DBDM. During the first year of the study, teachers participated in seven team meetings covering various aspects of DBDM including interpretation of assessment data, goal-setting, and monitoring student progress. In the second year, schools could choose to deepen their learning related to DBDM in the same subject area chosen during the previous year or schools could broaden their understanding of DBDM within a different subject area. Teachers participated in five team meetings during the second year. Following the intervention, Keuning et al. (2017) compared survey and interview data from the leadership teams at ten primary schools with strong intervention effects with the data from the leadership teams at ten primary schools with no intervention effects. The authors conclude that organizational characteristics of the

school can mediate the effects of a DBDM intervention. Specifically, Keuning and colleagues cite the school's data culture and teacher attitudes towards DBDM as mitigating factors in determining the effects of the DBDM intervention.

Research, thus, suggests that multiple factors influence the effective implementation of DBDM. As proposed by Van Geel et al. (2016), these factors can be organized into levels, namely the class level, school level, and board level. Prior to unpacking the factors that influence teachers' data literacy at the classroom level in greater detail, it is important to consider additional conditions that can influence effective implementation of DBDM.

Barriers to DBDM

In 2007, the U.S. Department of Education funded a national study regarding the implementation of data systems and the use of data to guide instruction. The study included two primary objectives: to determine how school districts were building the capacity for data systems and to explore how teachers utilized data systems to inform instruction. To these ends, Means et al. (2010) conducted a national survey of districts and a secondary survey of teachers regarding access to data and its use during instruction. Means et al. (2010) determined that the greatest perceived need across the districts surveyed was for models regarding how to translate the data into instruction. The authors also highlight the need for administrative support in facilitating regular activities involving the examination of student data.

Whereas RTI is not legally mandated, schools implement DBDM with varying levels of fidelity, and research demonstrates that DBDM is inadequate in many school systems (Fuchs & Fuchs, 2017). Consistent with the results of the national survey from Means et al. (2010), educators cite difficulties with data interpretation and use as the number one barrier to the

implementation of an effective tiered system of support (Espin et al., 2017; Stecker et al., 2005; Wagner et al., 2017). Roehrig et al. (2008) surveyed and interviewed ten teachers from four schools during their second year of Reading First implementation in Florida. The authors sought to determine the perceived supports and challenges to data use and specifically the use of progress monitoring data to guide instructional decision-making. Roehrig and colleagues found several perceived barriers to data use including the availability of instructional support and coaching, the willingness of teachers to evaluate the efficacy of their instruction, teacher knowledge of assessment practices, and a lack of clarity regarding how to translate data into practice.

When considering these challenges to implementing DBDM, it is important to note that interpreting data and translating data into changes in professional practice represent two distinct constructs (Dunn et al., 2013). In their conceptual framework for evaluating teachers' implementation of an intervention program, Century et al. (2010) identify a distinction between educators' procedural and educative knowledge. The authors explain that teachers need to understand both the "how" (procedural knowledge) and the "why" (educative knowledge) behind instructional practices, prior to implementing an intervention program with fidelity. The cycle for data use as depicted in Figure 1 similarly distinguishes between the stages of interpreting data and translating the information into instructional practice. Teachers need to understand "how" to interpret the data and "why" the data matters in order to effectively engage in DBDM (Century et al., 2010; Dunn et al., 2013).

In their study of the effects of support for data-driven instruction (DDI) on teachers' data use and student achievement, Gleason et al. (2019) found that support for DDI did not result in

increased data use or changes in instructional practice as reported by teachers on a survey.

Gleason et al. (2019) define data-driven instruction as "the strategy of using assessment and

other data to inform teachers' instruction" (p. 1). Teachers in the control group and teachers who

received training and professional development related to DDI reported engaging in similar data-

related activities, and the support for DDI did not affect student achievement in reading or in

math (Gleason et al., 2019). While these results may seem discouraging, Gleason et al. (2019)

conclude that simply giving teachers support for data use is not sufficient to improve the quality

of instruction. In order to bridge the gap between data interpretation and application, it is

necessary to provide models of translating data into practice (Dunn et al., 2013).

Similar to the findings from Gleason et al. (2019), in their study of teachers' interpretations

of CBM graphs, Espin et al. (2017) demonstrate that experience using data does not guarantee

expertise. Espin et al. (2017) defined "expertise" as the ability to discuss student data accurately

and precisely in response to targeted prompts. The researchers coded teacher responses to a

think-aloud reflecting on CBM graphs of student progress in response to intervention. Fourteen

special education teachers from an urban school district participated in their study. The authors

found that despite the teachers' reported experience creating CBM graphs over the course of their

academic careers, many lacked the ability to accurately interpret and describe the graphed data.

The authors noted that expertise involved the ability to access and recognize relevant

information. They describe how teachers who could describe and interpret the CBM data with

specificity were able to "read beyond the data," whereas teachers who interpreted the data

inaccurately or whose explanations were incoherent were unable to read the data itself (Espin et

al., 2017, p. 17). Therefore, the challenge to DBDM is two-fold insofar as, stakeholders must

know how to accurately read the data, prior to learning how to *read beyond* the data and translate data into practice.

To summarize, existing research suggests several challenges to teachers' implementation of DBDM including limited access to assessment data, lack of administrative support, and the lack of clarity regarding how to translate data into practice (Means et al., 2010; Roehrig et al., 2008). Additionally, evidence demonstrates that experience and professional learning are not sufficient on their own to improve DBDM (Espin et al., 2017; Gleason et al., 2019). Schools provide varying levels of instructional support and coaching, and teachers often lack clear models of how to translate data into practice (Dunn et al., 2013; Roehrig et al., 2008).

Cultivating DBDM

Whereas experience is insufficient on its own to improve the implementation of DBDM (Espin et al., 2017), it is imperative to explore potential methods for cultivating a community that translates experience into expertise in DBDM. In the IES Practice Guide for using student data to inform instruction, Hamilton et al. (2009) provide recommendations for the use of common assessment data to guide instructional decision-making. Their recommendations include using data as a part of an ongoing cycle of instructional improvement, teaching students to analyze their own data and set individual goals, establishing a clear vision of data use as a school community, providing supports that "foster a data-driven culture within the school," and the development of a district-wide system for data use (p. 8). While the level of evidence supporting each of these recommendations is characterized as "low," the authors cite numerous qualitative studies to support their directives. Additionally, these recommendations highlight several key elements of effective data use, namely the ability to accurately interpret and communicate data

with students. These suggestions are intended to support teachers as they *read beyond* the data and translate it into effective instructional practice.

Research indicates that "educator skill development serves a critical role in building capacity to effectively implement RTI" (Castillo et al., 2016, p. 893). Over 4,000 educators from 34 pilot schools and 27 comparison schools participated in a study by Castillo et al. (2016) to determine the effects of large-scale professional development on RTI implementation and teachers' perceived skills. Leadership teams from the pilot schools participated in 13 days of training across 3 years. Educators at the pilot schools also received job-embedded coaching during the same 3-year period. Following these opportunities for intensive PD and coaching, teachers reported significant increases in perceived RTI skills (Castillo et al., 2016). This research provides evidence in favor of ongoing support for data-based reform that is inclusive of school leadership.

To this end, Van Geel et al. (2017) analyzed the school characteristics which facilitate the implementation of a DBDM intervention. After piloting a training course on DBDM, 53 primary schools in the Netherlands agreed to participate in the DBDM training course and two-year intervention on DBDM. Four full-time trainers worked with the schools to implement DBDM over the course of the two-year study. Teachers received support and training on how to interpret assessment data using a student monitoring system. In reviewing a subset of the data collected from one of the trainers, Van Geel and colleagues (2017) compared DBDM implementation at 16 schools. Data was collected using questionnaires and a knowledge test administered to teachers prior to and following the intervention. The knowledge test administered to teachers pre- and post-intervention measured the degree of specificity with which teachers could accurately

interpret data from the student monitoring system. The questionnaires measured the participants'

motivation for implementing DBDM, as well as their perception of the school culture and

leadership. The authors identified supportive school leadership and staff continuity as strongly

associated with successful implementation of DBDM. Thus, research suggests that school leader

involvement and support of DBDM underpins how teachers engage in data use (O'Conner &

Freeman, 2012).

The use of regular data meetings among teachers, specialists, and administrators provides

one mechanism for closely monitoring data within all tiers of support. Rather than reflecting on

data in isolation, implications for Tier 1 programming, explicit instruction, and scaffolding can

be discussed and decided within the group (Harlacher et al., 2015). These meetings also offer a

means of ensuring consistency across classrooms and alignment with the standards (Harlacher et

al., 2015).

In the intermediate grades, the wider diversity of student needs necessitates regular

reflection on literacy data as a means of supporting individual students and monitoring the

efficacy of Tier 1 instruction (Fuchs & Vaughn, 2012). Assessments are crucial in determining

the nature of a student's reading difficulties in grades 3-5, insofar as a student may struggle with

code-based or meaning-based difficulties (Connor et al., 2007). While this warrants close

consideration of the tools used for assessment in the intermediate grades, it also merits ongoing

support for identifying and responding to student needs with appropriate differentiation.

Research suggests that school leaders set the tone for data use as a means of informing

instructional practice (Curry et al., 2016). Evidence, therefore, supports the provision of ongoing

DBDM support through data meetings, professional learning communities, and job-embedded

coaching opportunities as a means of improving DBDM and teachers' data literacy (Barnes et al., 2019; Harlacher et al., 2015; VanGeel et al., 2017).

In sum, effective implementation of DBDM involves the accurate interpretation of assessment data and reading beyond the data as a means of translating data into practice (Espin et al., 2017). Evidence suggests that several factors facilitate the effective implementation of DBDM, including supportive leadership, coaching opportunities, regular data meetings, staff continuity, and job-embedded professional learning opportunities (Hamilton et al., 2009; Harlacher et al., 2015; Van Geel et al., 2017). Implementing DBDM, thus, depends on the development and support of a data literate school community.

Factors that Influence Data Literacy

As previously noted, data-based decision making refers to the process of using data to inform instruction, while data literacy refers to the educator's ability to effectively implement DBDM (Mandinach & Gummer, 2016). Nancy Love (2003) further defines data literacy as "the ability to examine multiple measures and multiple levels of data, to consider the research, and to draw sound inferences" (p. 22). In other words, the data literate educator uses data to identify individual students' needs as well as patterns of performance across the classroom or grade. Using this data, the teacher then considers the research on best practice to form a hypothesis regarding changes to instructional practice that will meet students' needs. Love's definition encompasses the roles of data within Tier 1 instruction, insofar as teachers must simultaneously consider the research regarding valid and reliable assessment tools and evidence-based instructional practices, as well as be able to interpret student data to make instructional decisions. Based on semi-structured interviews with nine educators from four elementary schools, Jacobs et

al. (2009) posit that data use requires sophisticated professional knowledge, a culture of support, and ongoing attention to multiple data sources. The authors illustrate their findings as a ladder of stages through which educators progress as they become increasingly data literate (Jacobs et al., 2009). Data literacy, thus, entails an ongoing process of data collection, analysis, interpretation, and changes to practice.

To further explore educators' data literacy, Al Otaiba et al. (2019) administered surveys regarding teachers' knowledge of RTI implementation within their schools. Based on their analysis of responses from 139 general and special education teachers from nine elementary schools across the U.S., the authors identified three factors mitigating teachers' RTI knowledge including teacher knowledge of Tier 1 implementation, teacher knowledge of leadership, and teacher knowledge about DBDM (Al Otaiba et al., 2019). On average, teachers' survey responses indicated greater understanding of Tier 1 implementation and leadership, as compared to DBDM (Al Otaiba et al., 2019). The survey items employed a Likert scale ranging from 1=strongly disagree to 4=strongly agree. Survey items for knowledge of DBDM addressed the ease and efficiency of instructional decision-making using student data. This research highlights the need for more effective systems of support for data use. Therefore, the following sections explore the existing literature regarding factors that can facilitate growth and progression towards a more data literate community of reading educators.

Teachers' Professional Learning on Data Use

Professional learning opportunities situated within school contexts provide a promising means of enhancing teachers' professional knowledge, and specifically their knowledge of data use (Jacobs et al., 2009). Similar to the formerly cited study by Gleason et al. (2019), Gotch and

McLean (2019) examined the effects of a state education agency-sponsored professional development initiative to build teachers' assessment literacy. Gotch and McLean (2019) provided five months of training to 144 teachers from elementary, middle, and high schools across a northwestern state. Following their participation in regular professional learning opportunities regarding assessment literacy, teachers responded to questionnaires concerning their knowledge of assessment concepts and their self-efficacy for assessment tasks. While results indicated that there were no significant changes in teacher knowledge of assessment concepts as a result of teachers' participation in the professional development, teachers' self-efficacy for assessment tasks increased significantly (Gotch & McLean, 2019). The authors conclude that further research should investigate the contextual and affective factors that may mediate teachers' data literacy.

In contrast to the research on professional development with in-service teachers which resulted in insignificant changes to teacher knowledge regarding data use (Gleason et al., 2019; Gotch & McLean, 2019), Carlson and colleagues (2011) demonstrated positive effects of data-driven reform on student achievement. Using randomized assignment, over 500 schools from 59 districts in seven states were placed in either a control or treatment condition. Schools in the treatment condition participated in a school-wide data-based reform initiative. Consultants from the John Hopkins Center for Data-Driven Reform in Education Results supported the implementation of quarterly benchmark assessments in reading and mathematics in addition to providing professional training for district and school leaders regarding how to interpret and use the data to drive schoolwide reform. After the first year of implementation demonstrated significantly positive effects on students' math achievement and positive effects on reading

achievement that were not statistically significant. The study by Carlson and other authors (2011) underscores the need to further clarify the conditions that could mediate data-based reforms, so that initiatives can be more effectively designed and implemented.

Whereas the previously discussed literature has focused primarily on supporting data literacy among in-service teachers, a recent study from Miller-Bains et al. (2022) illustrates the positive and potentially lasting effects of a pre-service data use intervention. Miller-Bains et al. (2022) describe data-driven instruction as characterized by its emphasis on the ongoing use of diverse data sources and data types. The authors randomly assigned 90 teacher candidates enrolled in an internship seminar to either a control or treatment group. Pre-service teachers in the treatment group participated in a data literacy workshop, while pre-service teachers in the control group participated in a workshop focused on cultivating student relationships (Miller-Bains et al., 2022). Study participants who participated in the data literacy workshop reported significantly higher perceptions of the relevance of assessment, data use, and self-efficacy for data use (Miller-Bains et al., 2022). In their discussion of the findings, the authors posit that pre-service preparation offers a unique opportunity for improving teachers' data literacy insofar as "teachers' beliefs and practices are less ossified" (p. 9). This could explain, in part, previous research resulting in insignificant changes to in-service teachers' knowledge of data use in response to professional learning opportunities (Gleason et al., 2019; Gotch & McLean, 2019). It is also worth analyzing the approach to professional learning utilized within these studies, and what supports were put into place to implement and sustain changes to professional practice.

While evidence supports the efficacy of pre-service interventions for data literacy (Miller-Bains et al, 2022), research also suggests wide variation in the pre-service opportunities for data

use across different universities (Reeves, 2017). Additionally, there is conflicting evidence regarding the efficacy of data-based interventions with in-service teachers (Carlson et al., 2011; Gleason et al., 2019; Gotch & McLean, 2019). It follows that affective and contextual factors may play a significant role in determining the effectiveness of these data-based interventions.

Affective Factors

In addition to professional learning opportunities, affective factors influence teachers' data literacy. Whereas data literacy comprises teachers' dispositions towards data use (Mandinach & Gummer, 2016), these dispositions and beliefs play an important role in how teachers interpret and apply data during the design and delivery of reading instruction. Using a multi-case study design with cross-case analysis, Barnes et al. (2019) examined literacy teachers' beliefs about data use at the kindergarten and fifth grade levels. The authors concluded that teachers hold strong beliefs about the purpose of data and assessment, and that these beliefs serve to frame teachers' interpretations and uses for data in the classroom (Barnes et al., 2019). For example, the fifth-grade teachers expressed beliefs that data could help them identify students' limitations as well as areas of progress and growth. These perceptions informed how the teachers interpreted assessment data. The fifth-grade teachers also filtered their interpretations of student data using their beliefs about individual students and their knowledge of the content-area standards. Whereas prior evidence suggests that in-service educators possess relatively established beliefs regarding data use (DeLuca et al., 2018), the research from Barnes and colleagues (2019) necessitates further consideration of other factors that may serve to frame educators' beliefs about data use.

Coombs and colleagues (2018) used survey data to analyze teachers' approaches to assessment across career stages. Survey responses indicated that priorities for assessment use changed across an educator's career (Coombs et al., 2018). Like Miller-Bains and other authors (2022), Coombs et al. (2018) conclude that pre-service teacher education plays a critical role in determining teachers' approach to assessment, and specifically their approach to the fairness and equity of classroom assessment tools and their use. While in-service teachers may have more entrenched beliefs about data, research also suggests that data use initiatives can significantly impact teachers' self-efficacy for DBDM (Gotch & McLean, 2019).

Dunn et al. (2013) define data self-efficacy as "teachers' beliefs in their abilities to effectively analyze and interpret student data in order to successfully connect or apply their interpretations… to classroom instruction," (p. 90). Based on survey results from 1,728 K-12 educators who had participated in varying levels of DBDM professional development, Dunn et al. (2013) established a five-factor model for teachers' data literacy, including teachers' beliefs in their own abilities for data identification, data technology use, data interpretation, data application, and DBDM anxiety. Despite the relative inflexibility of in-service teachers' beliefs (Coombs et al., 2018), their self-efficacy for DBDM is subject to change, which poses implications for professional learning opportunities related to DBDM and supporting data self-efficacy (Coombs et al., 2018; Dunn et al., 2013; Gotch & McLean, 2019).

Organizational Factors

As illustrated in the combined framework for data use in Tier 1 reading instruction (Figure 1), context also influences teachers' engagement in the data use cycle. Evidence demonstrates the role of leadership and school culture on teachers' DBDM (Van Geel et al.,

2017); these contextual factors also determine teachers' knowledge, dispositions, and beliefs for data use. Coburn and Turner (2011) offer a framework for conceptualizing the complex interpretative and organizational dimensions which influence how data is used in the classroom. According to Coburn and Turner (2011), "data use implicates a number of processes, conditions, and contexts" (p. 173). While the authors identify routines, access to data, time, and norms as contributing factors within the organizational context, a more substantive body of research emphasizes the role of leadership and power relations in determining how data is interpreted and utilized to inform instructional decision-making (Coburn & Turner, 2011; Gleason et al., 2019; O'Conner & Freeman, 2012). Supportive leadership underpins the successful implementation of DBDM and school-wide data use reforms (Gleason et al., 2019; O'Conner & Freeman, 2012).

O'Conner and Freeman (2012) affirm that "successful, efficient, and effective RTI systems require district-level leadership and support," (p. 299). However, based on survey data collected from over 700 school staff members, more than half of the survey respondents disagreed or strongly disagreed with the statement: "In our district/school, district level leadership provides active commitment and support for school improvement actions (e.g., meets to review data and issues at least twice each year)" (p. 299). O'Conner and Freeman (2012) reference this data as further impetus to explore the role of leadership in affecting teachers' DBDM. The authors identify three factors which underpin the effective and sustainable implementation of RTI including leaders' RTI knowledge, leadership structures, and organizational frameworks (O'Connor & Freeman, 2012). While RTI is not synonymous with DBDM, an effective system for RTI is dependent upon the use of data to inform instructional decision-making. The research

from O'Connor and Freeman (2012) points to the need for system-wide buy-in and consensus in order to effectively interpret and use data as a means of implementing a tiered system of support.

Similar to O'Conner and Freeman (2012), Curry et al. (2016) emphasize the role of leadership in building teacher capacity for data-based decision making. According to Curry et al. (2016), a more collaborative approach to data use emerged when teachers were given greater autonomy for goal-setting and DBDM. Teachers reported greater use of formative assessment data when the purpose of data at the systems level became "informative" rather than "evaluative" (Curry et al., 2016, p. 89). Consistent with these findings, Barnes et al. (2019) identified teachers' fear of evaluative judgment as a barrier to building the collective capacity for data-based decision making among literacy educators. It follows that leadership plays a critical role in prioritizing and supporting teachers' data literacy and the use of DBDM to inform classroom instruction.

Chapter Summary

In order to address the needs of diverse learners in the intermediate grades and close gaps in literacy achievement, data-based decision making (DBDM) must guide Tier 1 reading instruction and differentiation. As depicted in the Combined Framework for Data Use (Figure 1), effective implementation of DBDM requires support and buy-in from stakeholders at the board level, school level, and class level. At the classroom level, prior research affirms the importance of teachers' data literacy and its role in ensuring the effectiveness of Tier 1 instruction. However, data literacy comprises more than an educator's knowledge of assessment; it is contextually and temporally bound. This necessitates ongoing and system-wide efforts to support teachers' data

use across tiers of instruction, but especially within Tier 1 as a means of ensuring that classroom

reading instruction better meets the needs of all learners.

Chapter 3: Methods

Data-based decision making (DBDM) involves the complex interaction of contextual factors, affective factors, as well as the practitioner's background knowledge in the areas of assessment, content, and pedagogy. A qualitative multiple-case study design offered a means of exploring how practitioners integrate these various bodies of knowledge while planning and delivering reading instruction. These methods align with the research questions, in that the questions "focus on how and why things happen" (Maxwell, 2009, p. 232). Additionally, a multiple-case study design fits this study due to the exploratory purpose of the research and the complexity of the problem of practice, insofar as DBDM involves a variety of contextual factors (Hancock & Algozzine, 2017). Case study designs "capture complexity and context" by drawing upon multiple data sources (Rallis & Rossman, 2012, p. 123). In the following chapter, I describe the methodology and design of the current study as it is informed by the Combined Framework for Data Use in Literacy Instruction (Figure 1) and my positionality as the researcher. I also describe the context for this research, the attributes of the participants, and the ethical considerations for this work.

Purpose and Research Questions

As stated in the introduction, national data reveals flat trends in reading achievement for the past fifteen years with approximately one third of students in the fourth and eighth grades demonstrating grade-level proficiency (National Center for Educational Statistics, 2019). At Little River Charter School (LRCS), student performance on the Measures of Academic Progress (MAP) assessment for reading reveals similar trends and stagnant growth across grades 3-8. This data necessitates an evaluation of Tier 1 reading instruction and how teachers at LRCS collect,

interpret, and apply student data to inform instructional design and delivery. Through the use of a multiple-case study design, I explored how teachers in grades 3-5 conceptualize and respond to student data during the planning and provision of Tier 1 reading instruction. The findings, in turn, revealed several ways in which systems at LRCS facilitate and hinder effective data use by teachers in grades 3-5. The research questions were as follows:

- How do teachers in grades 3-5 at Little River Charter School use data when designing Tier 1 reading instruction?

- How do teachers in grades 3-5 at Little River Charter School use data when delivering Tier 1 reading instruction?

- What factors do grade 3-5 teachers at Little River Charter School identify as facilitating or hindering effective data use?

Methodology

In order to determine how teachers integrate and prioritize data when making instructional decisions, I employed qualitative methods to make explicit the intrapersonal process that occurs during lesson planning and implementation. In the next sections, I explain the features of this study's design as well as the relevant contextual elements which informed the procedure as well as the subsequent findings regarding teachers' data use at LRCS.

Multiple-Case Study Design

As illustrated in the Combined Framework for Data Use (see Figure 1), data use does not occur within a vacuum. Coburn and Turner (2011) demonstrate the importance of contextual systems to the practitioner's access to and interpretation of student data. Meanwhile, Mandinach and Gummer (2016) draw attention to the various bodies of knowledge that teachers integrate

and apply during DBDM. Further evidence also reveals that teachers hold strong beliefs regarding the purpose of data and assessment, and that these beliefs inform their approach to data use (Barnes et al., 2019; Coombs et al., 2018; Dunn et al., 2013). Taken together, the multi-factorial nature of teachers' data use aligns with and compels the constructivist paradigm for this research.

Data use is subjective. The students within a given classroom are diverse and possess different literacy needs, it follows that this study employs a multiple-case study design to examine the experiences of individual teachers. Thus, the exploratory intent aligns with the case study design, in that the intent is to provide an "intensive analysis and description of a single unit or system bounded by space and time" (Hancock & Algozzine, 2017, p. 9). This approach acknowledges and aligns with the complex, multifaceted nature of data use. Case study designs involve "an empirical investigation of a contemporary phenomenon within its natural context using multiple sources of evidence" (Hancock & Algozzine, 2017, p. 15). The qualitative design, therefore, makes sense given the complex and contextualized nature of data use.

Methods

I collected and analyzed data for this study during the fall semester of 2023 at LRCS. Through the use of a data literacy survey, structured think-alouds regarding student data, observations of literacy instruction, and semi-structured interviews, I explored how teachers of reading in grades 3-5 interpreted and used data during instructional design and delivery.

Researcher Access

As a former elementary teacher at LRCS, I have an existing relationship with many of the teachers, the director, as well as the instructional leader for grades 3-5. The instructional leader

and I discussed the problem of practice while I was working as a teacher at LRCS. Given the influx of new teachers and the introduction of new leadership roles following the Covid-19 pandemic, the instructional leader for grades 3-5 expressed concerns regarding the lack of consistency across and within the intermediate grade bands. While school leaders value teacher autonomy, the instructional lead indicated that as a team, school leadership wants to ensure that teachers have the tools, knowledge, and resources to effectively support all students. This entails access to assessment data as well as an understanding of how to interpret and apply assessment data within instruction.

Site and Sample

Due in part to my emic perspective and the intrinsic nature of my case study design, I conducted these case studies at a suburban charter school in South Carolina. LRCS was opened in 2009 during the district's transition to a system of school choice. Class sizes are capped at 20 students per classroom with new student enrollment limited to grades K-5. Once students transition to middle school, the belief is that the Tier 1 values of the school have been instilled within the earlier grades, and introducing new students in middle school presents more challenges than opportunities. Therefore, each fall, the school enrolls new K-5 students from a lottery conducted in the spring. Of the school's 703 students, 57% are White, 25% are Black, 10% are Hispanic, and 8% of students reported other or multiple races (SCDOE, 2022). Based on U.S. Census data (2022), student demographics closely match the demographics of the surrounding district.

Grade 3-5 Reading Classrooms. Whereas students transition from learning to read to reading to learn in the intermediate grades (Chall, 1983), students in grades 3-5 demonstrate a

wide range of needs and abilities when it comes to reading (Fuchs & Vaughn, 2012). Research is lacking regarding a comprehensive approach to assessment and data use within Tier 1 reading instruction for grades 3-5 (Gersten et al., 2009). In conjunction with my experience teaching in the intermediate grades, this data (or lack thereof) informed the purposeful selection of the grade 3-5 classrooms at LRCS as the sample of interest for this study.

At LRCS, students in each grade level are divided into one of four homeroom classes, capped at twenty students per classroom. The school schedule allocates 75 minutes for Tier 1 reading instruction in grades 3-5. In the third grade, students remain with their homeroom teacher for Tier 1 content area instruction. In the fourth and fifth grades, students switch classrooms for math and reading. Teachers typically group students for a designated block using data from the Measure of Academic Progress (MAP) assessment. In addition to MAP, intermediate-grade teachers at LRCS are expected to assess students using *i-Ready* (Curriculum Associates, 2011) and the *Fountas and Pinnell Benchmark Assessment System* (Fountas & Pinnell, 2011). All LRCS students are assessed at the beginning of the year using *i-Ready*. Third-grade teachers are also required to assess all students using the *Fountas and Pinnell Benchmark Assessment*. In the fourth and fifth grades, teachers assess students who score below the 60th percentile on MAP using the *Fountas and Pinnell Benchmark Assessment.*

As a condition within the school's charter, student growth in reading and math is evaluated using the MAP assessment three times per year. The data in Table 3.1 shows that across the intermediate grades, half of students did not make anticipated growth on the MAP reading assessment in 2022. Additionally, 27% of students in grades 3-5 demonstrated no growth

in reading. This data necessitates an exploration of DBDM during Tier 1 reading instruction for these grade levels at LRCS.

Table 3.1

Student Performance on MAP Reading Assessment by Grade Level at LRCS in 2022

Grade Level	Total Student Enrollment	Did Not Meet Goal	No Growth
3	80	42	9
4	77	39	28
5	77	36	26
Totals	234	117	63

Additional Contextual Considerations

Prior to further discussing study participants and their selection, it is imperative to recognize the unique social and political context for this study, insofar as the COVID-19 pandemic dramatically altered the educational landscape globally, and the repercussions for student learning continue to impact teachers and school systems (Reimers, 2022). At LRCS, the school transitioned to virtual learning at the start of the pandemic in the spring of 2020. Beginning in October of 2021, some students returned to in-person learning while other students remained virtual for the 2021-2022 school year. Teachers taught both groups of students simultaneously using a digital platform. In the fall of 2022, the school resumed with in-person teaching and learning for all students. Whereas the school previously boasted one of the highest teacher retention rates in the district, during the pandemic, eight of the twelve teachers in grades

3-5 left the school for various reasons. While the other grade levels at LRCS also experienced higher than average teacher turnover rates during the pandemic, the intermediate grades lost the most teachers and thus experienced the greatest transition. Following the pandemic, the context at LRCS changed, and the diversity of student needs related to literacy in grades 3-5 became even more pronounced.

Mandinach and Gummer's conceptual framework for teachers' data use (2016) illustrates how teachers respond to multiple elements simultaneously, including their knowledge of the context, the student, and the content. During the Covid-19 pandemic, the context for schooling changed dramatically, and the repercussions on student learning are still being realized. Thus, the pandemic introduced even greater complexity to the already complicated nature of teachers' data use.

Participants and Sampling

Based on my emic perspective and previous conversations with instructional leadership at LRCS, I initially identified "the bounded system [or] unit of analysis," as intermediate grade reading teachers (Merriam & Tisdell, 2015, p 100). I then relied on voluntary response sampling, insofar as I reached out to all of the teachers of reading in grades 3-5 at LRCS and invited all willing participants. While voluntary response sampling can be a source of self-selection bias, I used multiple data sources to triangulate data and confirm findings. Additionally, six of the eight teachers of reading in grades 3-5 agreed to participate in the study, and therefore provided a large enough sample for comparison of their responses (Taherdoost, 2016).

Of the six teacher participants, four identified themselves as female and two identified as male. Five identified themselves as White, and one participant identified himself as Black. The

remaining six teachers from the grade 3-5 teams all identified as White females. Four of these

teachers teach math and science, and two teachers of literacy did not participate in this study. The

data in Table 3.2 demonstrates the years of experience of the grade 3-5 teachers who participated

in the study. The table indicates the number of years spent teaching, the number of years teaching

at LRCS, the grade level they currently teach, and other relevant background information,

including professional endorsements, graduate degrees, and completion of the Read to Succeed

coursework.

Table 3.2

Characteristics of Teacher Participants at LRCS*

Teacher	Current Grade Level	Total Years Teaching	Years Teaching at LRCS	Relevant Background Information
Kelly Birch	3	18	7	• Master's degree in early childhood education • National Board-Certified Teacher • Gifted Endorsement • Read to Succeed Endorsement
Melanie Scott	3	19	2	• Master's degree in curriculum and instruction • Read to Succeed Endorsement • Gifted Endorsement
Christian Holt	3	5	5	• Master's degree in elementary education
Kristin Moore	4	7	2	• Master's degree in elementary education
Katie Gates	4	9	1	• Master's degree in Educator Leadership • Read to Succeed Endorsement • Gifted Endorsement
Jackson Hobbs	5	4	1	• Master's degree in secondary education

*All names are pseudonyms

The purposive selection of teachers of grades 3-5 at LRCS established certain similarities across study participants including completion of certain required trainings, such as training in responsive classroom strategies and project-based learning. In an effort to value teacher autonomy, the school does not provide a Tier 1 curriculum for reading instruction. LRCS encourages backwards planning of cross curricular units of study related to the state standards and the school's Tier 1 values. However, without a common curriculum, instruction across classrooms varies. As demonstrated in Table 3.2, this variability may be due in part to the fact that the teachers in grades 3-5 possess varying amounts of teaching experience both generally and specifically at LRCS.

Despite their diverse levels of experience, LRCS teachers share certain attributes. All of the LRCS teachers underwent a three-part hiring process in order to teach at Little River. While Little River is a public charter school, prospective employees apply through the school's website, rather than through the division's hiring platform. In addition to submitting a resume and completing an interview, prospective teachers are asked to submit three artifacts or documents as demonstrative of their teaching philosophy. All of the participant teachers at LRCS were selected from an applicant pool based on their submission of documents that exemplify the creative thinking and student-centered learning that are espoused within the mission statement of LRCS. Additionally, much like the Little River students, teachers elect to be at LRCS, rather than one of the county's other elementary or middle schools. The school often attracts teachers based on its core values and its presence in the community. LRCS conducts major fund-raising campaigns and requires student and family engagement in multiple events throughout the year. In addition

to its provision of teacher autonomy, the rapport of the school within the community is seemingly positive, which makes the school attractive to many local educators.

It is also worth noting that all certified elementary educators in the state of South Carolina are required to complete coursework for a Read to Succeed (R2S) licensure credential as a part of the Read to Succeed Act passed in 2014. Required courses include Foundations in Reading, Instructional Practices, Assessment of Reading, and Content Area Reading and Writing. According to the Read to Succeed (R2S) legislation, teachers must complete the required coursework within ten years of state certification. Teachers can apply for exclusion if they have obtained a graduate degree in literacy or reading or completed similar coursework. Teachers must submit official transcripts to apply for exclusion. The R2S legislation is intended to ensure that all classroom teachers "use evidence-based reading instruction," including the analysis and interpretation of "valid and reliable assessments… to inform reading instruction," (South Carolina Read to Succeed Act, 2015). Despite the intent of legislative initiatives such as this, educators tend to possess varying levels of background knowledge regarding evidence-based literacy instruction, including the use of assessment data to inform instructional practice (Espin et al., 2017).

As depicted in Table 3.2, all six teacher participants earned graduate degrees in education, but none of these degrees are in literacy or a related field. Of the teacher participants, three have received the Read to Succeed (R2S) endorsement. The teacher participants who have not received the R2S endorsement indicated that they have not started the coursework to receive the endorsement. Among the participating teachers, endorsement areas include early childhood education, elementary education, secondary education, and gifted education.

Procedures and Data Sources

In the spring of 2023, I broadly discussed my proposed study with the grade 3-5 reading teachers at LRCS. Six of the eight teachers expressed intent to participate in the study. After obtaining approval from UVA's Institutional Review Board, I followed up with these teachers via email to present more details about the study and request consent. Data collection commenced in the fall of 2023. By employing a multiple-case study design, I sought to gain an in-depth understanding of how the grade 3-5 teachers at LRCS conceptualized literacy data and its utility for guiding instructional practice. First, I collected teacher responses to a survey adapted from the IES Teacher Data Use Survey (Wayman et al., 2016). The survey provided initial insight regarding the types of data teachers commonly collect and utilize, as well as teacher attitudes towards data and the environmental factors that influence data use. Following survey distribution, I conducted structured think-alouds with each teacher regarding student data. These think-alouds offered insight into how teachers interpret student data. Following the structured think-alouds, I observed instruction during each teacher's literacy block, and reflected on the observed lessons during semi-structured interviews. The observations and interviews offered a means of gaining further insight into each teacher's perception of data use and the factors that influence their DBDM throughout instructional delivery. Table 3.3 offers a visual to align the research questions with the relevant mechanisms for data collection.

Table 3.3

Alignment of Research Questions with Data Collection Tools

Research Question	Teacher Data Use Survey	Student Data Think-Aloud	Lesson Recording	Interview
How do teachers in grades 3-5 at Little River Charter School use assessment data when designing Tier 1 reading instruction?	X	X		
How do teachers in grades 3-5 at Little River Charter School use assessment data when delivering Tier 1 reading instruction?			X	X
What factors do grade 3-5 teachers at Little River Charter School identify as facilitating or hindering effective data use?	X			X

Teacher Data Use Survey

In order to examine the use of data in the design of Tier 1 reading instruction, I collected responses to the Teacher Data Use Survey developed by Wayman et al. for the Institute of Education Sciences (2016). The Teacher Data Use Survey was pilot tested in an urban school district in 2016. Respondents included 47 teachers, 19 administrators, and 17 instructional support providers. The scale measures were found to be highly reliable (Cronbach alpha statistics for each scale were 0.85 or higher). Many of the survey items were adapted from an existing survey instrument developed by Wayman, Cho, and Shaw (2009). These items were previously validated. Three new items were added to the survey regarding collaboration around data use. The content validity of all survey items was "assured through the use of content experts,

cognitive interviews in constructing the scales, and the use of scales from a similar unpublished instrument" (Wayman et al., 2016, Notes-1).

The Teacher Data Use Survey examines how teachers collect and use student data from four categories: state data (e.g., state achievement tests), periodic data (e.g., MAP tests), local data (e.g., district-developed common formative assessments), and personal data (e.g., classroom-based assessments). The survey begins with questions regarding the availability and use of each of the four types of student data. Teachers are asked follow-up questions about the actions they take following the collection of each of the four types of student data. The remainder of the survey is organized around teachers' perceived competence with data use, teachers' attitudes towards data, collaboration around data use, and the organizational supports available to teachers. In addition to exploring how teachers engage in the data use cycle, this survey addresses several components of the Combined Framework for Teachers' Data Use in Literacy Instruction including access to data, as well as contextual and affective factors that influence teachers' data use. Since the survey represented the first data source, I added several questions at the beginning of the survey to gather information regarding each teacher's professional background. The survey was administered digitally via Qualtrics using Wayman et al.'s recommendations for online administration (2016). A paper copy of the survey instrument, including added demographics, is included in Appendix A.

Student Data Think-Aloud

To further analyze teachers' competence for data use and their engagement in Hamilton et al.'s data use cycle, I employed a structured think-aloud reflecting on each teacher's data from the Measures of Academic Progress reading assessment. Thinking aloud is "the concurrent

verbalization of thoughts while performing a task" (Güss, 2018, p. 1292). As a method of inquiry, thinking aloud provides data on an individual's process for sense-making (Güss, 2018). In this study, analyzing teachers' responses to a think-aloud protocol offered a means of exploring how teachers interpreted or drew meaning from student data. I used MAP reading data since all teachers have access to the same student reports and MAP growth is stipulated within the charter for LRCS. Prior to each teacher's scheduled think-aloud, I asked them to print the Class Report Summary and Detail pages for their students' fall MAP Reading data. At LRCS, MAP reading data is used to monitor student growth in response to Tier 1 instruction, and therefore, teachers are expected to review student MAP data as a means of planning and differentiating support.

Espin et al. (2017) utilized similar think-aloud methods to examine teachers' interpretations of student data from graphs of performance on a curriculum-based measure (CBM). Whereas Espin et al. (2017) employed an expert rating scale to assess teachers' understanding of CBM, my purpose was more exploratory rather than evaluative. Therefore, I adapted several questions from Espin et al.'s think-aloud protocol to make the questions more open-ended. I recorded and transcribed teacher responses for coding. The think-aloud protocol is included in Appendix B. Think-alouds ranged in duration from 14 to 26 minutes with an average duration of 19 minutes. Most think-alouds were scheduled prior to the lesson observation; however, a couple think-alouds were rescheduled on the same day as the teacher's interview due to illness and difficulties coordinating three separate times for data collection.

Lesson Observations and Recordings

I recorded reading instruction in each participant's classroom in order to explore the relationship between the teacher's perspective and practice. Each recording occurred within the English language arts block. I stayed in the classroom and observed during each lesson recording in order to capture as much detail as possible. As stated by Hatch (2002), "if the researcher is interested in participant perspectives, observing those participants in action provides avenues into their understandings that are unavailable any other way" (p. 90). Given the dynamic nature of the classroom, teaching requires frequent decision-making and flexibility. Observing a lesson offered the primary means of capturing each teacher's decision-making in response to formative assessment data and student interaction. Lesson observations and recordings ranged in duration from 48 minutes to 78 minutes with an average duration of 63 minutes. While the designated literacy block is 75 minutes, the third-grade team had modified their schedule as they continued to collect beginning of the year assessment data for each student.

I developed the protocol included in Appendix C as a means of narrowing my focus to include the frequency and forms of student response elicited throughout instruction, as well as the types feedback provided by the teacher. The protocol includes organizational information including the teacher's name, the date, and the lesson objective. I also included space for a diagram of the classroom set-up and descriptive information concerning the number of students present, the resources prepared in advance, and the transition into the ELA block. The guiding questions on the protocol helped align my notes with the research questions as well as the tenets of the Combined Framework for Data Use, insofar as my focus was on the students themselves and the teacher's response to student understanding as evidenced by formal and informal

assessment. I reserved the space beneath the guiding questions for my notes with direct quotes from teachers and students and examples of how the teacher collected formal and informal data throughout the ELA lesson. Following each observation, I selected two or three moments during instruction when the teacher collected and responded to student data. These moments guided questioning during the semi-structured interviews. By organizing my notes in this way, I created a guide for quick reference during the interviews. These structured notes also supported theme development (Creswell, 2013).

Interviews

Interviews can provide rich, personalized insight, related to the constructs under study (Hancock & Algozzine, 2017). I employed a semi-structured interview design, so that I could clarify or rephrase questions as needed (Jacob & Furgerson, 2012). I developed the Interview Protocol included in Appendix D as a means of organizing the interview to align with the research questions. The questions were intended to provide further insight regarding specific examples of teacher engagement in the data use cycle during instructional delivery. By designing open-ended prompts, such as "Tell me about how you assessed students' literacy needs during the recorded lesson on…," I garnered a deeper understanding of how teachers perceived their own data use during the design and delivery of reading instruction. In alignment with the conceptual framework, I also developed questions to examine the resources and/or contextual factors that teachers perceived as helpful or hindering their effective data use. Interviews ranged in duration from 17 to 26 minutes with an average duration of 21.5 minutes. Following each interview, I wrote reflexive memos to capture my immediate observations and reflections. Interviews were recorded as audio files on my laptop and deleted following transcription.

Summary of Data Sources

Data was collected through survey responses, structured think-alouds, lesson recordings, and semi-structured interviews. Qualitative research involves "the collection of data in a natural setting sensitive to the people and places under study" (Creswell, 2007, p. 37). By combining qualitative data from the survey responses, think-alouds, lesson recordings, and interviews, I was able to triangulate the data and ensure that I captured the subjective and complex experience of teachers' data use and instructional decision-making. Table 3.4 illustrates the sequence of data collection with dates and durations for the think-alouds, recorded lessons, and interviews.

Table 3.4

Data Collection Dates at LRCS*

Teacher	Survey Date	Think-Aloud Date (Duration)	Observation Date (Duration)	Interview Date (Duration)
Kelly Birch	Week of 9/11/23	9/13/23 (21 minutes)	9/14/23 (50 minutes)	9/19/23 (26 minutes)
Melanie Scott	Week of 9/11/23	9/14/23 (20 minutes)	9/14/23 (52 minutes)	9/19/23 (23 minutes)
Christian Holt	Week of 9/11/23	9/13/23 (16 minutes)	9/13/23 (48 minutes)	9/14/23 (19 minutes)
Kristin Moore	Week of 9/25/23	9/28/23 (18 minutes)	9/26/23 (74 minutes)	9/28/23 (21 minutes)
Katie Gates	Week of 9/11/23	9/12/23 (26 minutes)	9/13/23 (78 minutes)	9/15/23 (23 minutes)
Jackson Hobbs	Week of 9/25/23	9/28/23 (14 minutes)	9/25/23 (76 minutes)	9/28/23 (17 minutes)

*All names are pseudonyms

Data Analysis

Due to its inductive nature, qualitative research, "while carefully planned, is also a path of discovery" (Court et al., 2018, p. 61). Creswell (2007) describes the process of data analysis as a spiral, beginning with data collection and ending with a narrative. According to Creswell (2007), the data analysis spiral progresses through a series of analytic circles including: (a) data collection; (b) data management and organization; (c) reading, rereading, and recording memos; (d) describing, classifying, and interpreting data; and (e) representing and visualizing data. I employed this procedure when analyzing the data collected from the surveys, think-alouds, lesson recordings, and interview transcripts. Table 3.4 depicts the alignment between the research questions, data collection methods, and data analysis.

Table 3.5

Question and Method Alignment

Research Question	Source of Data	Analysis
1. How do teachers in grades 3-5 at Little River Charter School use data when designing Tier 1 reading instruction?	Data Use Survey and Think-Aloud	Descriptive Statistics of Survey Responses Think-Aloud Codebook (Appendix E)
2. How do teachers in grades 3-5 at Little River Charter School use data when delivering Tier 1 reading instruction?	Lesson Recording and Semi-Structured Interview	Lesson Recording Codebook (Appendix F) Interview Codebook (Appendix G)
3. What factors do grade 3-5 teachers at Little River Charter School identify as facilitating or hindering effective data use?	Data Use Survey and Semi-Structured Teacher Interview	Descriptive Statistics of Survey Responses Interview Codebook (Appendix G)

Descriptive Statistics

To answer the research questions concerning data use and factors that facilitate or hinder data use, I interpreted survey results using descriptive statistics of frequencies and percentages for individual item responses. Wayman et al. (2016) pilot tested the data use survey and found the scales to be highly reliable (Cronbach alpha of 0.85 or higher for each scale). The authors assigned numerical values to each response item for computational analysis. By analyzing the frequency of these numerical responses across topical areas, I explored the perceived utility of different types of data, teachers' attitudes towards data use, as well as teachers' perception of the organizational structures intended to support data use. Since the data is ordinal, I utilized the median and mode as measures of central tendency to compare item responses.

Codebooks

To analyze the qualitative data from the think-alouds, lesson recordings, and semi-structured interviews, I employed an iterative coding process. The objective of qualitative research is to "review all of the data and make sense of them, organizing them into categories or themes that cut across all of the data sources" (Creswell, 2007, p. 38). Using the conceptual framework and existing literature, I employed concept-driven coding in addition to inductive coding during and following data collection. As described by Patton (2015), "ideas for making sense of the data that emerge while still in the field constitute the beginning of analysis" (p. 522). Several patterns and themes emerged while listening to teachers' reflections on student MAP data and discussing recorded lessons during the semi-structured interviews. While the data analysis commenced during data collection, I engaged in an iterative process of progressive focusing, as a

means of refining both a priori and emergent codes from the data (Check & Schutt, 2017, p. 302).

Due to the similar methods employed by Espin et al. (2017) in their analysis of teachers' interpretations of CBM graphs, I adapted several of their codes for analyzing teacher responses to the think-aloud prompts. Espin et al. (2017) analyzed teacher responses in terms of specificity, reflectivity, and accuracy. Whereas their objective was more evaluative, rather than exploratory, I similarly coded for reflectivity, however, instead of employing expert analysis for accuracy and specificity, I coded for examples of data interpretation and data application as depicted in the Combined Framework for Data Use (Figure 1). During data collection and analysis, I added codes regarding the nature of teachers' reflections, insofar as teachers frequently described limitations of MAP data and discussed other data sources that provided more useful information for decision making. The codebook for the MAP data think-aloud is included in Appendix E.

The lesson observation/recording codebook targeted the observable elements of practice as guided by the literature on effective Tier 1 reading instruction. Using the elements of DBDM as detailed in Chapter 2, I developed several a priori codes related to differentiation, scaffolding, feedback, and opportunities for formal and informal assessment. During data analysis, I organized these codes into two categories, so that the codebook reflected the observable stages of the data use cycle as depicted in Figure 1: data collection and data application. The codebook for the lesson observations is included in Appendix F.

While the codes regarding observed instruction focused on elements of practice, the interview transcripts served as the bridge connecting the two research questions addressing both instructional design and delivery. Teachers' responses to the interview questions provided insight

into the less observable stage of the data use cycle: data interpretation. Thus, the a priori codes

for the interview codebook came from the conceptual framework in Chapter 1 (Figure 1). I

organized codes into categories of teacher knowledge, types of data, and contextual factors. As

illustrated in the Combined Framework for Data Use in Literacy Instruction (Figure 1),

contextual variables, access to assessment resources, and teacher knowledge all play a critical

role in the cycle for data use. During data analysis, I adjusted several of the codes regarding

teacher knowledge in response to teachers' frequent attributions to curricular or experiential

knowledge as motivating instructional practice. I also added a code for contextual variables

related to school leadership based on the literature as well as teachers' frequent reflections on

LRCS leaders' involvement in data use.

With each review of the notes, recordings, and transcripts, the code books evolved to

become more analytic, rather than descriptive. I recruited the support of a critical peer in the

doctoral program to review the a priori and emergent codes to ensure alignment between the

research questions, the data, and the findings. Her feedback informed additions to the codebook

for the Think-Aloud, and she provided helpful feedback as we discussed my preliminary findings

from the data. The codebook for the Think-Aloud on MAP reading data is included in Appendix

E. The lesson recording codebook is included in Appendix F, and the interview codebook is

included in Appendix G.

Trustworthiness

Within case study research, the researcher enters the field and becomes deeply involved

within the context under study. In order to maintain credibility, it is, therefore, imperative to

acknowledge the ways in which one's positionality may influence the collection and analysis of

data (Hays & Singh, 2012). As a former teacher at the school where this study was conducted, I brought certain implicit perspectives and background knowledge. This emic or "insider's perspective" informed my inquiry decisions and the subsequent interpretation of the data (Hancock and Algozzine, 2017, p. 8). Whereas "each person coming to the data brings with them their own purposes, perspectives, and knowledge," I acknowledge that my former experience as a teacher within the context likely influenced my interpretation as well as the teachers' responses within data collection (Bazeley, 2013, p. 150). Due to my experience, I have a more in-depth understanding of the school's vision and mission, as well as the systems for schoolwide assessment. In these ways, my former experiences contributed to my credibility as the researcher. Additionally, my existing rapport with the participating teachers established a level of trust, so that the teachers seemingly felt comfortable during the classroom observations and interviews.

In order to ensure the trustworthiness of the data, I employed several methods including triangulation, member checking, and peer debriefing. I triangulated data from the surveys, think-aloud responses, lesson recordings, and interviews, to corroborate and expand findings from across data sources (Gross, 2018). I used member checking as a means of verifying my initial impressions and preliminary findings with each study participant. Throughout the process, I consulted with a peer reviewer and maintained a reflexive journal to document my reflections as well as the decision-making process. I also bracketed my initial impressions during data collection and documented my thoughts in reflective memos as a means of remaining organized and transparent throughout data collection and analysis.

Ethical Considerations

Trustworthy research is dependent upon ethical reasoning (Rallis & Rossman, 2012). Due to the nature of education research, ethical judgements "affect more than just the researcher and, therefore, must be transparent" (Rallis & Rossman, 2012, p. 77). Prior to obtaining informed consent from the study participants, I shared the purpose of the study and described the methods of data collection. I tried to ensure that all of the teacher participants understood the exploratory nature of my research, so that they would feel comfortable providing honest responses throughout data collection. I also followed up with a couple individual teachers via email throughout the study as a way of checking in and inviting any questions. Even though participating in this study did not pose any anticipated risks, I communicated the purpose of the study at each stage of data collection and reminded participants of their rights including the choice to withdraw at any point without repercussions.

To protect the identities of the study participants, I assured participants that their names would remain confidential, and I used pseudonyms for names of people and places throughout the final report. The same pseudonyms were used on all study documents (e.g., reflective memos). All data was stored securely without participants' identifying information, and all digital files remain password protected.

Researcher Reflexivity and Role

Prior to pursuing a doctoral degree in education, I taught in Virginia for five years. I spent two years teaching English for speakers of other languages and a reading intervention program at the secondary level before transitioning to elementary school to teach fifth grade for three years. After moving to South Carolina in 2021, I taught fifth grade reading and history at LRCS. My

husband remains an educator at LRCS in the middle school, so many of the teachers know us as colleagues and friends. To ensure the validity of the results and prevent bias, I elicited the support of a peer reviewer. The peer reviewer possesses background knowledge of reading science, data use, and qualitative methods. The peer reviewer does not have any affiliations with LRCS. Therefore, through regular debriefs during data analysis, the peer reviewer helped ensure the alignment between the findings and the data.

Throughout the data collection process, I aimed to remain as objective as possible. I reiterated to the participants that my role was non-evaluative, but rather I was there to provide insight regarding how teachers utilized data to inform instructional decision-making. While conducting think-alouds and interviewing teachers, I tried to keep my own contributions brief, so that I could focus on actively listening to each teacher's responses and ensure my own understanding through member checking.

Chapter Summary

This qualitative study was designed to explore how grade 3-5 teachers at LRCS use data during the planning and delivery of Tier 1 reading instruction. Throughout this chapter, I sought to explain the alignment between my theoretical lens, the research questions, the multiple case study design, the tools for data collection, and the methods for data analysis. I employed multiple methods to ensure the trustworthiness and credibility of my research. In the next chapter, I discuss the findings in response to the research questions.

Chapter 4: Findings

This capstone study was designed to explore how intermediate grade teachers at Little River Charter School (LRCS) use data to inform the design and delivery of Tier 1 reading instruction. Data-based decision making (DBDM) underpins the provision of differentiated instruction across tiers of support with a response to intervention (RTI) framework. However, literacy data at LRCS indicates that many students in the intermediate grades are not making sufficient progress in relation to grade-level expectations. This necessitates an examination of how data guides instructional decision making within Tier 1 reading instruction. Translating student data into instructional practice is a complicated and dynamic process mediated by the practitioner's beliefs and attributes as well as certain conditions within the organizational context. To gain an understanding of how DBDM is operationalized within Tier 1 literacy instruction in grades 3-5 at LRCS, the following research questions guided the current inquiry:

- How do teachers in grades 3-5 at Little River Charter School use data when designing Tier 1 reading instruction?

- How do teachers in grades 3-5 at Little River Charter School use data when delivering Tier 1 reading instruction?

- What factors do grade 3-5 teachers at Little River Charter School identify as facilitating or hindering effective data use?

To explore the research questions, I conducted case studies of six intermediate-grade teachers at LRCS. I examined qualitative data from multiple sources including survey responses, think-alouds, observations, and interviews. In the fall semester of 2023, I collected data across a three-week period, beginning with the distribution of the Teacher Data Use Survey. In addition to

distributing the survey, I conducted structured think-alouds regarding each teacher's beginning-of-year Measures of Academic Progress (MAP) reading data, and I observed and recorded a lesson during each teacher's literacy block. Following the recorded lesson, I conducted semi-structured interviews to reflect on 2 or 3 instances of DBDM from within the observed lesson. Table 4.1 summarizes these data sources.

Table 4.1

Data Collection Process at LRCS

Data Source	When Collected	Data Obtained
Teacher Data Use Survey	Week of 9/11/23	Teacher responses to survey questions regarding: • The accessibility and utility of different types of data • Perceived competence with data use • Attitudes towards data • Collaboration around data use • Organizational supports for data use
Structured Think-Aloud	9/11/23 - 9/28/23	Teacher responses to prompts regarding student performance on the beginning-of-year MAP reading assessment
Recorded and Observed Lesson	9/13/23 - 9/26/23	Observation field notes and follow-up questions for teachers regarding observed instances of data use
Semi-Structured Interview	9/14/23 - 9/28/23	Teacher responses to questions regarding data use in the planning and delivery of the observed/recorded lesson

By triangulating data from across these sources, I was able to identify multiple themes in response to the research questions. These themes informed three important findings regarding how teachers at LRCS perceive and use data to inform instructional decision making. In this

chapter, I will discuss the following findings and their relevant themes as a way of addressing the research questions:

- Finding 1: While teachers refer to multiple data sources during discussions of students' literacy skills and needs, teachers frequently prioritize their personal knowledge of students' attributes when making instructional decisions.

    o Theme 1.1: The perceived utility of personal data

    o Theme 1.2: Limitations of assessment data

    o Theme 1.3: The role of classroom management in decision making

- Finding 2: Teachers' DBDM is often bound by their background knowledge.

    o Theme 2.1: Prior experience as a data source

    o Theme 2.2: Breadth and depth of curricular knowledge integrated within decision making

- Finding 3: Intentional collaborations can facilitate teachers' data use.

    o Theme 3.1: The perceived role of leadership in facilitating data use

    o Theme 3.2: Collaboration as facilitating reflection on and refinement of practice

    o Theme 3.3: Variance in degree of collaboration across grade levels

Finding 1: While teachers refer to multiple data sources during discussions of students' literacy skills and needs, teachers frequently prioritize personal knowledge of students' attributes when making instructional decisions.

As described in Chapter 3, the Teacher Data Use Survey examined how teachers collected and used student data from four categories: state data (e.g., state achievement tests), periodic data (e.g., MAP tests), local data (e.g., district-developed common formative

assessments), and personal data (e.g., classroom-based assessments). Survey data and teachers'

responses to think-aloud prompts and interview questions revealed that most teachers consider

student performance on multiple assessment measures when planning literacy instruction. As

articulated by Christian Holt, teachers employ "a gumbo of data sources" during instructional

planning (Interview, September14, 2023). During their interviews, most teachers cited the MAP

reading assessment, state testing data (SCReady), *i-Ready*, and the *Fountas & Pinnell*

Benchmark Assessment System (Curriculum Associates, 2011; Fountas & Pinnell, 2011) as types

of data utilized during instructional planning and delivery. However, when later questioned about

which forms of data were perceived as the least helpful for instructional planning and delivery,

teachers regularly indicated these same assessments. In contrast, observations, interviews, and

survey responses all indicated that teachers frequently employed informal classroom-based

assessments or personal data to inform their decision making. Thus, while teachers

acknowledged the varied forms of data that can support instructional decision making, most

teachers expressed greater value for the informal data gleaned through practice.

In this section, I explain the perceived utility of personal data compared to other data

sources, and I discuss teachers' skepticism towards traditional standardized tests. I close this

section with an examination of how classroom and behavior management frequently drive

decision making within Tier 1. These themes offer key insight in response to the first two

research questions regarding how teachers use data when designing and delivering Tier 1 reading

instruction.

Theme 1.1: The Perceived Utility of Personal Data

Within the Data Use Survey, data sources were categorized as state, periodic, local, or personal forms of data. State data refers to standardized state assessments (e.g., SCReady); periodic data refers to commercially available, periodically administered assessments (e.g., MAP); local data refers to district-developed assessments, and personal data refers to classroom-based assessments (Wayman et al., 2016). When asked about the frequency with which teachers utilized state assessment data, five of the six teachers indicated "less than once a month," and one teacher indicated "do not use." When asked about the frequency with which periodic and local data were used, teacher responses were more varied with responses ranging from "a few times a week" to "once or twice a month" and "do not use." In contrast, all teacher respondents indicated that they used personal data "a few times a week." When asked about the perceived utility of each form of data, responses were similarly varied for all data sources, except personal data. All six teachers classified personal data as "very useful" to practice. This finding regarding the perceived utility of personal data was confirmed by teachers' interview responses.

During her interview, when asked about which data sources were most helpful in designing and delivering Tier 1 reading instruction, Katie Gates explained that:

Anecdotal notes and what I observe and what I see—that's what is most helpful when I am designing a lesson. MAP and *i-Ready* may help with goals, but when thinking of day-to-day instruction, I primarily use my observations and anecdotal notes. (Interview, September 15, 2023)

I observed Ms. Gates during a writing lesson, in which students composed "I Am" poems. Ms. Gates provided all students with sentence starters and walked them through the

writing process line-by-line. When introducing several of the lines that elicited sensory details (e.g., *I hear...*), Ms. Gates offered students the choice to interpret the prompt literally or to add imaginary elements. "Close your eyes for a moment," she directed. "I hear water rhythmically crashing against the sand. Where am I?" The students responded eagerly to her example. "Now think of your own examples. You can write about something you actually hear or something you can imagine hearing" (Observation, September 13, 2023). All twenty students were gathered around Ms. Gates on the front rug for the writing assignment, and several scooted closer to show Ms. Gates their work. Ms. Gates called attention to a student sitting on the far corner of the rug. The student's eyes were closed, as she was trying to visualize like Ms. Gates had previously modeled. When I asked Ms. Gates about her thinking when she offered students these literal and imaginative options and examples, she indicated that a previous writing assignment involved an imaginative task, and many of her students struggled to think beyond their literal context. During the observed lesson, Ms. Gates, therefore, provided the sentence prompts, models, and response options as a way of "scaffolding through voice and choice" (Interview, September 15, 2023).

Ms. Gates was not the only teacher to use her previous observations and personal knowledge of students to guide instructional decision making. When questioned about why she approached certain students during a writing task in her classroom, Melanie Scott responded that she gets to know students by building personal relationships with them.

> For example, I knew this little girl over here [Ms. Scott motioned to an empty chair in her classroom]. She needed to be pushed, but I also knew I had to be real sweet with her because if she felt too challenged, then she would start to shut down. (Interview, September 19, 2023)

Ms. Scott used her personal knowledge of students to guide the provision of individualized feedback. Similarly, when I questioned Mr. Hobbs regarding how he knew which fifth-grade students needed more support during instructional tasks, he responded that the beginning of year MAP data provided a snapshot, but "after that, students really start to settle into what they can and can't do and become a little stubborn about it" (interview, September 28, 2023). By observing how students responded to daily classroom assignments and activities, Mr. Hobbs indicated that he was able to gain greater insight into what each student needed.

While teachers collected data from more standardized assessments, they regularly described making decisions based on information gleaned informally through personal interactions with their students. During the classroom observations, teachers from across grades 3-5 regularly responded to students' needs or anticipated needs with intentional scaffolding and feedback. When questioned about these observed instances of decision making, teachers identified their personal knowledge of students' characteristics as motivating and guiding their practice.

Theme 1.2: Limitations of Assessment Data

Having taught fifth grade for several years, the previous theme did not surprise me. My own practice was often informed by my personal knowledge of students as gained through informal interactions with students, their caregivers, and their previous teachers. However, logically, I wanted to dig deeper to uncover why personal data sources and classroom-based assessments were consistently cited as the most helpful and most frequently utilized during instructional planning and delivery. As previously noted, on the data use survey, all six teacher participants reported using personal data "a few times a week," and they also agreed that

personal data was "very useful" to practice. The consensus of these responses stood out in contrast to the varied responses regarding the frequency and utility of other data sources. Teachers' responses during the think-aloud and interview offered some insight regarding the perceived limitations of more standardized assessment measures.

A Snapshot. When describing assessment data from SCReady, Mr. Hobbs indicated that the student reports "give [him] a snapshot... of who is where," but "in terms of actually planning instruction, that's on the back burner," (Think-aloud, September 28, 2023). During his interview, I revisited this response and asked about what information he perceived as missing from "snapshot assessments" like SCReady. Mr. Hobbs responded that these assessments leave him questioning "is it a behavior thing? A focus thing? Or a gap in knowledge?" (Interview, September 28, 2023). Similar sentiments were expressed by several of his colleagues when reflecting on MAP and SCReady.

Melanie Scott characterized assessment data as less helpful in designing and delivering Tier 1 reading instruction. According to Ms. Scott, the most helpful data sources include "things like [students'] writing journals and our reading groups where we are reading passages aloud and answering comprehension questions because that is in real-time. It's not a piece of data that I snapshot" (Interview, September 19, 2023). Similarly, Katie Gates explained that "MAP data is one snapshot and it depends on the student performance on one day" (Interview, September 13, 2023). Ms. Gates helped define the term "snapshot," in that these assessments capture student performance at one point in time. During her think-aloud, Ms. Gates noted that these assessments have "a purpose in the classroom, but assessment data is just one part of the kid" (Think-aloud, September 12, 2023). In a follow-up question, I asked Ms. Gates to elaborate and clarify the role

or purpose of assessment data within the classroom. To which, she replied that assessment data often informs goals, but achieving those goals requires more information.

        Insufficient Information. Having spent his entire teaching career at LRCS, Christian Holt is deeply familiar with the school's culture, history, resources, and staff. During our conversations, Mr. Holt repeatedly referenced individual students as examples, and in a few instances, he would change his initial response following his reflection on a specific student. For example, when I asked about the adequacy of assessment data for making instructional decisions, Mr. Holt initially responded affirmatively that he had sufficient information for decision making, and then he went on to describe a student who scored below the grade-level benchmark on the beginning of year MAP assessment. He concluded that "we need more diagnostic data... It [MAP] gives you an idea of where they're at, but you need other assessment data or observation" (Think-aloud, September 13, 2023).

        While fifth-grade teacher, Jackson Hobbs possessed the least teaching experience of the participating teachers at LRCS, he, too, acknowledged a desire for more information about students' literacy needs and assets. During the think-aloud, I asked Mr. Hobbs how he might use beginning of the year assessment data, and he replied that "when it comes to planning and delivering instruction, it makes me want more information from assessment- something that drills it down a bit more" (Think-aloud, September 28, 2023). Mr. Hobbs repeated this sentiment when I asked about the sufficiency of assessment data for making decisions regarding intervention and instruction. While he indicated that the data may be sufficient to identify students who need intervention, the data is "not so supportive within [Tier 1] reading instruction" (Think-aloud, September 28, 2023). Mr. Hobbs elaborated that:

[Assessment] data reveals the truth that students are all over the place when it comes to reading. Even though the kids are in different places, it doesn't necessarily change what I teach. Maybe it will change how I teach, but usually that comes from getting to know students rather than MAP or assessment data. (Think-aloud, September 28, 2023)

Third-grade teacher, Melanie Scott, echoed the concern that MAP data does not provide information for the purpose of guiding Tier 1 reading instruction. In her words, "MAP isn't skill-based, and I don't want to teach to the test. I want to make sure that we are building a foundation." (Think-aloud, September 14, 2023). To build this foundation, most teachers described supplementing their knowledge of students with information from classroom-based assessments and personal observations.

Identified by her third-grade colleagues as a "master teacher," Kelly Birch described her system of assessment as involving a combination of sources including writing samples, spelling inventories, MAP, *i-Ready*, *Fountas and Pinnell Benchmark Assessments* twice per year, and regular running records for students with more intensive literacy needs. Despite her understanding of these assessments and the information they provided, Ms. Birch described using the state standards as her primary guide during instructional planning. Specifically, Ms. Birch explained that the standards allowed her to "dig deeper" into necessary literacy skills and facilitated vertical alignment:

> When I taught in the public schools, we had to teach to the MAP skills, but third grade standards are more intensive and using the third-grade standards, I can dig deeper... I try to dig in deep into the standards and look at the alignment with other grades when I am planning. (Think-aloud, September 13, 2023)

Ms. Birch recognized that she needed more information than she could glean from a single assessment, and even combining assessments, she dug into the standards for a more comprehensive understanding of what to target during reading instruction. In this way, Ms. Birch affirmed the sentiment expressed by many of her teaching colleagues, that the standardized assessments employed in grades 3-5 at LRCS provided insufficient data for exclusively driving instructional decision making.

  Effort Over Achievement. Another shared sentiment in response to questions about the use of assessment data involved valuing student effort rather than student performance. Multiple teachers discussed praising student effort, rather than student achievement. Kelly Birch indicated that she is "dead against rewarding student performance" (Think-aloud, September 13, 2023). To her, praise in response to an assessment should address "the effort and the mindset" (Think-aloud, September 13, 2023). Like Ms. Birch, Kristin Moore in fourth grade described how she sees too much anxiety tied to these assessments without the added pressure of "showing a score to a student and saying, 'I want you to beat this'" (Think-aloud, September 28, 2023). To help relieve anxiety, Ms. Moore tells students that these assessments are practice in preparation for high school. Other teachers criticized the accuracy of the data gleaned from MAP and *i-Ready* assessments due to students' anxiety or their inability to maintain focus for the length of time required to respond to all the questions on these assessments. Valuing students' efforts rather than their test scores, thus, contributed to and reflected teachers' greater reliance on classroom-based assessments and personal knowledge as opposed to the more standardized measures of literacy.

Theme 1.3: The Role of Classroom Management in Decision Making

When questioned regarding their decision making within observed instruction, many teachers cited student behaviors or interests as motivating factors. Additionally, several teachers employed structures and routines as a means of maintaining order and organization throughout instruction. While classroom and behavior management are important across tiers of support within an RTI system, these factors are especially evident in Tier 1 where students possess a wider range of strengths and needs (Adamson et al., 2019). Thus, it is not without precedence that many of the teachers at LRCS identified knowledge of students' behavioral needs as guiding their instructional planning and delivery.

Behavior Management. Students in the fourth and fifth grades at LRCS are split into two teams for literacy and math instruction. Therefore, Ms. Moore, Ms. Gates, and Mr. Hobbs teach two blocks of literacy instruction. In previous years, student placement within those blocks was determined by students' performance on the beginning of the year MAP assessment for math. However, the fourth-grade team advocated for change last year, and the fifth-grade team followed their example when organizing student groups this year. As described by Mr. Hobbs, "Groups are organized this year based on behavior and who works well with whom. We tried to avoid butting heads, so they are grouped by temperance." (Interview, September 28, 2023). Ms. Gates similarly discussed their departure from ability grouping, as compelled by the needs of the students. In her own words:

> Last year, instead of ability grouping based on math data- we made the groups more
>
> similar in their heterogeneity. We noticed that we could do more with our students, and
>
> we could have students work independently or with a peer versus having twenty students

who really needed more support all the time. We found that by splitting students into

more even groups, it really helped students and it helped us, too. (Interview, September

15, 2023)

When I asked Ms. Gates about her process for organizing students into these more heterogenous

groups, she indicated that she and her math teaching colleague first divvy up students based on

RTI resources and the scheduling needs of the interventionists and special education team. Then,

they simultaneously consider MAP data and the behavioral needs of students. Ms. Gates

indicated that the "goal was to balance the needs present within both classes" (Interview,

September 15, 2023).

In third grade, students stay with their homeroom teacher for content area instruction, but

behavioral needs factor into decision making in other ways. For example, when I asked Ms.

Birch about why she approached certain students during a "Turn-and-Talk" activity, Ms. Birch

indicated that one student was absent the day before, and so she wanted to make sure he had the

necessary information to engage in a conversation with his peer. She approached another pair of

students because "one student is more shy than the other, so I knew that my proximity would

encourage both students to participate" (Interview, September 19, 2023). Ms. Birch's students

had designated thought partners who they sat beside on the front rug during direct instruction.

Ms. Birch allowed students to pick their thought partners earlier in the school year based on

certain criteria she provided. She occasionally made changes based on her observations.

In Mr. Holt's classroom, he allowed students to choose their partner for a writing task.

Like Ms. Birch, he told students to select a partner who would help them brainstorm good ideas

and provide helpful input while discussing the writing assignment. He also indicated that he

would rearrange the partnerships, if needed. Mr. Holt then called out individual students one by one and asked them to take their writing notebooks and move behind their selected partner's chair. In this way, he was able to be intentional about the degree of choice offered to certain students. Mr. Holt explained that "several students who are stronger writers have best friends who are also strong writers, and I knew that they would choose each other if I let them, and that limits the partnership options for other students who really need a strong partner" (Interview, September 14, 2023). Thus, Mr. Holt integrated his knowledge of student friendships and his knowledge of students' writing needs to motivate his decision making. Across classrooms, teachers' knowledge of students' needs beyond literacy (e.g., social, emotional, behavioral) informed their decision making within the planning and delivery of Tier 1 reading instruction.

Student Engagement. Another method of managing student behavior involved the use of specific strategies to support student engagement. Within instructional planning, several of the third and fourth grade teachers described integrating students' interests within lesson activities as a means of enhancing student engagement with the content. In the third-grade classrooms, students were learning how to structure and compose opinion writing with reasons and details. Students responded to the prompt, "the best pet is a _____." As Mr. Holt described:

> Kids love pets and they are eager to give their responses about why they love them, and there's no lack of motivation. Whether their writing is good or bad- they love it. They are all engaged and trying their best. (Interview, September 14, 2023).

Similarly in fourth grade, Ms. Gates and Ms. Moore embedded comprehension skill instruction using a popular podcast, the *Six Minutes* podcast. The teachers assigned certain episodes each week and constructed corresponding comprehension questions. These assignments

comprised a daily task on students' ELA Checklist. Photos of the ELA Checklist and the podcast questions are included in Figure 4.1. During the observed lesson in Ms. Moore's classroom, Ms. Moore used the podcast to guide an activity on visualizing. She played an episode of the podcast aloud for the class. As they listened to the episode, students completed a graphic organizer with pictures of their mental images and notes on the details that stood out to them. Several students cheered when Ms. Moore told them that they would be listening to the podcast together. Following the activity, Ms. Moore asked students to bring their graphic organizers to the front rug, and students passed graphic organizers clockwise around the circle while students reflected on similarities and differences between their mental images and the mental images depicted by their peers. Ms. Moore explained that by employing these reflective exercises, she aimed to "encourage students to value the quality of the work they produce" (Interview, September 28, 2023).

Structures and Routines. Teachers across the grade bands described using methods similar to Ms. Moore to engage students and keep students organized. Whereas fourth-grade teachers utilized the Weekly ELA Checklists (Figure 4.1), the third-grade teachers used a weekly Work Plan with assigned tasks for students to work on independently while teachers met with students either individually or in small groups. In fifth grade, Mr. Hobbs described using Google Classroom and Google Slides to organize student materials. Once students reach the fifth grade at LRCS, they are given a designated school iPad for use during the school day. Therefore, Mr. Hobbs referenced several digital tools that helped promote student engagement and/or supported data collection, such as Blooket, Quizlet, Readworks, and IXL.
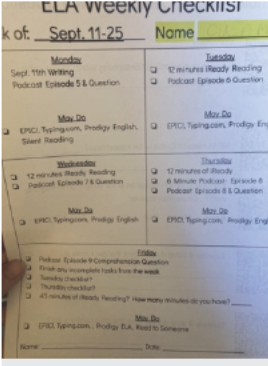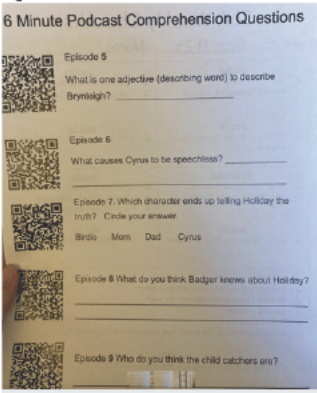
In the third- and fourth-grade classrooms, teachers developed other routines and strategies to maximize student engagement and enhance the efficiency of transitions. As previously noted, third-grade students in Ms. Birch's class had assigned thought partners for interactive tasks throughout instruction. In fourth grade, Ms. Moore described how she and Ms. Gates commenced the ELA block in the same way each day. A writing prompt was posted on the board, and students gathered on the front rug with their writing notebooks and immediately began working. Students knew the expectations and Ms. Moore and Ms. Gates regularly collected writing notebooks to provide a few notes of feedback. Ms. Moore also described displaying these notebooks during Portfolio Night, an event hosted each trimester at LRCS during which students guide their parents through artifacts of their learning. In our discussion of how she monitored student responses, Ms. Moore explained that:

> I try to write in 5 writing notebooks a day, leaving comments or notes. It's set out at portfolio night, and the parents see their work and students are so proud of it. Once and while we go back and look to see what they did at the beginning versus now. (Interview, September 28, 2023).

The grade 3-5 teachers at LRCS intentionally developed routines to maximize their instructional time. By establishing clear expectations, the teachers tried to minimize unnecessary disruptions because students knew what to expect and how to manage their time throughout the ELA block. While teachers undoubtedly used data in the development of these organizational routines and structures, teachers frequently cited information gleaned from practice, rather than student performance on standardized assessments.

Figure 4.1

Lesson artifacts

Artifact	Grade, Teacher	Purpose
Student Work Plan	3rd Grade, Kelly Birch	During the observed lesson, students were directed to start their Work Plan once they completed the graphic organizer for opinion writing. Ms. Birch and the third-grade team gave students one of four work plans each week based on their assigned reading group. All students received the same work plan during the observed lesson because students were still learning the relevant classroom routines.
ELA Weekly Checklist	4th Grade, Katie Gates	During the observed lessons in fourth grade, both teachers directed students to spend time working on their ELA Weekly Checklists. All students received the same checklist to organize their independent work time.
***Six Minutes* Podcast Weekly Questions**	4th Grade, Katie Gates	On the backside of the ELA Weekly Checklist, students were given comprehension questions in response to assigned episodes of the *Six Minutes* podcast.

Summary of Finding 1

Intermediate grade teachers at LRCS described collecting data from a variety of sources during structured think-alouds and interviews. Responses on the Teacher Data Use Survey confirmed that teachers have access to state, periodic, local, and personal assessment data. However, the perceived utility and frequency with which teachers reported utilizing assessment data from more standardized sources varied greatly. Survey data underscored the shared belief that personal assessments provided the most helpful information for making instructional decisions. During interviews and think-alouds, teachers expressed concerns that assessment data did not provide a comprehensive picture of what students needed or what teachers needed to teach in order to support student growth. When teachers elaborated on examples of decision making observed during practice, teachers frequently cited using their knowledge of students' behavioral and social needs in addition to their literacy needs when planning and delivering instruction. In the next section, I describe experience as an unexpected data source that appeared to influence how teachers engaged in DBDM during instructional planning and delivery.

Finding 2: Teachers' DBDM is often informed and bound by their background knowledge.

The constructivist assumption that knowledge is subjectively created by the learner's interactions and experiences resonated as I observed and listened to LRCS teachers' reflections on DBDM. Teachers described acquiring a repertoire of strategies and routines in response to prior experiences both within and outside of the classroom. Several teachers also seamlessly integrated skills from across their scope and sequence within the observed lessons. While background knowledge and experience informed teachers' decision making, teachers were also

bound by their previous experiences, in that their use of data was limited, in part, by the types of assessment data that they had been trained to use.

In the following sections, I explore how prior experience simultaneously informed and constrained intermediate-grade teachers' data use within Tier 1 literacy instruction at LRCS. I also discuss how teachers' knowledge of content was integrated into the kinds of scaffolding and feedback provided throughout instructional delivery. These themes, thus, provide further insight in response to the first two research questions regarding how teachers use data during the design and delivery of reading instruction.

Theme 2.1: Prior Experience as a Data Source

While the survey on teachers' data use did not directly assess the connection between experience and teachers' DBDM, patterns of response indicated that teachers with more teaching experience generally reported greater feelings of competence for data use. For example, the four teachers who indicated that they agreed with the statement "I am good at using data to plan lessons," all possessed ten or more years of prior teaching experience. Meanwhile, the two teachers who responded that they disagreed with the previous statement possessed fewer years of teaching experience at LRCS and in general. This same pattern was replicated in teachers' responses to the prompt "I am good at adjusting instruction based on student data." These response patterns suggest a possible association between years of teaching experience and teachers' perceived competence for data use.

During the structured think-alouds regarding MAP data, most teachers expressed similar sentiments regarding the limited utility of MAP data; however, the ways in which teachers supplemented MAP data varied across classrooms. Many teachers, especially those with more

teaching experience, cited other methods of gleaning valuable information about students'

literacy needs that they had learned and vetted through practice, such as regular writing samples,

spelling inventories, and fluency passages (Kelly Birch think-aloud, September 13, 2023).

Similarly, teacher interviews revealed that many teachers relied on experience as a means of

refining their instructional plans and practice each year. For example, when questioned about

how she selected the resources and tools that she utilized during the observed writing lesson,

Melanie Scott responded that:

> When I first started teaching [at LRCS], all the teachers on our team came to an
>
> agreement that we needed something for writing. Last spring, we found a writing
>
> curriculum that we do like and we use it as a roadmap. This year, we are all trying to stick
>
> to the curriculum to see how it works with the standards. (Interview, September 19,
>
> 2023).

Ms. Scott and her 3rd-5th grade teaching colleagues provided several examples of the

ways in which prior experience informed their decision making. However, these examples also

illustrated the ways that prior experience can limit one's knowledge to certain tools, resources,

and methods. The following sections unpack these themes with further evidence from teachers'

reflections on data and practice.

Experience Informing Decision Making. Christian Holt began his career at LRCS as a

teacher's aide in a first-grade classroom. After being an aide for four years, Mr. Holt earned his

master's degree in teaching and transitioned to the third-grade classroom, where he has taught for

the past five years. When I concluded the interview with Mr. Holt, I asked if he had any

questions or additional thoughts that he would like to share with me. Mr. Holt used the

opportunity to describe how he has learned "everything [he] knows about teaching from [his] colleagues [at LRCS]" (Interview, September 14, 2023). Specifically, he discussed the impact of working with two teachers, one of whom was a former first-grade teacher, and the other teacher was Kelly Birch. In this way, Mr. Holt explicitly acknowledged how his previous experiences working with specific colleagues influenced his practice.

In fourth grade, Katie Gates cited experience as informing her decision to construct "I Am" poems during whole-group instruction, rather than assigning the task to small groups, partners, or as independent work. According to Ms. Gates "Last year, we did the poem in small groups, and I explained it 10 different times in 10 different ways. Having students work on their poems in small groups and independently became very hectic" (Interview, September 15, 2023). She also noted that a previous lesson which involved similar abstract skills proved to be very difficult for several students. For these reasons, all of which were rooted in prior experience, Ms. Gates used whole group instruction during the observed lesson.

In both fourth-grade observations, the teachers reserved the final ten minutes of instruction for practice routines involving ten vocabulary words. Ms. Gates and Ms. Moore used the same words and the same ten-day systematic routine for introducing, practicing, and assessing students' vocabulary knowledge. When I asked each teacher about these routines, they described attending a professional development (PD) opportunity together at the end of the summer regarding vocabulary instruction. Ms. Gates and Ms. Moore adopted the routine they were taught for teaching vocabulary and selected words from relevant content units on Flocabulary, a digital learning platform. In this way, the shared PD experience had a direct impact on Ms. Moore and Ms. Gates' instructional practice.

In third grade, Ms. Scott explained how her understanding of assessment data has been informed by her prior experience using different tools associated with certain assessments. Specifically, Ms. Scott explained how she typically referred to the literacy goals set by *i-Ready* and felt equipped to support students in achieving those goals, as opposed to the reading goals set by MAP. In her own words:

> I think the *i-Ready* goals are absolutely achievable because *i-Ready* gives the teacher so much support. Maybe there are those things for MAP, and I just don't know where they are at, but to me, MAP goals feel less realistic without knowing more than the numbers. (Think-aloud, September 14, 2023).

Ms. Scott's reflection on goal setting and using MAP versus *i-Ready* illustrates how a teacher's familiarity with an assessment system can inform how or if the assessment data gets translated into practice. Whereas Ms. Scott's familiarity with the resources provided by the *i-Ready* platform informed her beliefs about the feasibility of achieving the assessment's goals, the converse was true for MAP. Ms. Scott's lack of familiarity with the MAP platform influenced her skepticism of its goals. In fourth grade, Ms. Moore provided nearly the same response regarding growth goals, insofar as she "look[ed] more at the *i-Ready* goals," because she lacked familiarity with MAP (Think-aloud, September 28, 2023). In this way, the limitations of a teacher's previous experiences also bore implications for their practice.

Limitations of Experience. Like Ms. Scott, Mr. Hobbs' responses during the think-aloud illustrated how an individual's level of familiarity with an assessment tool can limit one's understanding and interpretation of assessment data. Mr. Hobbs explained that "this [was] only [his] second year looking at MAP data" (Think-aloud, September 28, 2023). Rather than

interpreting MAP reading data as a means of identifying literacy-related needs, Mr. Hobbs described using the assessment to get an idea of students "who are more self-sufficient and those who may need more 1:1 support" (Think-aloud, September 28, 2023). He also indicated that MAP scores give him "an idea of parental involvement" (Think-aloud, September 28, 2023). While MAP data is utilized to help determine which students receive tiered support at LRCS, Mr. Hobbs' discussion of how he used MAP data to infer student characteristics did not align with the assessment's intended purpose, which is to identify individual students' literacy needs and to gauge students' growth over time (NWEA, n.d.). This misalignment between Mr. Hobbs' interpretation of MAP data and the assessment's purpose, in part, reflects his lack of familiarity with the assessment tool itself.

Whereas Mr. Hobbs' responses illustrated the caveat he repeated several times during the think-aloud, that he lacked experience using MAP data, Ms. Moore, who possessed more teaching experience than Mr. Hobbs, also lamented how her lack of experience in fourth grade bore implications for practice. During the observed lesson in Ms. Moore's classroom, students received frequent response opportunities. The frequency of these response opportunities was matched by the regularity of Ms. Moore's affirmative or corrective feedback. The pace throughout her instruction was brisk, and her teaching exemplified many of the tenets of explicit instruction as defined in chapter 2. During our follow-up interview, after reflecting on several instances of feedback and scaffolding, I asked Ms. Moore the same question that I posed within all the teacher interviews: "What, if any, additional resources or tools related to literacy data would be helpful to you in designing and delivering Tier 1 reading instruction?" Without hesitation, Ms. Moore responded:

I've told [3-5 instructional leader] this from the beginning. Because I was always a

primary teacher, I really struggle with reading groups. We have a new room with reading

resources. It's all F&P books and questions, and maybe it will help, but I just really

struggle with teaching small groups in fourth grade. I'd love to go to a workshop on

reading groups because I feel like I have a lot to learn there. In 1st and 2nd, it was all about

skills. I keep reading about repetition, so I try to spiral whenever we can, but reading

groups are so hard for me.

While Ms. Moore did not work with small reading groups during the observed lesson, she

described feeling pressured to meet with small reading groups regularly. During the think-aloud

on MAP data, Ms. Moore explained that she plans lessons a week ahead of time as a way of

differentiating instruction based on students' needs as observed in class. In her own words, Ms.

Moore indicated that "We [the fourth-grade ELA teachers] have a scope and sequence that guides

standards, but I use what I see in class to guide the activities that we use week-to-week" (Think-

aloud, September 28, 2023). While Ms. Moore attributed her feelings of being ill-equipped to

provide targeted small group support as related to her lack of experience, her reliance on

personal data sources may have also limited her understanding of how to provide targeted small

group support. Comprehension is complex and comprehending a text relies on multiple precursor

skills, which necessitates the use of more diagnostic measures in order to appropriately tailor

instruction (Francis et al., 2006). Whereas most of the teachers expressed a reliance on personal

data as a means of filling any perceived gaps in standardized assessments (see Finding 1), Mr.

Hobbs and Ms. Moore also highlighted the ways in which personal data is itself limited by one's

previous experience and background knowledge.

Theme 2.2: Breadth and Depth of Curricular Knowledge Integrated Within Decision Making

In addition to experience, multiple teachers cited their knowledge of the standards, scope, and sequence as informing their instructional decision making. Within the observed lessons, I noticed several teachers integrating multiple skillsets seamlessly within their provision of feedback and scaffolding. These observations in addition to teachers' reflections on data illustrated the ways in which the breadth and depth of a teacher's curricular knowledge influenced their DBDM during the planning and provision of Tier 1 reading instruction.

In Ms. Birch's third-grade classroom, students were given graphic organizers with sticky notes to visually distinguish between the reasons they had previously written regarding why their chosen pet was the best and the details that would support each reason. When I asked Ms. Birch about why she utilized the graphic organizer and sticky notes in this way, she described "planning with the end in mind" (interview, September 19, 2023). She knew that the lessons were systematically building towards an end goal of writing a multi-paragraph opinion essay with clear reasons and details. She also knew that students needed to understand how each detail connected to and supported a specific reason. While all of the observed third-grade teachers provided a model of their own opinion writing, Ms. Birch used a think-aloud procedure to walk students through her writing process when constructing a model. When I asked Ms. Birch about this routine, she said "It's the 'I do' of the gradual release model. I just want students to hear my thinking without the risk of a student contributing an example that may be inaccurate or confuse other students" (interview, September 19, 2023). In her think-aloud, Ms. Birch explicitly checked for the attributes of "third-grade writing," including complete sentences, capitalization, and correct punctuation. While the lesson objective focused on adding details within opinion writing, Ms.

Birch intentionally integrated other writing standards in a way that seemed natural. As previously noted, Ms. Birch described "digging deep" within the standards to guide her instructional decision making (Think-aloud, September 13, 2023), and throughout the observed lesson, her knowledge of the standards was evidenced by the way she modeled her thinking and questioning.

In Kristin Moore's fourth-grade classroom, knowledge of the standards similarly manifested within the provision of affirmative and corrective feedback. When selected students shared their responses to the daily writing prompt, Ms. Moore asked one student to pause and reread their composition while the rest of the class listened and raised their hands each time they heard a current or previously taught vocabulary word. Later, when a student shared her notes on her "mental movie" from the *Six Minutes* podcast, Ms. Moore similarly directed the student to reread her notes while the rest of the class identified examples of transition words that the student employed in her writing. When I asked Ms. Moore about her provision of feedback, she explained that "saying 'good job' feels dismissive" (interview, September 28, 2023). She also noted that she is "very careful" in selecting "who gets to share when," which she described as a way of ensuring that all students receive opportunities to participate in ways that will "build their confidence" (interview, September 28, 2023). Thus, Ms. Moore intentionally integrated knowledge of the literacy standards with her knowledge of students when providing feedback throughout instruction.

Summary of Finding 2

In addition to integrating their personal knowledge of students throughout literacy instructional planning and delivery, the intermediate grade teachers at LRCS highlighted the ways in which experience informed data use. Survey data illustrated a possible association

between experience and the teacher's perceived competence for data use. Teachers discussed how their experiences within the classroom and professional learning experiences played a role in the design and delivery of Tier 1 reading instruction. Within think-alouds and interviews, teachers described how their familiarity with an assessment tool often influenced how and if the data informed practice. The lesson observations also revealed that teachers frequently employed their knowledge of the standards during instructional decision-making. In this way, experience and background knowledge informed data use during planning and instructional delivery. Thus, this finding offers insight in response to the first two research questions concerning how teachers use data during Tier 1 literacy instruction, as well as the third research question regarding the factors that facilitate and hinder data use. This finding also bears implications for the potential of shared learning experiences to support teachers' data use, which is addressed in greater depth in Chapter 5.

Finding 3: Intentional collaborations can facilitate teachers' data use.

Like the previous findings, the third finding highlighted another source that teachers frequently referenced when discussing their use of data. In addition to their personal knowledge of students and their background knowledge, teachers often discussed the role of peer and team collaborations in DBDM. Survey responses and teachers' reflections during interviews and think-alouds illustrated the influential role of colleagues and school leaders in shaping how data gets interpreted and utilized during Tier 1 reading instruction. In this way, this finding responds to the third research question regarding the factors that facilitate and hinder teachers' data use during Tier 1 reading instruction at LRCS.

Theme 3.1: The perceived role of leadership in facilitating data use

According to their responses on the Teacher Data Use Survey, all six participating teachers agreed that "there is someone who answers my questions about using data." Three teachers strongly agreed and three agreed that "School leaders encourage data use as a tool to support effective teaching." While these responses demonstrate that teachers felt supported by school leaders in their use of data, teachers' responses regarding the regularity with which data guided discussions in collaborative teams were more varied. When asked how frequently teams "approached an issue by looking at data," one teacher responded "often," two teachers responded "a lot," and three teachers indicated "sometimes." Despite the perceived support from leadership for data use, teachers also provided more varied responses regarding the translation of data into changes in instructional practice. Two teachers disagreed with the statement "there is someone who helps me change my practice (e.g., my teaching) based on data." During interviews and think-alouds, several teachers elaborated on the ways in which school leaders collaborated with teachers around data use.

During the MAP think-aloud, when I asked Melanie Scott about the adequacy of assessment data to make instructional decisions, she responded as follows:

I think that by comparing MAP and *i-Ready* with F&P and having conversations with students' previous teachers, we are able to get a really accurate picture of our kids. The way we do RTI here is awesome because we really do come together and have conversations about data. We have meetings right after or right before report cards about students in RTI. (Think-aloud, September 14, 2023)

Ms. Scott went on to describe a former student who had been identified for reading services, but ultimately during conversations with the reading specialist and the grade 3-5 instructional leader, they determined that the student's difficulties were behavioral, rather than specific to literacy. She concluded that "these discussions are as important as the data itself" (Think-aloud, September 14, 2023).

While Ms. Scott provided insight into how leadership participated in regular meetings concerning students who receive support in Tiers 2 and 3, the role of leadership in Tier 1 reading instruction was less apparent. In response to the same question regarding the adequacy of data for decision making, Mr. Hobbs described how the data itself may be sufficient for intervention, but he did not find assessment data as helpful for guiding Tier 1 instructional decision making. This may be due in part to how assessment data is used within these RTI meetings described by Ms. Scott.

Like Ms. Scott, Ms. Birch similarly extolled the RTI system at LRCS. According to Ms. Birch the RTI system is relatively new. Three years ago, the school board created designated positions for a reading specialist and a math specialist. Two years ago, these specialists started facilitating periodic data meetings regarding "student movement across tiers of support" (Think-aloud, September 13, 2023). Ms. Birch was the only teacher to mention the use of progress monitoring data, and she discussed it within the context of her description of RTI:

> This year, for progress monitoring, I am using the same data as last year. I use SC Ready brief assessments to give students exposure to those kinds of questions throughout the year. We also use F&P running records and *i-Ready* progress monitoring passages. Last

year, it all came from *i-Ready*. Now, they want us to match our assessments with what we

are supporting students in, and it's up to teachers. (Think-aloud, September 13, 2023)

During her think-aloud, Ms. Birch identified several ways in which LRCS leaders promoted the

development of a robust tiered system of support and encouraged teachers' data use. However,

her responses were unique in the specificity with which she described RTI and the types of

assessments she commonly employed. Additionally, by giving teachers exclusive discretion over

the tools used for progress monitoring, school leaders assumed that teachers possessed a

common understanding of how to do so, which appeared not to be the case based on the

variability of teachers' experiences and responses throughout this study.

In the think-aloud with Katie Gates, she described how she had four students with

Individualized Education Programs (IEPs) and four students "in RTI for reading" (Think-aloud,

September 12, 2023). I asked her to describe how the tiers of support were defined at LRCS, and

she responded that students identified as needing Tier 2 support received intervention 2-3 times

per week. She said that students who do not meet goals set by the reading specialist or students

whose MAP data indicates greater literacy needs received "more intensive support 4-5 times per

week" (Think-aloud, September 12, 2023). When I asked Ms. Gates about when these students

received intervention, she indicated that they were pulled out during their literacy block (Tier 1).

During four of the observed lessons, groups of 2-5 students left the classroom for 25-50 minutes

due to Special Education services or RTI. In third grade, Ms. Scott described how she has one

student who consistently misses the entire literacy block because of pull-out services:

One little guy who stood out to me on MAP was here [Ms. Scott pointed to a student on

her class MAP report]. He was already identified as SpEd. I know that I have to keep my

eye on him. On one hand, he gets a lot of intervention between SpEd and RTI, but he

misses all of my instruction. I try to pull him during different pieces of time that I can

find throughout the day. (Think-aloud, September 14, 2023).

While school leaders have made strides to develop and implement a responsive tiered system for

supporting students' literacy and math needs at LRCS, it seems that leadership has focused on

data use within the context of Tiers 2 and 3, with less attention given to how data can guide

instruction within Tier 1. Additionally, during the observed lessons, Tier 1 literacy instruction

was frequently interrupted by students leaving and re-joining class. Whereas members of the

leadership team develop the master schedule and participate in the periodic RTI meetings,

leaders play an important role in prioritizing quality instruction at all tiers of support, including

Tier 1.

Theme 3.2: Collaboration as facilitating reflection on and refinement of practice

Despite the perceived focus on Tiers 2 and 3 during the periodic RTI data meetings,

survey responses indicated that all the teachers agreed with the statement that "school leaders

create protected time for using data." In addition to the RTI meetings that occurred at least three

times throughout the year (based on trimester report cards), teachers described daily planning

blocks that were intentionally aligned with their content and grade-level peers, so that teachers

received regular opportunities to collaborate. Teachers often described planning with their

colleagues; however, the degree of collaboration varied by grade level.

In third grade, this collaborative planning was evident when I observed the same writing

lesson within two classrooms and the preceding day's lesson within Mr. Holt's third-grade

classroom. While the teachers implemented the lessons slightly differently, they all followed the

same sequence and utilized several of the same resources, such as the read-aloud videos used to illustrate examples of opinion writing. Mr. Holt explained that the third-grade team maintains a working spreadsheet from year-to-year with a basic plan for daily instruction organized into units. According to Mr. Holt:

> [Kelly Birch] is considered the unofficial team lead, and she used to be solely responsible for lesson planning, but the team is trying to get more involved. Every night, my teammates communicate via text message. We meet during our planning block and after school. We are constantly communicating via text and email with resources.

This collaboration also informed the assessment practices employed across third-grade classrooms. In addition to MAP, *i-Ready*, and the *Fountas & Pinnell Benchmark Assessments*, all of the third-grade teachers described collecting writing samples before and after each unit of instruction. The third-grade team also used Words Their Way spelling inventories to create groups for word study. According to Ms. Birch, all of the third-grade teachers met with their spelling groups on Mondays, and students received independent spelling-related tasks within their work plans. The third-grade teachers described using their planning time to discuss any concerns and design their differentiated weekly work plans. Mr. Holt indicated that he and his teammates also "update[d] their plans each year based on new resources and reflections on how students responded to certain activities," (interview, September 14, 2023). In this way, their collaboration helped to refine their instructional practice over time.

Ms. Gates' reflection on her use of data to guide student groupings also illustrated how collaborative planning helped her and Ms. Moore to refine their practice from year-to-year. According to Ms. Gates, discussions with Ms. Moore during collaborative planning emboldened

them both to approach their teammates and then leadership about shifting away from "ability grouping" for their literacy and math blocks. Once their team agreed on creating more balanced heterogenous student groups, Ms. Gates indicated that she and Ms. Moore essentially told leadership that "this is what we are doing" (think-aloud, September 12, 2023). As the fourth-grade team noticed the benefits of heterogeneously grouping students, Ms. Gates described advocating for other teachers in the upper grades to adopt the same method for structuring their ELA and math blocks.

 Similar to Ms. Gates, Ms. Moore reflected on how collaborative planning informed her decision making around student groupings during the observed lesson in her classroom. Throughout instruction, Ms. Moore integrated frequent opportunities for students to work together and share their work. I referred to a couple of these opportunities during the follow-up interview to gain an understanding of how and why she structured these instances of peer collaboration. Ms. Moore referred to a chart posted on a cabinet in her classroom (Figure 4.2). During the first week of school, she described anonymously polling students in response to the prompt, "How do you do your best work?" Ms. Gates had the same chart posted in her classroom. According to Ms. Moore, she and Ms. Gates regularly collaborated to make plans and reflect on "how much interaction and involvement" certain activities elicited (interview, September 28, 2023). By polling students, Ms. Moore and Ms. Gates could plan instruction in response to and in anticipation of students' expressed preferences.

Figure 4.2

Student Grouping Preferences in 4ᵗʰ Grade
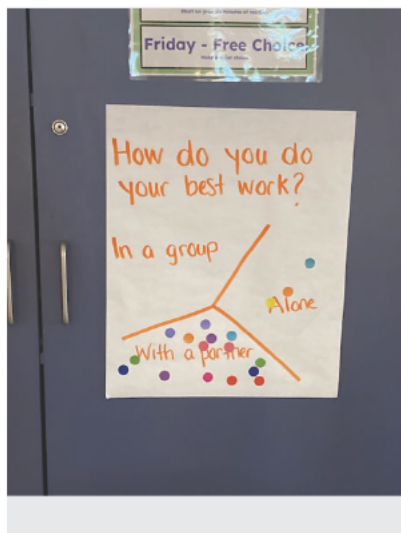
Survey responses indicated that all six teacher participants agreed or strongly agreed with the statement "members of my team trust each other." This was also evidenced by the ways in which teachers described collaborating with their grade-level teammates to plan, problem-solve, and advocate on behalf of their students. Thus, collaborative planning often facilitated reflection and refinement of teachers' instructional practice.

Theme 3.3: Variance in degree of collaboration across grade levels

While collaborative planning offered a valuable means of reflecting on qualitative and quantitative data sources to refine and differentiate instruction, teachers reported varying degrees of collaboration across grade levels. As previously noted, according to the Data Use Survey, when asked how frequently teams "approached an issue by looking at data," one teacher responded "often," two teachers responded "a lot," and three teachers indicated "sometimes." The three teachers who indicated "often" or "a lot" were all members of the third-grade team.

The participating fourth- and fifth-grade teachers indicated "sometimes." Additionally, when asked how frequently teams "explored data by looking at patterns and trends," the three participating third-grade teachers responded either "a lot" or "often." Meanwhile one of the fourth-grade teachers and one of the fifth-grade teachers responded "sometimes." Interview and think-aloud responses further corroborated this theme that grade-level teams varied in their approaches to collaborative planning.

In third grade, teachers were responsible for teaching all of the Tier 1 content areas within their homerooms. Mr. Holt described how this necessitated collaboration, in that "planning it all on your own" wasn't feasible and would "lead to burn out" (interview, September 14, 2023). Last year, Mr. Holt put together the slides for the daily "Morning Meetings" that he and his colleagues used to start each day. By distributing the responsibilities for planning by subject area, the third-grade teachers relied upon each other, and over time, they accumulated a bank of resources to pull from each year. As previously described, the teachers also employed the same assessments to examine students' literacy-related needs. The teachers used the same data sources to organize students into reading and spelling groups, and the weekly assignments were differentiated in largely the same ways. For example, all of the third-grade teachers organized students into four reading groups and used the same four student work plans, differentiated by students' F&P reading levels.

In the fourth and fifth grades, teachers either taught math and science or language arts and history. Therefore, the fourth- and fifth-grade teachers did not plan content area instruction as a grade-level team. In the fourth grade, Ms. Moore and Ms. Gates described meeting each week to discuss their plans for the next week. However, the teachers did not necessarily

implement the same activities from day-to-day. Certain elements were consistently the same in both fourth-grade ELA classrooms, including the vocabulary instructional routines, the ELA weekly checklists, and the learning objectives. According to Ms. Moore, she and Ms. Gates utilized many of the same "larger projects and assignments for portfolio night," as well, but they adapted these tasks as necessitated by their students' needs.

In fifth grade, Mr. Hobbs explained that he and his fifth-grade ELA colleague "don't always match up to exact assignment or skill" (follow-up email, October 27, 2023). While they collaborated at the start of the year and met once each week, Mr. Hobbs explained that they did not necessarily employ the same instructional resources. However, Mr. Hobbs indicated that he and his teammate tried to "utilize most of the same assessments, projects, and assignments" (follow-up email, October 27, 2023). Without having observed in the other fifth-grade ELA teacher's classroom, I relied upon Mr. Hobbs' description of their collaboration to guide my analysis. Based on Mr. Hobbs' response concerning my follow-up question about his collaboration with his grade-level teammate, it appears that the fifth-grade teachers shared fewer routines and resources than their third- and fourth-grade teaching colleagues. However, all of the participating LRCS teachers described seeking consistency with bigger assessments and assignments.

Another factor that may have contributed to the varied amounts of collaboration across grade bands involved the literacy assessments that were employed differently depending on the grade. Unlike in the third grade, not all fourth- and fifth-grade students were assessed using *Fountas & Pinnell's Benchmark Assessment System*. Teachers, therefore, designed reading groups using other data sources. Ms. Moore mentioned using MAP, but she also indicated that

the information from MAP was "not so helpful" in planning small group instruction (Think-aloud, September 28, 2023). When I asked about additional resources or tools related to literacy data that would be helpful in designing and delivering Tier 1 reading instruction, Mr. Hobbs responded:

> I would love to have some sort of vocabulary and spelling instruction that could be tailored in the same way that comprehension is. We teach root words and affixes, but I feel like vocabulary is secondary to comprehension, and my students are constrained in their writing by their spelling.

This reflection from Mr. Hobbs further underscores the varied approaches to collaboration and data use across grade bands. In third grade, the teachers described using Words Their Way spelling inventories to guide word study instruction (Bear et al., 2011). In fourth grade, the teachers employed a vocabulary routine that they learned during a professional development opportunity. These examples illustrate how the third- and fourth-grade teachers collaborated to address these component literacy skills during instruction. Meanwhile, Mr. Hobbs, who previously taught at a middle school, and was certified for secondary education, recognized that spelling and vocabulary represented areas of need, but he lacked the tools and resources to address these areas during instruction. Without previous experience teaching these component literacy skills in fifth grade, collaboration could be a promising means of helping Mr. Hobbs to find effective tools and resources to guide his instruction. However, his response suggests that unlike his third- and fourth-grade colleagues, he and his fifth-grade colleague have not yet collaboratively addressed these perceived areas of need.

Summary of Finding 3

Survey data in combination with teachers' responses to think-aloud prompts and interview questions offered insight into how collaboration can facilitate data use during Tier 1 reading instruction at LRCS. While school leaders have promoted the use of data in decision making for RTI, teachers described a heavier focus on intervention and students' movement between tiers, rather than the use of data within the general education classroom. Additionally, teachers described how intervention often interrupted and removed students from Tier 1 literacy support. Whereas school leaders provided shared blocks of planning time for grade-level teams, and teachers reported meeting with these teams at least once per week, the degree of collaboration and the ways in which data were utilized varied by team. These findings underpin several recommendations in chapter 5 regarding how school leaders can facilitate effective data use within Tier 1 literacy instruction across the intermediate grades.

Chapter Summary

Chapter 4 presented data from survey responses, structured think-alouds on students' literacy data, observations, and interviews. Descriptive information from survey responses and qualitative data from the think-alouds, observations, and interviews provided insight in response to the research questions. In this chapter, I integrated data from these sources as evidence supporting the following findings and themes:

- Finding 1: While teachers refer to multiple data sources during discussions of students' literacy skills and needs, teachers frequently prioritize their personal knowledge of students' attributes when making instructional decisions.
    - Theme 1.1: The perceived utility of personal data

- ○ Theme 1.2: Limitations of assessment data

- ○ Theme 1.3: The role of classroom management in decision making

- Finding 2: Teachers' DBDM is often bound by their background knowledge.

  - ○ Theme 2.1: Prior experience as a data source

  - ○ Theme 2.2: Breadth and depth of curricular knowledge integrated within decision

    making

- Finding 3: Intentional collaborations can facilitate teachers' data use.

  - ○ Theme 3.1: The perceived role of leadership in facilitating data use

  - ○ Theme 3.2: Collaboration as facilitating reflection on and refinement of practice

  - ○ Theme 3.3: Variance in degree of collaboration across grade levels

Chapter 5 offers recommendations to instructional leaders at LRCS based on these findings.

Chapter 5: Recommendations

Designing and differentiating Tier 1 reading instruction to meet the diverse needs of

students in grades 3-5 involves continuous engagement in the data use cycle as depicted in the

Combined Framework for Data Use (Figure 1; Hamilton et al., 2009). Evidence demonstrates

that effective data use is complex and requires a combination of variables and conditions (Van

Geel et al., 2017). At Little River Charter School (LRCS), instructional leaders are interested in

improving student literacy growth and reading achievement in grades 3-5. It is, therefore,

necessary to understand how teachers use data to inform the design and delivery of Tier 1

reading instruction in grades 3-5, as well as the factors that teachers perceive as facilitating or

hindering their effective data use at LRCS. To this end, I employed a multiple case study design

and collected qualitative data from the following sources: descriptive data from a Teachers' Data

Use Survey (Wayman et al., 2016), teachers' responses to think-aloud prompts regarding student

performance on the Measures of Academic Progress (MAP) reading assessment, observations of

reading instruction, and teachers' reflections on practice during follow-up interviews. I integrated

evidence from across these sources to inform findings to address the following research

questions:

- How do teachers in grades 3-5 at Little River Charter School use data when designing

  Tier 1 reading instruction?

- How do teachers in grades 3-5 at Little River Charter School use data when delivering

  Tier 1 reading instruction?

- What factors do grade 3-5 teachers at Little River Charter School identify as facilitating

  or hindering effective data use?

In this chapter, I combine the findings from this study with the relevant literature to present recommendations for instructional leaders at LRCS. These recommendations are intended to support teachers and enhance data-based decision making (DBDM) within Tier 1 reading instruction. The recommendations are as follows:

- Recommendation 1: School leaders support teachers as they design and differentiate Tier 1 reading instruction in response to student data.

  - Action Step 1.1: Minimize interruptions during teaching by prioritizing every child's participation in Tier 1 reading instruction.

  - Action Step 1.2: Review available assessment tools and consider common formative assessments to provide a more comprehensive understanding of students' literacy needs.

  - Action Step 1.3: Coordinate regular data meetings with teams and school leaders focused on Tier 1 literacy instruction.

- Recommendation 2: Provide ongoing professional learning opportunities focused on literacy assessment tools and data use in Tier 1.

  - Content Focus 2.1: Provide specific guidance on why certain assessment tools are utilized and what information they provide.

  - Content Focus 2.2: Create a system for regularly monitoring student progress in response to Tier 1 literacy instruction.

  - Content Focus 2.3: Develop strategies for the systematic differentiation of Tier 1 literacy instruction based on assessment data.

- Recommendation 3: Enhance opportunities for teachers' collaboration around data use.

- Action Step 3.1: Coordinate opportunities for vertical planning and collaboration across grade levels.

- Action Step 3.2: Organize opportunities for peer observation and reflection.

- Action Step 3.3: Monitor teachers' response to collaborative opportunities.

Recommendation 1: School leaders support teachers as they design and differentiate Tier 1 reading instruction in response to student data.

Findings from this study suggest that teachers at LRCS perceive school leadership as supportive of their data use; however, teachers at LRCS also described how regular data meetings tended to focus on data use within Tiers 2 and 3, rather than data use during Tier 1. Teachers also described how students were also regularly pulled from Tier 1 instruction to receive intervention services. Whereas school leaders set the master schedule, they are responsible for determining when services are provided. While research demonstrates that supportive school leadership is strongly associated with successful implementation of DBDM across tiers of support (Van Geel et al., 2017), research also suggests that collaborations around data use tend to focus on Tiers 2 and 3, rather than Tier 1 (Harlacher et al., 2015).

Based on survey data from over a hundred elementary educators across the United States, Al Otaiba and colleagues (2019) identified three mitigating factors to teachers' data use, including teachers' knowledge of Tier 1 implementation, teachers' perception of school leadership, and teacher knowledge about DBDM (Al Otaiba et al., 2019). Similarly, national survey data from Means et al. (2010) highlighted the perceived influence of school and district leadership in facilitating teachers' data use. Thus, school leaders play a significant role in

ensuring the quality of Tier 1 reading instruction by supporting teachers' data use (Al Otaiba et al., 2019; Means et al., 2010).

Findings from this study in combination with the existing research suggest that school leaders play a significant role in promoting DBDM (Al Otaiba et al., 2019; Van Geel et al., 2017). School leaders influence the types of assessments and resources that teachers utilize, as well as how these assessments and resources are implemented and interpreted (Mandinach et al., 2006). Based on these findings, I recommend that school leaders at LRCS take several actions to support teachers as they design and differentiate Tier 1 reading instruction using data. Specifically, I recommend that school leaders prioritize Tier 1 instructional time and ensure that teachers have sufficient information to guide instructional decision making. Additionally, by engaging in regular data meetings focused on differentiating support within Tier 1, I suggest that school leaders can promote effective data use to enhance instruction for all students across tiers of support.

Action Step 1.1: Minimize interruptions during teaching by prioritizing every child's participation in Tier 1 reading instruction.

During four of the six observed lessons, small groups of students were removed for portions of instruction to receive RTI services. In follow-up interviews, teachers discussed the challenges of organizing instruction in a way that facilitated these transitions of students into and out of the classroom. Whereas research demonstrates that intervention is often prioritized within RTI systems, the quality of instruction at Tier 1 is critical to the overall efficacy of a tiered system for support (Harlacher et al., 2015).

In the IES Practice Guide for *Assisting Students Struggling with Reading*, Gersten et al. (2008) explain that "differentiated instruction [in Tier 1] applies to all students," and "data-driven instruction should permeate of the tiers of reading instruction," (p. 17). Research demonstrates that pulling students out of Tier 1 instruction for intervention negatively affects student achievement (Balu et al., 2015). Additionally, when students are pulled out of Tier 1, they do not receive the recommended 90-120 minutes of Tier 1 reading instruction (Gersten et al., 2008). Within effective RTI systems, tiers of support are layered, so that students who are identified for intervention receive support in addition to Tier 1 instruction, rather than instead of Tier 1 instruction (Balu et al., 2015). Tier 1 instruction ensures that all students receive equitable access to grade-level expectations for learning (Coyne et al., 2018).

By layering support, all students receive access to grade-level learning, and the quality of instruction becomes the primary focus during decision making (Coyne et al., 2018). When Tier 1 instruction is provided for all students, student performance on standardized assessment measures can be used to identify patterns and inform differentiation. However, when students are removed from Tier 1 instruction, the fidelity of RTI implementation is compromised, since students are not receiving the same access to grade-level content. In this way, Sullivan and Proctor (2016) describe the potential for effective tiered systems of support to disrupt patterns of bias, insofar as the universal provision of Tier 1 reading instruction allows teachers and school leaders to examine the quality of support the child has received, rather than assuming the child has a need or deficit. Therefore, I recommend that school leaders at LRCS prioritize every child's participation in Tier 1 reading instruction by minimizing interruptions and scheduling other times for the provision of support services.

Action Step 1.2: Review available assessment tools and consider common formative assessments to provide a more comprehensive understanding of students' literacy needs.

Findings from this study suggest that grade 3-5 teachers at LRCS refer to multiple data sources when planning and providing Tier 1 reading instruction, but they often prioritize their personal knowledge of students when making instructional decisions. Based on teachers' think-aloud and interview responses, this may be due in part to the perceived limitations of assessment data and teachers' lack of familiarity with certain assessment tools. While existing research demonstrates that data use requires ongoing attention to multiple data sources (Jacobs et al., 2009), LRCS teachers indicated a reliance on personal data sources that varied across grade levels and classrooms.

As previously noted, Wayman et al. (2016) defined classroom-based assessments as personal data sources. Their definition encompasses the formative checks for understanding that teachers utilize to gauge student learning throughout instruction (Fisher & Frey, 2014). At LRCS, teachers employed diverse methods of formatively assessing student learning, ranging from oral questioning to written prompts and teacher-developed quick checks. Fisher et al. (2007) describe how these formative methods of assessment are critical to "developing the detailed knowledge of students' understandings and misunderstandings necessary to teaching with precision" (p. 64). However, these formative measures are not technically validated for reliability and validity, and thus, checks for understanding should not be the exclusive source of information used to guide instructional decision making (Bailey et al., 2020).

While all of the observed teachers at LRCS provided multiple and varied opportunities for formatively assessing student learning, the teachers described different objectives for these

checks of understanding. Teachers also expressed varied understanding of the information provided by the more standardized assessments, such as *i-Ready* and MAP. As illustrated in the Combined Framework for Data Use (Figure 1), knowledge of students is central to effective DBDM. However, teachers' decision making is constrained by their access to high-quality data that is relevant to their instructional purposes (Barnes et al., 2022). Fisher and colleagues (2007) similarly underscore the need for detailed knowledge of students in order to teach with the precision necessary to improve student reading achievement. The authors describe how teachers need shared access to reliable and valid information regarding student understandings in order to identify patterns and trends.

At LRCS, grade-level teams used different formative assessment tools to gather information that they perceived as missing within the more standardized reading assessments. For example, third-grade teachers used spelling inventories, writing samples, and measures of fluency. In fourth grade, Ms. Moore and Ms. Gates developed their own assessments of vocabulary related to their instruction. Meanwhile, in fifth grade, Mr. Hobbs lamented his lack of instructional resources and assessment tools related to vocabulary and spelling. In light of these findings and evidence from existing research, I recommend that LRCS leaders review the current assessment tools and vet, identify, and implement a common set of assessments tools that may provide a more comprehensive and shared understanding of students' literacy needs across classrooms in grades 3-5.

Action Step 1.3: Coordinate regular data meetings with teams and school leaders focused on Tier 1 literacy instruction.

In addition to prioritizing instructional time and access to information from vetted assessment resources, school leaders at LRCS can support teachers' data use during Tier 1 reading instruction by coordinating regular data meetings focused on Tier 1. As discussed in the literature (Chapter 2), regular data meetings offer a means of closely monitoring data within all tiers of support (Harlacher et al., 2015). Rather than reflecting on data in isolation, teachers, specialists, and school leaders can discuss implications for Tier 1 programming, explicit instruction, and scaffolding (Harlacher et al., 2015). These meetings can also promote consistency across classrooms and alignment with the standards (Harlacher et al., 2015). Findings from this study suggest that routine data meetings at LRCS tend to focus on supporting students within Tiers 2 and 3 and making changes to the intensity of reading interventions. However, less attention has been given to data use for the purposes of differentiation within Tier 1. Whereas teachers at LRCS indicated that intentional collaborations with colleagues and school leaders facilitated reflection and refinement of their practice, I recommend that school leaders at LRCS coordinate regular data meetings focused specifically on Tier 1 reading instruction.

Recommendation 2: Provide ongoing professional learning opportunities focused on literacy assessment tools and data use.

Research indicates that "educator skill development serves a critical role in building capacity to effectively implement RTI" (Castillo et al., 2016, p. 893). In their study of teachers' perceptions of Reading First implementation in Florida, Roehrig and colleagues (2008) found several perceived barriers to data use including the availability of instructional support and

coaching, teacher knowledge of assessment practices and a lack of clarity regarding how to translate data into practice. This study underscores the need for professional learning opportunities to support teachers' knowledge of literacy assessment measures and how to effectively translate data into practice.

Finding 2 from the current investigation similarly indicates that teachers possess diverse experiences related to data use, and these experiences inform their practice. Whereas professional learning opportunities can provide a means of establishing a common understanding of data and how data can inform practice, these opportunities must be designed for the complex systems in which data is being utilized (Barnes et al., 2022). To meet the distinct needs of LRCS reading teachers, I recommend that school leaders provide ongoing professional learning opportunities related to literacy data and how data can be interpreted and applied to instructional decision making.

Prior evidence suggests that educators possess relatively established beliefs regarding data use (DeLuca et al., 2018), and these beliefs often serve to frame teachers' interpretations and uses for data in the classroom (Barnes et al., 2019). In light of this evidence, Barnes et al. (2022) suggest that professional learning opportunities related to DBDM should be "situated in the learning goals and objectives identified by teachers and aligned with their instructional practices" (p. 282). Therefore, in response to this existing research, I suggest that LRCS leaders involve teachers in the design and delivery of professional learning opportunities related to data use, so that the focus is relevant and responsive to teachers' perceived needs. The following recommended foci for professional learning opportunities should integrate and build upon

teachers' existing knowledge, so that students across classrooms and grade levels receive equitable access to data-based instruction.

Content Focus 2.1: Provide specific guidance on why certain assessment tools are utilized and what information they provide.

As noted in Chapter 2, in their evaluation of teachers' implementation of an intervention program, Century et al. (2010) distinguish between educators' procedural and educative knowledge. The authors posit that teachers need to understand both the "how" (procedural knowledge) and the "why" (educative knowledge) behind instructional practices, prior to implementing the practices with fidelity. Findings from the current study suggest that teachers at LRCS approached data sources in the same way. Teachers at LRCS more readily referred to personal data sources that they developed or selected independently or with their grade-level teammates. Due to their involvement in selecting and developing these formative assessments, teachers understood their purpose and how to interpret student responses.

The findings from the current study highlight the association between teachers' previous experiences and their use of data during literacy instruction. For example, several teachers at LRCS lacked familiarity with certain assessment tools, such as MAP, and their lack of familiarity with these tools limited their use of the assessment's data in the design and delivery of Tier 1 instruction. As described by Ms. Moore, "I am less likely to pay attention to MAP growth goals because I am less familiar with it, and I am not one to show students a score and ask them to beat it" (Think-Aloud, September 28, 2023). Professional learning opportunities offer a means of supporting teachers' procedural and educative knowledge of assessment tools, such as MAP, so that teachers can more readily use student data to guide decision making.

Content Focus 2.2: Create a system for regularly monitoring student progress in response to Tier 1 literacy instruction.

The wider diversity of student needs within the intermediate grades necessitates regular reflection on literacy data as a means of monitoring the efficacy of Tier 1 reading instruction and supporting individual students' needs (Fuchs & Vaughn, 2012). In partnership with an urban high school in California, Fisher et al. (2008) developed a schoolwide system for formative assessment. Fisher and colleagues (2008) supported the design and implementation of common assessments to gauge student learning in response to instruction. The authors describe "impressive gains in student achievement" following the schoolwide adoption of regular formative assessments. Their work highlights the potential for student growth when data is used consistently to guide instructional practice.

While LRCS currently collects MAP data three times per year as a way of monitoring student growth in reading and math, teachers indicated that MAP reports did not provide precise enough data for guiding day-to-day instruction in Tier 1. Therefore, in order to garner the detailed information necessary for effectively differentiating Tier 1 instruction, teachers relied on data sources that varied across classrooms and grade levels. To offer greater consistency and alignment between classes and grade bands, I recommend LRCS leaders involve teachers in the adoption or development of a common system for monitoring student progress in response to Tier 1 reading instruction, in addition to providing guidance regarding how to interpret and utilize data from periodic assessments, such as MAP. By establishing greater consistency in the types of assessments that are implemented, teachers across classrooms and grade levels in the intermediate grades can identify patterns and collaborate regarding their response.

Content Focus 2.3: Develop strategies for the systematic differentiation of Tier 1 literacy instruction based on assessment data.

Findings from the current study suggest that teachers at LRCS consider multiple attributes of their students when designing and delivering Tier 1 reading instruction. I observed how LRCS teachers regularly differentiated reading instruction in response to their knowledge of students' interests, preferences, and needs across areas of development (e.g., socio-emotional, behavioral, and academic). To build teachers' capacity for differentiating instruction across classrooms and grade levels, I believe professional learning opportunities should offer a means of sharing these strategies for leveraging knowledge of students' needs and interests to inform practice.

Additionally, teachers at LRCS referred to different data sources when making decisions during Tier 1 instruction. To promote greater consistency across classrooms and to support greater alignment between data sources and instructional response, I recommend that professional learning opportunities at LRCS focus on developing strategies for systematically differentiating Tier 1 instruction in response to student data. For example, professional learning opportunities could be organized as a means of responding to the following questions using student data:

- How do I know where to begin instruction within the grade level's scope and sequence?
- How do I know when to reteach, provide more practice, or move on within a lesson?
- How do I know when to reteach, provide more practice, or move on within a unit?
- How do I determine the appropriate level of grouping to use for instruction?
- How do I organize students into small groups?

- What data should guide small group instruction?

- How frequently should I meet with students in small groups?

While this list is far from exhaustive, these questions can facilitate conversations to promote consistency across classrooms and vertical alignment across grade levels. Based on the findings from this study, teachers at LRCS approached these topics differently. In her think-aloud, Ms. Moore described how her lack of experience teaching in the intermediate grades contributed to her uncertainty regarding how to organize small groups. Meanwhile, in third grade, Ms. Birch indicated that she met with small groups almost daily, and she organized these groups based on students' Fountas and Pinnell levels. In fifth grade, Mr. Hobbs described using small groups less frequently based on his behavioral observations of who could work on a task independently and who "struggled to get work done on their own" (Interview, September 28, 2023). Thus, ongoing professional learning opportunities should provide support for how data can inform these decisions with greater consistency across classrooms. As described by Fisher et al. (2008), the goal of professional learning should be precision not prescription. Consistent methods for data use within Tier 1 instruction are critical to providing precise teaching differentiated to meet students' needs (Fisher et al., 2008).

Recommendation 3: Enhance opportunities for teachers' collaboration around data use.

As discussed in Chapter 2, teachers' dispositions towards data use play an important role in how teachers interpret and apply data during the design and delivery of reading instruction (Barnes et al., 2019; Mandinach & Gummer, 2016). These dispositions are influenced by the school's culture and leadership (Van Geel et al., 2017). In Finding 3, I described the ways in which intentional collaborations within grade-level teams at LRCS facilitated teachers' data use.

While the teachers at LRCS frequently cited their collaboration with colleagues as facilitating reflection on and refinement of their practice, the collaboration across teams varied. To promote dispositions for data use and enhance collaborative opportunities around data, I recommend LRCS leaders coordinate opportunities for vertical planning, peer observation, and reflection. In combination with the professional learning opportunities described in Recommendation 2, collaboration across grade-level teams can facilitate DBDM within Tier 1 reading instruction.

Action Step 3.1: Coordinate opportunities for vertical planning and collaboration across grade levels.

As depicted in the Combined Framework for Data Use (Figure 1), content knowledge contributes to teachers' data use, and this content knowledge comprises an understanding of the scope and sequence of skills and standards beyond the child's assigned grade level (Hosp et al., 2016; Mandinach & Gummer, 206). In Finding 2, I detailed the ways in which teachers at LRCS integrated the breadth and depth of their content knowledge during the planning and delivery of reading instruction. Ms. Birch and Ms. Moore both described how their knowledge of the standards informed their provision feedback during observed instruction. Ms. Birch indicated that rather than relying on MAP data, she preferred to "dig deep into the standards and look for vertical alignment" when planning instruction (Think-Aloud, September 13, 2023). Meanwhile, Ms. Moore reflected on her own children and described learning from the expectations and challenges that they experienced in the intermediate grades. By collaborating with colleagues from across grade-level teams, more teachers at LRCS can benefit from an understanding of how the literacy standards develop and evolve from year to year.

Additionally, without a Tier 1 program to guide reading instruction, collaborative opportunities for vertical planning provide a means of ensuring vertical alignment within the scope and sequence for instruction. Spear-Swerling and Cheesman (2012) collected survey data from 142 elementary educators regarding their professional backgrounds, their familiarity with specific reading assessments, research-based instructional models, and RTI practices. The authors noted that when teachers lack access to an evidence-based Tier 1 program, they become responsible for designing the curriculum themselves, and this leads to a lack of consistency across classrooms and grade bands (Gersten et al., 2009; Spear-Swerling & Cheesman, 2012). To ensure greater consistency across grade bands and classrooms, I recommend that LRCS leaders coordinate opportunities for collaboration with teachers from across grade bands.

Action Step 3.2: Organize opportunities for peer observation and reflection.

Roehrig and colleagues (2008) identify the lack of clear examples for translating data into practice as one of the primary barriers to teachers' data use. Multiple authors cited in the literature (Chapter 2) explained that models are necessary in order for teachers to bridge the gap between data interpretation and the application of data to practice (Dunn et al., 2013; Gleason et al., 2019; Means et al., 2010). Evidence suggests that peer observations and job-embedded coaching opportunities may help to bridge that gap (Castillo et al., 2016; Van Geel et al., 2016).

Findings 2 and 3 both underscore the significance attributed to teachers' experiences witnessing and collaborating with fellow teachers. Mr. Holt indicated that he learned "everything [he] knows about teaching from [his] colleagues" (Interview, September 14, 2023). Based on my observations, even teachers who shared the same lesson plans differentiated their instructional delivery in ways that could inform others' practice. Whereas Barnes et al. (2019) identified

teachers' fear of evaluative judgment as a barrier to DBDM among literacy educators, by organizing peer observations exclusively for informative purposes, LRCS leaders can diminish the fear of judgment and build teachers' collective capacity for data use.

In addition to observing their colleagues in practice, teachers need opportunities to reflect on these observations and discuss what they noticed (Ridge & Lavigne, 2020). Similar to Ms. Scott's conclusion that the discussions at data meetings "are as important as the data itself" (Think-Aloud, September 14, 2023), these opportunities to discuss the why and the how behind teachers' actions are as critical as the observed practices themselves. Within this study, the follow-up interviews offered unique insight into why teachers designed and delivered instruction in certain ways. Research suggests that understanding the "why" is critical to learning how to implement a new practice (Century et al., 2010). Thus, peer observations should be designed with time set aside for follow-up conversations and reflection, so that the teachers can collectively make meaning from what they observed.

Action Step 3.3: Monitor teachers' engagement in and response to collaborative opportunities.

Finally, I recommend that LRCS leaders monitor teachers' engagement and response to opportunities for collaboration and professional learning. Evidence suggests that the school's culture and teacher attitudes towards data use serve as mitigating factors for DBDM (Keuning et al., 2017). To ensure that teachers participate in these opportunities and find value in their participation, I suggest that school leaders regularly monitor teachers' responses and the perceived impact of these learning opportunities on practice. Without monitoring teachers' participation in and response to opportunities for peer observation, collaborative planning, and professional learning, it is unclear if teachers will make changes to their data use during Tier 1

reading instruction. Therefore, teacher feedback should inform the design and implementation of opportunities for collaboration and professional learning, just as student data should inform the design and delivery of Tier 1 reading instruction.

Limitations

When considering these recommendations, as informed by the findings, there are important limitations that should be noted. First, these recommendations are specific to the context at LRCS and specifically, the grade 3-5 reading classrooms at LRCS. The assessment tools, instructional resources, and affective factors including the school culture, are all specific to the study context. Therefore, the findings and recommendations are not generalizable to other grade levels at LRCS or other elementary schools serving students in grades 3-5. Additionally, the focus of this study was on teachers' data use, and not on student learning. Future research could explore the relationship between teachers' data use and student learning within reading classrooms at LRCS. Given the disproportionate identification of certain populations for RTI services (Sullivan & Proctor, 2016), I recommend that LRCS leaders consider equity issues when examining student learning as associated with teachers' data use. Also, with its focus on teachers, the findings and recommendations are not generalizable to school leaders. Research indicates and findings from the current study suggest that school leaders play an influential role in how data gets translated into practice (Barnes et al., 2020; Van Geel et al., 2017); however, further research is needed to gain insight into how school leaders at LRCS select assessment tools and interpret data for purposes other than teaching. Further research on leadership and data use could also compare how teachers and leaders value and interpret certain types of data. This information may be useful in ensuring alignment between assessment purposes and teacher practice.

Chapter Summary

In Chapter 5, I provided several recommendations and action steps that school leaders can take to enhance intermediate-grade teachers' data use within Tier 1 reading instruction at LRCS. These recommendations were synthesized using the findings from the current study and themes from the existing literature. In the short term, I hope that these recommendations will support teachers' data use during Tier 1 reading instruction. Collectively, the purpose of these recommendations is to support effective DBDM during the planning and delivery of Tier 1 reading instruction in grades 3-5 at LRCS. Ultimately, by differentiating Tier 1 instruction in response to student data, students benefit, and ideally, reading achievement at LRCS will improve.

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Appendix A
Data Use Survey
Part 1:
Professional Background
These questions concern your professional history related to education.

1. **Teaching Experience:** Select the number of years you have been teaching in a K-12 setting:

    ☐ 0-4 years
    ☐ 5-9 years
    ☐ 10-14 years
    ☐ 15-19 years
    ☐ 20 years or more

2. **LRCS Teaching Experience:** Select the number of years you have been teaching at Little River Charter School:

    ☐ <1 year (This is your first year at LRCS)
    ☐ 1 year
    ☐ 2 years
    ☐ 3 years
    ☐ 4 years
    ☐ 5 years or more

3. **Endorsement Areas:** Please list all certification fields and endorsements on your South Carolina Teaching license:

    _____

4. **Additional Certifications or Graduate Work:** Please list any additional certifications or degrees related to education that you have obtained (e.g., National Board Certification, Graduate degrees):

    _____
    _____

5. **Read to Succeed Endorsement:** Have you obtained the Read to Succeed Literacy Endorsement?

    ☐   Yes → skip to question 6

    ☐   No → go to question 5a

5a. Read to Succeed Endorsement Progress: Have you started coursework for the R2S Literacy Endorsement?

☐ Yes → go to question 5b

☐ No → skip to question 6

5b. Read to Succeed Endorsement Progress: Which R2S courses have you completed?

Please select all answers that apply:	
☐	Foundations in Reading
☐	Instructional Practices
☐	Assessment of Reading
☐	Content Area Reading and Writing
☐	Other, please explain: _____

Part 2:
Forms of Data
The following questions ask about various forms of data that you may use in your work.

6. Are the following forms of data available to you?

Form of data	Yes	No
<State data>	☐	☐
<Periodic data>	☐	☐
<Local data>	☐	☐
<Personal data>	☐	☐
Other	☐	☐

If you indicated "no" to all options in question 6, skip to question. If you responded "yes" to any option, please proceed to question 7.

7. Teachers use all kinds of information (i.e., data) to help plan for instruction that meets student learning needs. How frequently do you use the following forms of data?

Form of data	Do not use	Less than once a month	Once or twice a month	Weekly or almost weekly	A few times a week
<State data>	☐	☐	☐	☐	☐
<Periodic data>	☐	☐	☐	☐	☐
<Local data>	☐	☐	☐	☐	☐
<Personal data>	☐	☐	☐	☐	☐
Other	☐	☐	☐	☐	☐

If you marked the "other" option above, please specify the form of data here:

8. Now, how useful are the following forms of data to your practice?

Form of data	Not useful	Somewhat useful	Useful	Very useful
<State data>	☐	☐	☐	☐
<Periodic data>	☐	☐	☐	☐
<Local data>	☐	☐	☐	☐
<Personal data>	☐	☐	☐	☐
Other	☐	☐	☐	☐

If you marked the "other" option above, please specify the form of data here:

_____

If you indicated that <state data> is not available to you in question 6, OR if you indicated that you do not use <state data> in question 7, please go to question 10.

9. These questions ask about <state data>. In a typical school year, how often do you do the following?

Action	One or two times a year	A few times a year	Monthly	Weekly
a. Use <state data> to identify instructional content to use in class.	☐	☐	☐	☐
b. Use <state data> to tailor instruction to individual students' needs.	☐	☐	☐	☐
c. Use <state data> to develop recommendations for additional instructional support.	☐	☐	☐	☐
d. Use <state data> to form small groups of students for targeted instruction.	☐	☐	☐	☐
e. Discuss <state data> with a parent or guardian.	☐	☐	☐	☐
f. Discuss <state data> with a student.	☐	☐	☐	☐
g. Meet with a specialist (e.g., instructional coach or data coach) about <state data>.	☐	☐	☐	☐
h. Meet with another teacher about <state data>.	☐	☐	☐	☐

Items adapted from Wayman, J. C., Cho, V., & Shaw, S. (2009). *Survey of Educator Data Use*. Unpublished instrument.

If you indicated that <periodic data> is "not available" to you in question 6, OR if you indicated that you "do not use" <periodic data> in question 7, please go to question 11.

10. These questions ask about <periodic data> used in your school or district. In a typical month, how often do you do the following?

Action	Less than once a month	Once or twice a month	Weekly or almost weekly	A few times a week
a. Use <periodic data> to identify instructional content to use in class.	☐	☐	☐	☐
b. Use <periodic data> to tailor instruction to individual students' needs.	☐	☐	☐	☐
c. Use <periodic data> to develop recommendations for additional instructional support.	☐	☐	☐	☐
d. Use <periodic data> to form small groups of students for targeted instruction.	☐	☐	☐	☐
e. Discuss <periodic data> with a parent or guardian.	☐	☐	☐	☐
f. Discuss <periodic data> with a student.	☐	☐	☐	☐
g. Meet with a specialist (e.g., instructional coach or data coach) about <periodic data>.	☐	☐	☐	☐
h. Meet with another teacher about <periodic data>.	☐	☐	☐	☐

Items adapted from Wayman, J. C., Cho, V., & Shaw, S. (2009). *Survey of Educator Data Use*. Unpublished instrument.

If you indicated that <local data> is "not available" to you in question 6, OR if you indicated that you "do not use" <local data> in question 7, please go to question 12.

11. These questions ask about <local data> developed and used in your school or district. In a typical month, how often do you do the following?

Action	Less than once a month	Once or twice a month	Weekly or almost weekly	A few times a week
a. Use <local data> to identify instructional content to use in class.	☐	☐	☐	☐
b. Use <local data> to tailor instruction to individual students' needs.	☐	☐	☐	☐
c. Use <local data> to develop recommendations for additional instructional support.	☐	☐	☐	☐
d. Use <local data> to form small groups of students for targeted instruction.	☐	☐	☐	☐
e. Discuss <local data> with a parent or guardian.	☐	☐	☐	☐
f. Discuss <local data> with a student.	☐	☐	☐	☐
g. Meet with a specialist (e.g., instructional coach or data coach) about <local data>.	☐	☐	☐	☐
h. Meet with another teacher about <local data>.	☐	☐	☐	☐

Items adapted from Wayman, J. C., Cho, V., & Shaw, S. (2009). *Survey of Educator Data Use.* Unpublished instrument.

If you indicated that <personal data> is "not available" to you in question 6, OR if you indicated that you "do not use" <personal data> in question 7, please go to question 13.

12. These questions ask about <personal data>. In a typical month, how often do you do the following?

Action	Less than once a month	Once or twice a month	Weekly or almost weekly	A few times a week
a. Use <personal data> to identify instructional content to use in class.	☐	☐	☐	☐
b. Use <personal data> to tailor instruction to individual students' needs.	☐	☐	☐	☐
c. Use <personal data> to develop recommendations for additional instructional support.	☐	☐	☐	☐
d. Use <personal data> to form small groups of students for targeted instruction.	☐	☐	☐	☐
e. Discuss <personal data> with a parent or guardian.	☐	☐	☐	☐
f. Discuss <personal data> with a student.	☐	☐	☐	☐
g. Meet with a specialist (e.g., instructional coach or data coach) about <personal data>.	☐	☐	☐	☐
h. Meet with another teacher about <personal data>.	☐	☐	☐	☐

Items adapted from Wayman, J. C., Cho, V., & Shaw, S. (2009). *Survey of Educator Data Use.* Unpublished instrument.

The remainder of this survey asks general questions about the use of data to inform your education practice. For the rest of this survey, please consider only the following when you are asked about "data":

- *State achievement tests.*
- *Periodic assessments.*
- *Locally developed assessments.*

13. These questions ask about supports for using data. Please indicate how much you agree or disagree with the following statements:

Statement	Strongly disagree	Disagree	Agree	Strongly agree
a. I am adequately supported in the effective use of data.	☐	☐	☐	☐
b. I am adequately prepared to use data.	☐	☐	☐	☐
c. There is someone who answers my questions about using data.	☐	☐	☐	☐
d. There is someone who helps me change my practice (e.g., my teaching) based on data.	☐	☐	☐	☐
e. My district provides enough professional development about data use.	☐	☐	☐	☐
f. My district's professional development is useful for learning about data use.	☐	☐	☐	☐

Items adapted from Wayman, J. C., Cho, V., & Shaw, S. (2009). *Survey of Educator Data Use*. Unpublished instrument.

14. These questions ask about your attitudes and opinions regarding data. Please indicate how much you agree or disagree with the following statements:

Statement	Strongly disagree	Disagree	Agree	Strongly agree
a. Data help teachers plan instruction.	☐	☐	☐	☐
b. Data offer information about students that was not already known.	☐	☐	☐	☐
c. Data help teachers know what concepts students are learning.	☐	☐	☐	☐
d. Data help teachers identify learning goals for students.	☐	☐	☐	☐
e. Students benefit when teacher instruction is informed by data.	☐	☐	☐	☐
f. I think it is important to use data to inform education practice.	☐	☐	☐	☐
g. I like to use data.	☐	☐	☐	☐
h. I find data useful.	☐	☐	☐	☐
i. Using data helps me be a better teacher.	☐	☐	☐	☐

Items adapted from Wayman, J. C., Cho, V., & Shaw, S. (2009). *Survey of Educator Data Use*. Unpublished instrument.

15. These questions ask how your principal and assistant principal(s) support you in using data. Principals and assistant principals will not be able to see your answers. Please indicate how much you agree or disagree with the following statements:

Statement	Strongly disagree	Disagree	Agree	Strongly agree
a. My principal or assistant principal(s) encourages data use as a tool to support effective teaching.	☐	☐	☐	☐
b. My principal or assistant principal(s) creates many opportunities for teachers to use data.	☐	☐	☐	☐
c. My principal or assistant principal(s) has made sure teachers have plenty of training for data use.	☐	☐	☐	☐
d. My principal or assistant principal(s) is a good example of an effective data user.	☐	☐	☐	☐
e. My principal or assistant principal(s) discusses data with me.	☐	☐	☐	☐
f. My principal or assistant principal(s) creates protected time for using data.	☐	☐	☐	☐

Items adapted from Wayman, J. C., Cho, V., & Shaw, S. (2009). *Survey of Educator Data Use*. Unpublished instrument.

16. Your school or district gives you programs, systems, and other technology to help you access and use student data. The following questions ask about these computer systems. Please indicate how much you agree or disagree with the following statements:

Statement	Strongly disagree	Disagree	Agree	Strongly agree
a. I have the proper technology to efficiently examine data.	☐	☐	☐	☐
b. The computer systems in my district provide me access to lots of data.	☐	☐	☐	☐
c. The computer systems (for data use) in my district are easy to use.	☐	☐	☐	☐
d. The computer systems in my district allow me to examine various types of data at once (e.g., attendance, achievement, demographics).	☐	☐	☐	☐
e. The computer systems in my district generate displays (e.g., reports, graphs, tables) that are useful to me.	☐	☐	☐	☐

Items a–d adapted from Wayman, J. C., Cho, V., & Shaw, S. (2009). *Survey of Educator Data Use*. Unpublished instrument.

17. These questions ask about your attitudes toward your own use of data. Please indicate how much you agree or disagree with the following statements:

Statement	Strongly disagree	Disagree	Agree	Strongly agree
a. I am good at using data to diagnose student learning needs.	☐	☐	☐	☐
b. I am good at adjusting instruction based on data.	☐	☐	☐	☐
c. I am good at using data to plan lessons.	☐	☐	☐	☐
d. I am good at using data to set student learning goals.	☐	☐	☐	☐

Items adapted from Wayman, J. C., Cho, V., & Shaw, S. (2009). *Survey of Educator Data Use*. Unpublished instrument.

18. How often do you have scheduled meetings to work in collaborative team(s)? (Check only one.)

☐ Less than once a month

☐ Once or twice a month

☐ Weekly or almost weekly

☐ A few times a week

☐ I do not have scheduled meetings to work in collaborative teams

If you answered "I do not have scheduled meetings to work in collaborative teams" in question 18, please go to question 21.

19. As you think about your collaborative team(s), please indicate how much you agree or disagree with the following statements:

Statement	Strongly disagree	Disagree	Agree	Strongly agree
a. Members of my team trust each other.	☐	☐	☐	☐
b. It's ok to discuss feelings and worries with other members of my team.	☐	☐	☐	☐
c. Members of my team respect colleagues who lead school improvement efforts.	☐	☐	☐	☐
d. Members of my team respect those colleagues who are experts in their craft.	☐	☐	☐	☐
e. My principal or assistant principal(s) fosters a trusting environment for discussing data in teams.	☐	☐	☐	☐

Items a–d are from University of Chicago Consortium on School Research. (2013). *Teacher Survey Codebook*, Chicago, IL: Author.

20. How often do you and your collaborative team(s) do the following?

Action	Never	Sometimes	Often	A lot
a. We approach an issue by looking at data.	☐	☐	☐	☐
b. We discuss our preconceived beliefs about an issue.	☐	☐	☐	☐
c. We identify questions that we will seek to answer using data.	☐	☐	☐	☐
d. We explore data by looking for patterns and trends.	☐	☐	☐	☐
e. We draw conclusions based on data.	☐	☐	☐	☐
f. We identify additional data to offer a clearer picture of the issue.	☐	☐	☐	☐
g. We use data to make links between instruction and student outcomes.	☐	☐	☐	☐
h. When we consider changes in practice, we predict possible student outcomes.	☐	☐	☐	☐
i. We revisit predictions made in previous meetings.	☐	☐	☐	☐
j. We identify actionable solutions based on our conclusions.	☐	☐	☐	☐

21. What else would you like to share with us about data use?

_____

_____

Appendix B

Think-Aloud Prompts

Research Questions:

- <mark>How do teachers in grades 3-5 at Little River Charter School use assessment data when designing Tier 1 reading instruction?</mark>

- <mark>How do teachers in grades 3-5 at Little River Charter School use assessment data when delivering Tier 1 reading instruction?</mark>

- What factors do grade 3-5 teachers at Little River Charter School identify as facilitating or hindering effective data use?

Administrator: I will now ask you a series of questions about your students' MAP reading data. I will ask all the questions in a predetermined order, but if you feel you have already answered a question, please elaborate on what you previously said.

- Tell me a bit about your initial impressions of your students' performance on the fall MAP Reading assessment.

- How would you describe student performance overall?

- How might you use this data?

- What are your thoughts about individual students' performance? Do any students stand out to you? Why?

- What are your thoughts about the growth goals set for each student?

- Do you feel this data is adequate for making decisions about instruction or intervention? Why or why not?

Appendix C
Lesson Recording Protocol

Research Questions:
- How do teachers in grades 3-5 at Little River Charter School use assessment data when designing Tier 1 reading instruction?
- How do teachers in grades 3-5 at Little River Charter School use assessment data when delivering Tier 1 reading instruction?
- What factors do grade 3-5 teachers at Little River Charter School identify as facilitating or hindering effective data use?

Prior to Instruction:
-Description of Classroom
-Diagram of the Classroom Arrangement
-How are students situated in the classroom in comparison to the teacher?
-What is the objective for the recorded lesson?
-How is the objective communicated to students?
-What visual tools or scaffolds are physically present in the classroom to support students during reading instruction?
-How do students transition into the reading block? What supports or scaffolds are in place to support students as they transition?

During Instruction:
-What is the level of grouping throughout instruction (whole group, small group, partners, or independent)?
-How are student responses elicited (orally, visually, or both)?
-How frequently are student responses elicited?
-What kinds of feedback does the teacher provide?
-How does the teacher scaffold or differentiate tasks based on student responses and needs?

Date:		
Time of Observation: **Location:** **Observer:** Austen Hecker		
Time	**Facts and Details**	**Reflections/Personal Observations**

Appendix D
Interview Protocol Draft

Introduction:
Hi _____. Thank you for taking the time to meet with me today to reflect on your use of data in the design and delivery of reading instruction. Please know that your participation in this research is voluntary, and you are welcome to decline or terminate your participation at any time. I will share my work with you and my professors and peers involved in my current coursework, but I will use a pseudonym for you and this school throughout this study. Do you have any questions before we begin?

Questions:
Why don't you start by telling me a little about yourself—where you are from, how you got into education, how long you have been at the school?

Tell me about how you would define data.

What types of data do you collect and use during literacy instructional planning and delivery?

      How frequently do you collect data?

Which sources or types of assessment data do you perceive as the most helpful in designing and delivering Tier 1 reading instruction? How so?

Which sources or types of assessment data do you use the least in designing and delivering Tier 1 reading instruction?

Let's reflect on the recorded lesson:
Tell me about how you assessed students' literacy needs during the recorded lesson on…,

During the recorded lesson, I noticed that you…

      Tell me about your thought process when…

      What motivated your decision to…

      How frequently do you…

      In addition to…, are there other ways that you… (e.g., scaffold, provide feedback)? Could you provide examples?

What, if any, additional resources, or tools related to literacy data would be helpful to you in designing and delivering Tier 1 reading instruction?

Do you have any additional thoughts or questions for me?

Appendix E
Think-Aloud Code Book

Code Name	Definition	Inclusionary Criteria	Exclusionary Criteria	Example
Data Interpretation				
Classroom-Level Data Analysis	Interpreting data to make general statements about classroom reading needs or strengths.	Teacher describes trends or patterns across classroom reading data.	Does not include interpretation of individual student data or examples of how data will inform instructional practice.	All have space to grow. Some are really close to where they should be. Nothing shocking. A lot of them scored higher than last year. It's encouraging that more students are closer to where they should be since Covid.
Individual-Level Data Analysis	Interpreting data to make statements about individual students' reading needs or strengths.	Teacher describes needs or strengths of an individual student from the data.	Does not include statements concerning the entire classroom or examples of how data will inform practice.	If I go on MAP and look at their profile, it will give a projected growth goal based on where they are, so [student] who is in a lower percentile band-will hopefully make more accelerated growth in response to intervention.
Data Application				
Classroom-Level Data Application	Examples of how data will inform core instruction for all students.	Teacher describes how data will be used to guide core reading instruction.	Does not include individualized instructional decision-making.	Maybe I'm not challenging them enough. I changed everything so much last year to meet the needs of those students. So I'm trying to step it up this year and dive a little deeper by adding more details in our journals and encouraging supportive reasoning.
Individual-Level Data Application	Examples of how data will inform scaffolding or instructional support for individual student/s.	Teacher describes how data will be used to support individual needs.	Does not include examples of how data could inform core instruction for all students.	One little guy who stood out was already identified as SpEd. I know that I have to keep my eye on him. On one hand, he is getting a lot of intervention, but he misses all of core. I try to pull him during different pieces of time that I can find throughout the day.

Reflectivity				
Personal Reflectivity	Personal reflections on perceived competence for using MAP reading data.	Teacher describes personal feelings, attitudes, or perceptions of using MAP reading data.	Does not include examples of personal feelings or perceived competence for data use.	Maybe there are those things for MAP and I just don't know where they are at.
Emergent Code: Limitations of Data	Examples of the ways in which data from a given source (such as MAP) is limited or insufficient for a given purpose.	Teacher descriptions of the ways that the data does not provide necessary information.	Does not include examples of data analysis or the ways that data could be interpreted.	When it comes to planning and delivering instruction, it makes me want more information- something that drills it down a bit more.
Emergent Code: Additional Data Sources	Examples of other data sources that teachers utilize to interpret students' literacy needs.	Teacher descriptions of additional data sources (other than MAP) that they use to supplement or gain literacy information.	Does not include examples of how MAP data is utilized or limited.	I like to use the iReady data because it gives a bit more about specific areas like vocabulary.

Appendix F
Lesson Recording Code Book

Code Name	Definition	Inclusionary Criteria	Exclusionary Criteria	Example
Emergent Codes: Data Collection				
Formative Assessment: Practice Opportunities	Students receive the opportunity to apply learning in practice during instruction (e.g., reading or writing connected text).	Students practice the new skill or apply the new content throughout instruction.	Does not include teacher-led modeling or summative assessment opportunities.	Turn to your sharing partner from yesterday, and you are going to share your reasons as well as a detail to support each reason.
Summative Assessment: Classroom-Based Assessment	Opportunities for students to show their own learning or understanding following instruction.	Teacher provides an opportunity for students to respond individually following instruction.	Does not include opportunities for students to interact with peers or respond as a group during instruction.	This is your first graded assignment. There are 10 words and 10 sentences. With each sentence, there are two words written and you are going to circle which of the two words fits in the sentence
A Priori and Emergent Codes: Data Application				
A Priori Code: Verbal Feedback	When the teacher cues or supports a student by providing a verbal response to student performance.	Teacher explains something in a different way, offers affirmative or corrective feedback, provides another example or prompt, or repeats directions.	Does not include the provision of physical tools or resources; Does not include chunking or altering content.	Ms. Gates reminds them they have 3 options- "what you actually see, what you imagine, or tie it to what you hear"
A Priori Code: Visual Scaffolds	When the teacher provides additional visual supports (e.g., graphic organizers) for students.	Teacher provides or draws attention to visual tools to support student learning.	Does not include modifications to content or student groupings.	Yesterday, you wrote reasons why you picked your favorite pet. [She shows the graphic organizers that students completed yesterday] I have added sticky notes to each reason, so that you can add a detail to support each reason.
A Priori Code: Content or Task Scaffolds	When the teacher modifies tasks or content for specific students.	Teacher provides or plans for task modifications such as chunking information or altering an assignment.	Does not include visual aids or modifications to the learning context.	I want you to take a picture of each definition and read it. Then highlight the words you don't know. (Directions to one student, while the rest of the class copies definitions into notebooks).

Emergent Code: Student Groupings	When the teacher modifies the context for a student's learning.	Teacher provides or plans for certain student(s) to complete the task in a different context (e.g., in a small group, with a partner, in a different setting).	Does not include modifications to the task itself.	Make a good choice of someone to partner with. When I call your name, move with your notebook to stand behind the seat of a partner.
Emergent Code: Nonverbal Feedback	When the teacher responds to students through writing or proximity or a gesture.	Teacher responds to student behavior or performance by using a nonverbal prompt.	Does not include verbal responses to student performance or modifications to the task or tools.	Ms. Birch moves to a third partnership and sits quietly as they share.

Appendix G
Interview Code Book

Code Name	Definition	Inclusionary Criteria	Exclusionary Criteria	Example
Knowledge				
Knowledge of Content	References to the use of knowledge about the reading science or how reading develops.	Teacher describes how knowledge about component skills of reading comprehension or reading development is helpful or would be helpful to inform Tier 1 instruction.	Does not include evidence of student learning (i.e., outcome measures).	When the students read with me, I am looking for breakdowns in phonics, fluency, and comprehension.
Knowledge of Students	References to the use of knowledge about students.	Teacher describes how knowledge about students is helpful or would be helpful to inform Tier 1 instruction.	Does not include references to knowledge of reading skills or content.	I have a little boy who is very intimidated by writing, so I always go to him first and get him to verbalize what he is going to say first, and then he can begin his writing.
Knowledge of Assessment	References to use of knowledge about how to assess and/or interpret assessment data for reading.	Teacher describes how knowledge about assessment is helpful or would be helpful to inform Tier 1 instruction.	Does not include references to knowledge of students, reading skills, or strategies.	For writing, we collect pre and post for each unit- at least six times per year. I have a group that really struggles with writing, so I know to use more graphic organizers.
Emergent Code: Knowledge from Previous Experience	References to the use of knowledge about how to teach reading.	Teacher describes how knowledge about how to teach reading is helpful or would be helpful to inform Tier 1 instruction.	Does not include references to knowledge of students or reading content.	Last year, we did the poem in small groups, and I explained it 10 different times in different ways.
Emergent Code: Knowledge of Curriculum	References to the use of knowledge regarding the scope and sequence for instruction.	Teacher describes how knowledge of the scope and sequence informs Tier 1 instruction.	Does not include references to knowledge of students or knowledge of the science of reading.	I try to dig in deep into the standards and look at vertical alignment.
Types of Data				
Personal Data Sources	References to opportunities for students to respond to learning throughout instruction.	Teacher describes collecting formative data throughout instruction.	Does not include setting goals or summative assessments of learning.	Once a week, they submit writing journals, and I check them and provide notes and feedback.

Formal Assessment Data	References to assessment data from screening or progress monitoring tools used across the school (e.g., MAP data).	Teacher describes collecting or using data from periodically administered assessments.	Does not include outcome data (e.g., state tests) or formative assessment data.	At the beginning of the year, the initial data from MAP and iReady tells me who I need to help, but after that, students really start to settle into what they can and can't do and become a little stubborn about it.
	Contextual Factors			
Tools and Resources	When the teacher mentions technology or other school-based resources (or the lack of these resources) for supporting the interpretation and use of assessment data.	Could relate to use of digital platforms, curricular supplies, or other materials that facilitate data use.	Does not include tools that do not support reading instruction.	In Enrich you can see their scores, but it breaks it down similar to MAP-literary text, informational text- it gives some but not a lot of useful information for teaching.
Collaboration	When the teacher mentions opportunities for collaboration with colleagues.	Could relate to common planning, data meetings, or other opportunities for collaboration.	Does not relate to student needs or types of assessment data.	Every night, my team's communicating via text message. We meet during planning block and after school. We are communicating constantly via text and email with resources.
Professional Learning	When the teacher mentions opportunities for professional development or professional learning related to data use	Could relate to opportunities at school for continued learning regarding data literacy or opportunities off-site for individual teachers.	Does not include opportunities for professional learning unrelated to data use.	We got our vocabulary routine from a PD that we attended this summer. It was really good, and I've been really impressed with how students have responded.
Emergent Code: School Leadership	When the teacher describes or mentions the school leadership in relation to data use and reading instruction.	References to school leaders and their involvement in data meetings and/or their role in using literacy data.	Does not refer to collaboration with other teachers or use of tools/ resources.	We have started meeting every 8 weeks with the reading specialist and sometimes [instructional lead] attends.