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HANDWRITING: A QUALITATIVE STUDY EXPLORING ELEMENTARY TEACHERS' BELIEFS, KNOWLEDGE, PREPARATION, PRACTICE AND INFLUENCING FACTORS IN HANDWRITING INSTRUCTION

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ABSTRACT

Handwriting instruction is often seen as less important in the curriculum, particularly due to pressures of passing high stakes assessments and the need to develop technology competencies, as technology in education and society has become commonplace. Current research shows that literacy skills are supported through the direct instruction of handwriting. Handwriting has also been associated with academic success, autoactivating the memory and processing portion of the brain, and is an important component in preparing the brain for phonics and reading acquisition. This has created a problem of significant disconnect between research-based recommendations and current classroom practices in handwriting instruction. The teachers' beliefs, knowledge, and instructional practice are key components of successful handwriting implementation as studies have found that teachers who receive researched-based training deliver quality instruction while those who do not receive this training seem to avoid teaching handwriting. With the instructor and quality of instruction being strong indicators of student performance, it is important to understand teachers' beliefs about handwriting and perceptions of their knowledge and skills concerning handwriting instruction, as teachers' beliefs affect how they teach which in turn affects student achievement. This qualitative study explored elementary teachers' beliefs, knowledge, preparation, and practice of handwriting instruction.

Interviews were conducted with K-4 grade level teachers from three school districts in the upper Midwest. The qualitative analysis consisted of identifying themes from semi-structured interviews with ten participants, two teachers from each grade level, K-4, from three upper Midwestern school districts. Conclusions from the study showed teachers believe handwriting is a fundamental skill important for literacy and academic success but aren't familiar with the research to support their belief. Teachers are concerned about their level of preparation and whether their current practice is 'best practice.' Finding time to teach handwriting in busy schedules was identified as a challenge and there was inconsistency in the length and frequency of handwriting instructional time across participants. Strong leadership, conversations around effective practices in handwriting, and more training about handwriting instruction were identified as ways improve practice.

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CHAPTER 1

Introduction

In the quest to provide an exemplary education for students, the adoption of Common Core State Standards (CCSS, National Governors Association Center for Best Practices, 2010), high-stakes testing, and the increased use of technology for communication have made instructional time a valuable commodity and has led educators to debate how and if handwriting should be included in the curriculum (Dinehart, 2014; Shapiro & Volsin, 2013).

With pressures for students to pass the high stakes assessments and develop technology competencies, handwriting is seen as less critical (McCarroll & Fletcher, 2017; Troia & Graham, 2016). Questioning the inclusion of handwriting into the curriculum is not a new trend. Researchers have been exploring whether handwriting is essential to student learning and how much time should be allocated to teaching handwriting since the typewriter was gaining popularity as early as the 1960s (Blatt, 1965; Phelps & Stemple, 1987).

In 1996, Sheffield stated that handwriting was a neglected component of literacy. She added that the importance of handwriting is similar to a "fad" that moves in cycles. In the 1960's the movement was trending away from teaching handwriting, moving back in the 1980's and then away again in the 90's with the whole language movement.

The committee that introduced and developed the Common Core State Standards (CCSS, National Governors Association Center for Best Practices) seems to follow this pattern. The first set of standards developed in 2010 included handwriting standards only through first grade (CCSS 2010). The updated 2018 CCSS standards included handwriting standards through fourth grade but omitted recommendations for the time necessary to develop skills at each level (CCSS 2018). The rationale was that the time allocation should be left to each state and district to

determine which often varies drastically from district to district (Coker et al., 2016; Graham et al., 2000).

The most recent version of the CCSS increased general writing standards, emphasizing reading and writing literacy skills essential for success in school and work (CCSS, 2018). Current research shows that literacy skills are supported through the direct instruction of handwriting (Cahill, 2009; Graham et al., 2000). Handwriting has been associated with academic success (McCaroll & Fletcher, 2017; Worthington, 2011). Handwriting activates the memory and processing portion of the brain in preschool children. (James & Englehart, 2012; Li & James, 2016).

Additionally, handwriting is an essential component in preparing the brain for phonics and reading acquisition (James & Engelhardt, 2012; Kiefer et al., 2015). Handwriting fluency has also been shown to correlate with composition quality, length, and fluency (Santangelo & Graham, 2016). The use of technology has been promoted to assist with increasing writing requirements, sometimes at the expense of teaching handwriting, even in the lower grades, yet keyboarding fluency does not increase enough to be a useful writing tool until after 4th grade (Stevenson & Just, 2014; Stievano et al., 2016). Sharp & Brown (2015) identify this problem, stating that "a significant disconnect exists between research-based recommendations and current classroom practices regarding handwriting instruction" (p. 28, 2015).

The teachers' beliefs, knowledge, and practice are key components of successful handwriting implementation (Phelps & Stepel, 1989; Sheffield, 1996). Studies have found that teachers who receive research-based training deliver quality instruction, while those who do not receive this training seem to avoid teaching handwriting (Pehlps & Stemple, 1989; Sheffield, 1996).

The surveys conducted with teachers indicate that many teachers believe handwriting is important but feel the pressures of administration, other academic standards, and testing requirements leave little time for handwriting practice (McCarroll & Fletcher, 2017; Troia & Graham, 2016). They also feel they have not received adequate training to teach handwriting effectively (Berninger, 2012; McCarroll & Fletcher, 2017; Sheffield, 1996; Troia & Graham, 2016).

These may be contributing factors to the variability in reported time spent teaching handwriting (Graham et al., 2000). The instructional time ranged from 2 minutes to an hour a day, with one in every two teachers spending 10 minutes or less a day and one in eight teachers spending 5 minutes or less teaching handwriting (Graham et al., 2000).

With the instructor and quality of instruction being a strong indicator of student performance, it is important to understand teachers' beliefs about handwriting and perceptions of their knowledge and skills concerning handwriting instruction, as teachers' beliefs affect how they teach, which in turn affects student achievement (Applegate & Applegate, 2004; Phelps & Stepel, 1989; Sheffield 1996).

Statement of the purpose:

This study aimed to gain a deep understanding of how teachers view and approach handwriting instruction. This study explored elementary teachers' beliefs, knowledge, preparation, and practice of handwriting instruction. The study examined teacher beliefs of the importance of handwriting, their level of knowledge and preparation, the instructional practices used to teach handwriting, the influencing factors and challenges teachers feel effect how, when, and how much handwriting is taught, and the current state of handwriting instruction.

Additionally, this study examined whether teachers' beliefs about handwriting instruction align with their administrators' beliefs.

Research questions:

Questions explored:

1. How do teachers describe their beliefs, knowledge, preparation, and practice in handwriting instruction?
2. What do teachers perceive to be the influencing factors and challenges that effect how, when, and how much handwriting is taught? How do they believe these factors could be addressed?
3. How do teachers perceive their beliefs align with their administrator?

Significance of the study:

Research indicates that handwriting instruction is associated with academic success, particularly in literacy outcomes. Yet, there is debate regarding including handwriting instruction in the curriculum with varying time and attention given, even in the lower grades. The differences in the time allotted and type of handwriting instruction are often attributed to teachers' beliefs and preparation.

The current study added to recent research on the beliefs, knowledge, preparation, instructional practices, and the influencing factors and challenges they believe affect how, when, and how much handwriting is taught. This study explored teachers' perspectives on the importance of effective handwriting instruction and the factors that they believe need to be addressed for effective handwriting instruction. The goal of this study was to provide insight into the current state of handwriting instruction, inform those involved in making curriculum and teacher preparation decisions about factors that affect teachers' decisions in teaching

handwriting, and provide suggestions for future action that may help to increase consistent practices in teaching handwriting and may in turn lead to increased student achievement.

Definition of Terms:

Automaticity: being able to form letters, words, and sentences without thinking or concentrating on how to perform the task (Graham & Weintraub, 1996).

CCSS: Common Core State Standards – a set of K-12 educational standards for math and English language arts and literacy (CCSS, National Governors Association Center for Best Practices, 2010).

Fluency: the speed of writing (Graham & Miller, 1980).

Handwriting: Handwriting is a physical process using hand-eye coordination as a tool to express, communicate, and record ideas (Graham & Miller, 1980).

Manuscript Handwriting: writing that consists of unjoined letters made with lines and circles (Graham & Miller, 1980).

Cursive Handwriting: writing that has continuous joined the strokes of the letters in words (Graham & Miller, 1980).

Legibility: how easily writing can be read (Graham & Miller, 1980).

Letter Formation: the specific procedure to transcribe each letter correctly and efficiently (Graham & Weintraub, 1996).

Limitations and Delimitations

The following limitations and delimitations should be considered when interpreting and generalizing the results of the study:

1. This study is limited to kindergarten through fourth-grade elementary classroom

teachers' beliefs of importance, preparation, and practice of handwriting instruction and the factors they believe affect how, when, and how much handwriting is taught.

2. This study is delimited to elementary teachers (Grades K-4) in selected schools in the state of South Dakota.

3. This study is delimited by using an interview instrument distributed in the spring of 2023.

4. This study is limited by using purposive sampling.

Assumptions:

The following assumptions in this study are as follows:

1. Teachers will respond openly and honestly to the survey items.

2. Teachers will have a basic knowledge and experience of the impact of handwriting instructions.

Organization of the Study:

Chapter 1 presented an introduction and background to the issue, a statement of the purpose, the research questions, the significance of the study, the definition of terms, and the limitations and delimitations of the study. Chapter 2 includes a review of current literature and research related to (a) the impact of handwriting instruction, (b) effective handwriting instruction, and (c) the beliefs and perceptions of teachers. Chapter 3 describes the methodology used to gather information for analysis, which includes the study design, population and sampling method, instrumentation, data collection, and analysis processes. Chapter 4 describes the details of the data and the findings. Chapter 5 summarizes the study, provides conclusions from the data analysis, and discusses the findings and implications. Recommendations for future study were provided.

CHAPTER 2

Review of Research

Chapter 2 presents a review of literature focusing on research on handwriting development and instruction on student outcomes and research on teachers' perceptions and beliefs regarding handwriting instruction. Research reviewed regarding handwriting and student outcomes will show outcomes of academic performance, writing, letter, and reading acquisition, as well as memory and processing development. This chapter is divided into sections: (a) Research on the Impact of Handwriting Instruction, (b) Research on Effective Handwriting Instruction, and (c) Research on the Perceptions and Beliefs of Teachers.

Research on the Impact and Importance of Handwriting Instruction:

Several studies have found a relationship between handwriting quality and student outcomes, particularly pre-literacy skills, literacy, and writing (Feng et al., 2019; Graham et al., 2011; James & Engelhardt, 2012; Kiefer et al., 2015; McCarrol & Fletcher, 2017; Worthington, 2011), as well as other content areas (McCarrol & Fletcher, 2017). Handwriting has also been associated with memory recall (Horbury & Edmonds, 2021) and visuospatial fluency (Stievano et al., 2016).

McCarrol and Fletcher's (2017) research addressed whether handwriting instruction has a place in the instructional day and the relationship between handwriting quality and academic success. This study occurred in a public school in a small city in the central United States. Ten highly qualified first and second-grade teachers in the district were selected to determine three students from their class that represented low, average, and high achievement, determined by teacher perception and standards-based report card grades, for 30 students. Any student who received special services was to be excluded.

The researchers analyzed data obtained from the teacher, as each teacher was to provide data on academic achievement in reading, math, writing, and handwriting quality. Scores from the district standards-based report card and the *Handwriting Without Tears Screener of Handwriting Proficiency* were used as measures. A correlation analysis of the relationship between the handwriting screener scores and the academic scores in reading, math, and writing from the standards-based report card was conducted.

The researchers also developed a short survey to gather teacher perceptions of handwriting quality and academic achievement data. The first six questions were qualitatively designed to determine the teachers' perceptions about their class. The final open-ended question allowed the teachers to state their opinions about their class and the relationship of handwriting quality to academic success.

A significant positive relationship was found between handwriting scores and grades from the standards-based report card in reading, writing, and math, with higher-performing students having higher handwriting scores than those at the average or low level. The responses to the teacher survey showed that there was little consistency in the frequency and length of handwriting instruction. Responses indicated anywhere from 1-5 days/week for 10-15 minutes. Responses discussing the relationship between handwriting quality and academics were mostly positive, with some questions about whether handwriting quality was due to maturity rather than academic abilities, noting that some high academic students have illegible handwriting.

The teachers felt handwriting was also important to success in many other content areas. In terms of developing good handwriting in the classroom, teachers emphasized the importance of evidence-based practice and proper technique early in the education process. Deterrents mentioned for teaching handwriting were lack of time available for appropriate instruction and

curriculum specialists not placing value in allocating time for handwriting instruction. One teacher mentioned handwriting becoming a dying art with the advancement of technology. Since the responses were anonymous, no relationship between teacher beliefs and handwriting scores could be observed.

McCarrol and Fletcher's (2017) study showed a relationship between handwriting quality and academic success in reading, writing, and math, with the strongest relationship to writing. Most participants also believed there was a relationship between handwriting quality and academic success. It was recommended this research be replicated with a larger population across more districts. The implications of this research suggest instructional time should be allocated for handwriting instruction, which could potentially contribute to increased academic success.

Worthington (2011) studied the impact of handwriting proficiency on academic success in middle school. This study aimed to examine middle school students' perspectives regarding the impact handwriting quality had on their grades and to determine whether handwriting interventions could improve handwriting quality. This research was a qualitative case study of 4 middle school students from a middle-class suburban school in the Southeast United States.

A case study design was used to gain perspective on students' handwriting struggles and the impact it had on their academic success. The language arts instructors identified the participants in this purposive study as students whose handwriting negatively affects grades and who would benefit from handwriting remediation sessions to improve legibility and fluency. Identified students participated in 2-3 45-minute handwriting tutoring sessions each week for six weeks.

The researcher determined the subjects in the study inconsistently or generally didn't believe that their handwriting affected their grades. They were aware their teachers commented about their work being "messy" or hard to read but didn't seem to believe their grades were impacted. The researcher also noted that students didn't understand there were different purposes for writing, which require different writing speeds. Determining the purpose of writing was incorporated into the weekly tutoring sessions.

The use of cursive writing improved legibility for all but one participant. The teachers were asked to report on the transference of skills learned in tutoring sessions to the classroom. The teachers reported consistent improvement in handwriting skills in all students but one. However, the one student's general legibility improved, and they used the skills learned in the tutoring sessions when prompted.

The study's implications suggest handwriting proficiency plays an essential role in students' success in school. It also demonstrated that the handwriting skills of legibility, fluency, and formatting of middle-grade students can be remediated. The researchers believe the study may bring awareness to teachers, administrators, and curriculum directors of the importance of early identification of students who lack proficiency in handwriting in order to provide remediation.

The effects of notetaking types on children's recall and understanding were studied by Horbury and Edmonds (2021). They wanted to determine whether one notetaking type would benefit children's learning. The participants in the study were male children between 10-11 years old. They were randomly assigned to notetaking conditions of handwriting or keyboarding. The students were asked to watch videos on content material in history and science and take notes on the information using handwriting or keyboarding.

Following the learning session, the students were given multiple choice tests to determine recall of facts. A follow-up test was given one week later to determine conceptual understanding. The history study was conducted first, and the biology study was completed one month later, with groups switching notetaking conditions. Mixed model Analyses of Variances (ANOVAs) were conducted: Mode of notetaking (handwriting, keyboarding) was a between subjects' factor, and time of test (immediate, delayed) was a within subject's factor assessing both factual and conceptual understanding.

The number of notes taken in either handwritten or typed condition was similar. No significant differences were determined when students were tested immediately after instruction; however, the results showed significant differences in conceptual understanding between those taking handwritten notes and those typing notes when tested a week after initial learning. The children who had taken notes by hand were determined to have better conceptual understanding regardless of the subject matter.

The researchers determined the increased conceptual learning could be related to active processing that allows for deeper analysis of the information as found with adult learners, or it could occur because they are less skilled typists and need to think more about their typing while taking notes. The students had been given training in keyboarding, but their speed and accuracy had not been assessed, which could be a limitation of the study and a need for future study.

Other study limitations were the small sample size *n-36* and the single-gender of males. The researchers believe this study contributes to the literature by examining children with authentic learning material and methods in actual classroom settings. It also addresses the

implications of handwriting and technology as it supports learning and the importance of policies incorporating keyboarding and handwriting in the curriculum.

Metanalyses reviewed how handwriting and keyboard contribute to writing performance (Feng et al., 2019). There were two metanalyses conducted. They first meta-analysis examined the following questions: a) how is handwriting fluency associated with writing? and b) do any other factors constrain the concurrent relationship between handwriting fluency and writing? Nineteen studies conducted and published by 2015, including studies using qualitative and correlational methods in peer-reviewed journals, dissertations, or thesis, qualified and were included in the analysis.

The second meta-analysis examined the following questions: a) How is handwriting performance associated with keyboarding? and b) do handwriting and keyboarding differ in their relationships with writing development? Seven studies were conducted and published in 2015, including studies using qualitative and correlational methods, simultaneously including measures on handwriting and keyboarding, which were available either online or in library archives, qualified, and included in the analysis.

The first meta-analysis found a beneficial relationship between handwriting and writing. The second meta-analysis found that handwriting and keyboard contributed to writing and that handwriting fluency correlates to keyboarding fluency. These findings indicate handwriting skills should be continued and stress the importance of incorporating handwriting as an essential element of classroom instruction to be developed along with technology instruction.

James & Engelhardt (2012) conducted a study to test the effects of handwriting experience on functional brain development in pre-literate children. The researchers wanted to demonstrate that learning letters by printing would result in a different neural processing than

learning through only visual practice. With the possibility of keyboarding replacing handwriting, they wanted to address the usefulness of handwriting skills.

Participants were pre-literate 5-year-olds from Bloomington, IN. All children were native English-speaking, with normal vision, hearing, and motor development and no known brain impairments or trauma. Fifteen children participated in the study. The children were evaluated for literacy skills to ensure no outlying factors. Then, the students were acclimated to the MRI using a simulator to ensure all children were comfortable with the testing environment. The children were exposed to three conditions to learn letters and shapes: printing by hand, tracing, and keyboarding.

In the training sessions, all participants were taught twelve unknown letters and twelve shapes, four letters and shapes in each condition. In the printing condition, the children were shown the letters and shapes and were trained to print them by hand. In the tracing condition, the children were shown four different letters and shapes but traced them on pre-printed dot cards. During the keyboarding condition, the children were shown the remaining four letters and shapes and asked to locate the letters and shapes on the keyboard by pressing the correct key containing the letter or shape on a modified keyboard. Using a PowerPoint program, the letter or shape would appear on the monitor. In each condition, the children practiced each letter and shape eight times. For example, when the child was shown the letter 'T' in the printing condition, the child would print the letter eight times. In the tracing condition, the child would trace eight cards with the letters on them, and in the typing condition, the child would press the key eight times.

The imaging session followed the training session. Students first watched a cartoon to become comfortable and get a brain scan. During the MRI scan, the students were shown images of the twelve letters and twelve shapes learned in training, in addition to twelve control images.

The imaging performed two types of analysis, fusiform gyrus and whole brain analysis. The fusiform gyrus is the region of the brain that is engaged in letter processing. The whole brain analysis examines how different training conditions engage other brain regions.

The authors noted that the portion of the brain linked to reading and letter processing was activated more in the scans of students trained using handwriting versus tracing or typing. The researchers believe it is the motor act of printing the letters that affects the visual processing, which they feel is crucial for learning and categorizing letters, and that the construction of letters, stroke by stroke, that will help children understand the parts that form letters, therefore assisting them with letter recognition.

The research team of Stievano et al. (2016) proposed that handwriting fluency may be associated with neuropsychological performances and that visual and spatial awareness could have a specific role in handwriting speed. The study included 96 students from an Italian primary school. There was an even division of males and females, with the majority being right-handed. The students were 8-12 years old. The students were tested in two sessions.

A comprehensive neuropsychological battery of Raven's colored progressive matrices, a standardized test of visual and inductive reasoning ability, and the developmental test of visual-motor integration were completed during the first sessions. The second session included a Handwriting Speed Test, Verbal Fluency Test, Corsi Block-Tapping Test, a measure of spatial attention span, and the Five Point Test, which measures the ability of an individual to produce unique geometric designs.

Handwriting speed was associated with visuospatial fluency, and fine motor skills play an integral role in learning to handwrite, which should be considered when evaluating the process of

handwriting impairments and their improvement. There was a wide range of ages of the students, and the study was unable to determine if handwriting fluency was affected by age.

Li and James (2016) examined handwriting practice as a facilitator of visual categorization. They proposed that handwriting assists letter recognition because perceptual environment symbols that build categorical understanding are produced. The subjects chosen for this study were five-year-old children from a middle-class mid-western community in the United States. All participants had to be enrolled in some sort of preschool or kindergarten class. They had to know how to write their name, know 75% of the alphabet, and have no exposure to the Greek alphabet. The experiment consisted of five tasks: name writing, ABC recognition, symbol learning, symbol recognition, and symbol categorization. All groups participated in the tasks in the same order.

The symbol learning portion of the experiment implemented six different conditions, and the participants were randomly assigned across the six learning conditions. Three visual motor tasks were copying typed symbols independently, tracing typed symbols, and tracing handwritten symbols. The other three tasks were visual and auditory: seeing and saying typed symbols of a single typed font, different typed fonts, and handwritten examples. The children were taught the Greek symbols in one of three visual motor conditions or one of three visual auditory conditions.

The first visual motor condition had participants learning four categories of Greek letters by copying. They were shown a symbol told its name, repeated the name, and wrote it on a blank card. The second and third conditions were the tracing-typed and tracing-written conditions. The procedure was similar in these groups, except the students traced a typed or written symbol instead of writing it freely.

In the first visual motor condition, the experimenter showed a flashcard of the symbol typed in the same font and said its name and the child repeated the name. The letters were shown the same way in the second and third conditions, but the letters were typed with several different fonts for the second condition and handwritten for the third condition.

The fourth task was a symbol recognition task, in which all children participated. In this task, the children were asked to point to the learned Greek symbols made with various fonts among three distractors: a Greek symbol that was not taught, a shape, and a rotated version of the taught symbol. The experimenter would say the name of the Greek symbol, and the child would point to the correct symbol.

The final task was symbol categorization, which was a card-sorting task. There were two sorting tasks in this phase: sorting typed symbols and sorting handwritten symbols. The learned symbols were laid out on a table in the four categories: pi, psi, mega, & zeta. The children were given cards and were told to place the cards in the correct category. If the child didn't believe it was a learned symbol, they could put it in a pile labeled "does not belong." The typed cards were sorted first, and the handwritten symbols were sorted last. This task was to determine if the children could generalize their knowledge of the symbol categories.

The results of the tests showed all the children could learn the Greek symbol categories, but differences appeared during the sorting task. The groups that learned the letters through multiple means performed better than those only exposed to one example of the symbol. They found that students involved in handwriting and tracing handwritten symbols could better categorize than tracing typed symbols.

Those involved in multiple typed fonts and handwritten symbols could also categorize to the same extent as handwriting and tracing handwriting. Finally, the only conditions significantly worse at categorizing were those students who learned a single font type of the symbols.

The researchers recognized that the time spent on the learning phase may have affected symbol learning since writing takes longer than repeating and saying the names. Li and James (2016) believe the practical application of these findings is significant. It is possible to use the learning of symbols through many models to develop the ability to categorize letters in young children by increasing the amount of handwriting practice in preschool and early elementary. Increase tracing of various letter styles—either different fonts or handwritten, use both types of visual and auditory learning and limit single-font examples for learning.

The influence of writing modes on reading and writing was studied by Kiefer et al. (2015). They examined how the pen and keyboarding affected reading and writing in preschool children. The study worked with 23 kindergarten students; 12 were female. The students were enrolled in 2 different Kindergarten classrooms from Ulm, Germany.

The students were divided into two groups for an intensive training program: handwriting with a pen or typing on a computer keyboard. Both groups were trained in letter recognition, letter naming, word reading, letter writing, and free letter writing. There were 16 sessions at 25 minutes each. The results of this study revealed that students who were trained using keyboarding didn't outperform the handwriting students on any tasks. The handwriting group did perform better in word writing and word reading. No significant differences were seen in letter recognition and letter naming. This study partially supports theories of combining sensory motor actions of handwriting with symbol representations to affect reading and writing performance.

Waterman et al. (2015) investigated visual–motor memory and its importance in handwriting and reading. They hypothesized that visual motor memory is the way to increase automaticity in handwriting. There were 87 participants from ages 6–11 years old, 44 females from a primary school in West Yorkshire. Children were shown original shapes for a short period on a tablet laptop screen. The students would then draw those shapes from memory as quickly as possible on the screen using a digitizer pen. Sophisticated algorithms objectively evaluated the accuracy of the children's drawings. These scores were compared to standardized scores in reading and writing.

The results showed a significant indirect effect of visual motor memory on reading through writing. The results indicate that visual motor memory provides a way for the motor aspects of handwriting to become more automated. Through automaticity, the cognitive load of the handwriting procedure is reduced, freeing the mind for more complex and abstract language skill development. Since the data was correlational, casualty could not be determined.

Graham et al. (2000) investigated handwriting problems in beginning writers. They sought to determine if handwriting is a factor in learning to write using the research question: "Is handwriting causally related to learning to write?" Participants in this study were first-grade students who were identified as "at risk" for handwriting but did not have an identified disability. Students were identified through a screening process.

Subjects for this study were identified from three hundred students in 12 classrooms from 4 different schools from a single school district. The schools were from urban and suburban areas in the Washington, DC, area. There were 38 children identified, 12 girls and 26 boys. The students were randomly divided into two different instruction groups: handwriting instruction and phonological awareness instruction.

Four graduate students majoring in education provided all the instruction, one at each of the schools. The instructors worked with each student individually three times a week for 15 minutes for 27 sessions. Students were pre and post-tested on handwriting skills with two timed tasks. The first was to write the entire lowercase alphabet without making mistakes. The second task was to copy a paragraph on lined paper. The teachers of the 12 participating classrooms were asked to complete two surveys. The first survey provided information on the teachers' beliefs about the importance of correct, implicit handwriting instruction. The second survey measured the self-efficacy of the teachers' ability to teach handwriting and their ability to overcome external factors.

The results indicated that the students who received handwriting instruction made more significant gains in handwriting and composition writing than those who received phonological awareness instruction and maintained that growth six months after instruction. The students were also more accurate in naming and writing the letters and could write them and text more fluently. The data from the teacher surveys indicated that while the teachers believed that teaching handwriting was important, the time allotted to teaching handwriting varied considerably from 30 minutes to 150 minutes each week.

The authors conclude that the results support their belief that handwriting is a causal factor in learning to write. The results lead the authors to recommend that effective writing programs incorporate explicit handwriting instruction integrated with the writing program.

Research on Effective Handwriting Instructional Practice

In an observational study, Coker et al. (2016) examined first-grade writing instruction. The purpose of the study was to provide a comprehensive analysis of first-grade writing addressing the following questions: a) What writing instruction do students experience across

first grade, including allocated time, writing tasks, and instructional methods, and how much instructional variation is attributable to classrooms and schools? b) How much writing do first-graders do across first grade, including allocated time, tasks, and complexity, and how much variation in writing activity is attributable to classrooms and schools? and c) are there relationships between classroom writing instruction and students' writing activities?

The study examined first-grade writing instruction in fifty classrooms from thirteen schools from three school districts from one state in the Mid-Atlantic region of the United States. Grouping, instructional focus, teacher instructional activity, and student writing activity were examined. A cross-sectional observational design was used to record teachers' instructional practices. The data were collected over three years: 1 year for preparation and two years for the actual collection of data.

The main finding of significance was the amount of time spent on writing instruction and student writing activities varied greatly. It was observed that teachers engaged in writing instruction only 9.6% of the time. Another finding indicated the time spent on skills instruction was related to several writing tasks, such as writing sentences, open writing, and writing connected text. The study is limited by the small number of participants. The implications of this study indicate that schools should adopt effective instruction with teacher training and continued opportunities to develop effective handwriting practices.

A meta-analysis of handwriting instruction in the United States was conducted to determine whether explicit instruction of handwriting improved student writing (Graham & Santangelo, 2016). The study included 80 studies of handwriting instruction that met their criteria for analysis. They developed a set of 11 questions for their study: 1. Does handwriting instruction produce more significant gains than no handwriting instruction? 2. How does

handwriting instruction affect writing quality, length, and fluency? 3. Does motor instruction produce more significant gains than no motor instruction? 4. Does motor instruction produce greater gains than handwriting instruction? 5. What is the impact of individualized handwriting instruction? 6. What is the impact of the handwriting without tears program? 7. What is the impact of teaching individual letters with motion models? 8. What is the impact of using technology in handwriting instruction? 9. What is the impact of using self-evaluation in handwriting instruction? 10. What is the impact of multi-sensory handwriting instruction? 11. What is the impact of copying letters from models or memory?

They found that handwriting instruction improved legibility, fluency, and writing quality (questions 1-3). The remaining questions address the instructional practices that enhanced students' handwriting. They did not find support for specifically teaching motor skills to improve handwriting. Methods that did improve student handwriting were the use of technology and individualization. Three methods weren't statistically significant in improving handwriting, but the statistics warranted discussion. Self-evaluation did show significance with students in grades 4-8. Copying letters from models or memory and teaching letters with motion models showed some significance in grades K-3. All three methods could have some meaningful effects, but all methods would need more study. Overall, the explicit teaching of handwriting was shown to improve writing.

The Slingerland multi-modal manuscript handwriting instruction was used in a study to investigate effective beginning handwriting instruction and its link to spelling and composition (Wolf et al., 2017). Participants for the first year were first graders from three schools in the United States. There were 33 students, 16 girls and 17 boys. They were divided into two groups.

The treatment group received the Slingerland instruction, and the control group received handwriting instruction not incorporated with other literacy instruction.

During the 2nd year, the treatment group remained the same, receiving instruction in manuscript writing, while the control group received cursive writing training. All students were pre and post-tested with handwriting, spelling, and composing assessments.

Results indicated that the treatment group improved significantly in word recognition of dictated spelling and phonological spelling. Results showed the benefits of consistent instruction beyond the first year. The findings also support the importance of teaching handwriting as a transfer to other language skills, such as spelling and composition, early in beginning writers. The findings also supported using a multi-modal program such as Slingerland to teach beginning writing. The authors believe future research should investigate the effectiveness of teacher training programs and preservice and in-service training, how long should manuscript be taught before introducing cursive, and how long should explicit instruction be continued. They also hope this study inspires collaboration between teachers and researchers to determine the practical effectiveness of research-based programs.

An in-depth analysis of handwriting curriculum and instruction in four kindergarten classrooms was conducted by Vander Hart and Fitzpatrick (2010). This case study was developed to investigate the quality of instruction and curriculum in real Kindergarten classrooms and assess the impact of instructional practices on handwriting. This year-long case study included teachers and students from 4 kindergarten classrooms from 2 urban schools with diverse ethnic backgrounds and a high percentage of low socio-economic families from Massachusetts.

The four teachers were all female and had at least a master's degree in education. There were 69 students, 35 males and 34 females. The case study included surveys and interviews of teachers, observation of classroom instruction, evaluation of handwriting curriculum, and student writing samples.

Findings suggest that while effective strategies were present in the instructional setting, several areas needed improvement, such as incorporating effective research-approved handwriting instruction daily, explicit instruction, writing for fluency, writing from memory, and using self-evaluation. These methods are among the most important practices recommended. The surveys indicated that teachers seemed to lack knowledge and have misconceptions about the most effective practices. The quality of teaching and learning of handwriting skills was shown to be impacted by the lack of effective practices.

The authors believe there are many areas for future research. They conclude there is a need to investigate the impact of teacher training. There is also a need to research an objective handwriting assessment tool. Research should also explore whether reading and handwriting curriculums reinforce each other. Research-based instruction in actual classrooms should be investigated.

An exploratory study of Australian kindergarten students addressed several questions about handwriting automaticity and instruction (Malpique et al., 2017). The first question was: what level of handwriting automaticity do Australian children exhibit at the end of kindergarten? How much variation is attributable to classrooms and schools, accounting for gender and reading skills? The second question was, what writing instruction do Australian children experience at the end of kindergarten, and is there variation in writing instruction across classrooms and

schools? The final question was, are there any associations between handwriting automaticity and the writing instruction provided at the end of kindergarten?

The study used 177 kindergarten children enrolled in 23 classrooms (23 teachers) from seven government-funded primary schools in Western Australia. Teachers completed a survey to indicate how often they included handwriting, spelling, and grammar instruction and the teaching of revising and planning strategies during a week of instruction. A five-point Likert-type scale ranging from 1(very rarely) to 5 (very frequently) was used for teacher responses. Hierarchical linear models were conducted to examine total variance attributable to child and classroom levels.

The students' level automaticity results showed significant variability that corresponded to the variability in writing instruction. Results also revealed that 28% of children could not write more than five letters in 1 minute by the end of kindergarten. There were significant differences in genders, with boys being most at risk. Higher word reading scores also correlated with higher writing automaticity scores. The teacher surveys noted that students may be engaged in less than the recommended 30 minutes of daily writing practice.

The results also indicate that there may be misconceptions about handwriting development, especially in boys. The correlation analysis showed a significant positive correlation between teaching revising and planning strategies and handwriting automaticity.

Previous research findings aligned with the current results, but future research should include larger samples to examine classroom-level variables such as classroom quality, organization, and instructional support. More detailed questioning, direct observation, or a combination of the two should be considered to gain a more accurate account of classroom

instruction. The nature of writing instruction and the amount required to develop automaticity should also be investigated.

A 2023 narrative review examined data on handwriting instruction obtained from educational and rehabilitation sciences. The review also discusses the possibilities that new technologies may provide for learning and remediating handwriting skills (Bonneton-Botte et al., 2023).

The researchers identified handwriting as a complex but essential skill. The often-assumed simple skill of handwriting consists of a combination of visual-motor coordination, motor planning, tactile, kinesthetic, cognitive, and perceptual skills (Bonneton-Botte et al., 2023). Learning to handwriting requires the mapping between motor instructions and sensory outcomes. Handwriting is a process that occurs over several years.

There are benchmarks for learning this skill. Between the ages of three and five, students should have a universal understanding of the language system and how it works with lines and curves and should be able to 'pretend' write and move into specific knowledge of letter shapes and connections to sound and directionality. From ages five to seven, children develop their ability to fluently write letters from memory.

Research has determined that 6-30% of typically developing students struggle with learning to handwrite (Bonneton-Botte et al., 2023). With handwriting affecting significant learning activities such as reading, spelling, and math, the researchers believe finding strategies to identify, prevent, and remediate students with difficulties will be important.

Through their review of current research, the researchers have determined that assessment is essential yet problematic to understand the deficiencies and guide remediation. Various assessments can be used to evaluate handwriting, but most are subjective and require

specific criteria. These assessments focus on letters written, speed and pressure, grip used, and how the paper is stabilized. Speed is determined by letters written per minute. The letters, pressure, grip, how the paper is held are more subjective and use criteria such as size, shape, space, slant, and line straightness. The issue with these assessments, from a remediation standpoint, is that they are not able to identify the cause. Further assessment from rehabilitation professionals is necessary to assist with plan development.

Instruction is key for learning and remediating handwriting. Evidence-based studies have identified several broad principles.

1. Practice is key for all learners. Interventions should be at least two times each week for ten weeks.
2. It should be task-specific.
3. It should be explicit.
4. Timely intrinsic and extrinsic feedback. Immediate feedback is more beneficial than delayed.
5. Variability varying the font and size promotes memorization.
6. Motivating and supportive environments that promote self-evaluation.

The instruction plans should also consider all factors affecting the child's handwriting. A plan should consider the child and the family providing support and be collaborative between professionals, teachers, parents, and the child. Recent but scarce research highlights some strategies that may assist with remediation. Activities should promote gross motor skill development, such as air writing or walking on letters formed on the floor, self-evaluation, and watching videos for letter formation sequences.

Providing remediation in schools is somewhat problematic. First, teachers do not believe their presence is essential during the practice and evaluation phase. Next, about 12% of teachers believe they are not adequately trained. Then, it is difficult to individualize instruction within a large group context. Finally, collaboration between professionals and teachers is difficult due to the demands of their scheduled time.

The second portion of the study tried to address many issues of providing intervention through technology development. Technology could provide ways and means to provide individualized intervention. With adapted and prescriptive lessons, digital technologies could tutor students and provide feedback. Technologies could provide the teacher with models or tools to communicate with those involved, such as parents and other professionals. Technology could also be used as an assessment measure to bring objectivity to students' handwriting skills. Digital evaluations can assess pen pressure irregularities in how strokes are made. These assessments could be used to personalize the instruction for each student. In order for these tools to be useful, their impact and usefulness will need to be evaluated. The research and training for these tools should involve all those concerned.

Research on Teachers' Beliefs, Knowledge, Preparation, Practice, and Influencing Factors.

This section will explore teachers' beliefs, knowledge, preparation, practice, and factors they believe affect handwriting instruction.

A mixed-methods study of interviews and surveys examined how teachers, occupational therapists, and administrators in the state of New York perceived the effect of Common Core on handwriting instruction and their influence on students' written performance (Collette et al. 2017). The study recruited participants who were elementary school teachers (K–6), special education teachers, school principals, curriculum directors, and occupational therapists.

The survey and interview information showed that more than 50% of the teachers believed handwriting instruction had decreased since the implementation of Common Core. They also believed that students' written work quality has also been negatively impacted. An increase in handwriting referrals to occupational therapy was reported.

Nineteen administrators responded to the survey, with 89% expressing the belief that incorporating handwriting daily in the early grades is crucial for reinforcing good written expression. This belief contradicts a quote from a teacher who reported, "I've actually heard administrators use the excuse that Common Core does not have clear-cut standards for handwriting, so it isn't important" (Collette et al., 2017, p. 6.). The results of this study indicate that handwriting should be included as part of the foundational standards of Common Core to enhance the rigorous preparation of children for future academic success.

Sharp and Brown (2015) explored the perceptions of three Texas elementary teachers on teaching handwriting. One participant taught kindergarten, and the other two taught fourth grade, but all three had various teaching experiences. A qualitative, phenomenological study was conducted, and three themes emerged: school culture/team approach, handwriting pedagogy, and personal/ professional perspective.

Within the theme of school culture, the three participants believed their grade-level teams had a strong collaborative mindset. They reported using the same handwriting style as well as having the same legibility expectations to help prepare students for the following grade levels.

Regarding the theme of handwriting pedagogy, the participants reported that the specific skills they focused on during instruction aligned with their state standards. They also reported that although their instruction was aligned with standards, the demands of other curricula did not leave enough time to develop handwriting proficiency.

The final theme of personal/professional perspective, the teachers indicated that handwriting instruction was an expectation only in the primary grades, with the expectation that students come to fourth grade with legible handwriting. The two fourth-grade teachers mentioned that fourth-grade handwriting instruction was obsolete, but they would provide remediation when needed. It was believed that skills such as keyboarding were more significant than taking the time to teach handwriting.

The experiences of these teachers are not generalizable to all populations. The results do have implications for the field of education regarding handwriting instruction and the instructional practices used in our schools. It also points to the need for a more comprehensive study.

A replication study of teachers' perspectives on teaching handwriting was conducted by Sharp and Titus (2016). This study was a mixed methods design using a cross-section survey of a larger sample of teachers than the previous Sharp and Brown (2015) study. The 39 participants were the Texas Association of Literacy Education (TALE) members.

The survey included two questions that were closed-ended to determine a) the handwriting styles used to teach handwriting and b) the styles of handwriting students chose to use. Six open-ended questions were also included in the survey. From these questions, four themes emerged: the goal of handwriting instruction, handwriting pedagogy, personal/professional perspectives, and the current state of handwriting.

In the first theme, the goal of handwriting, legibility was reported as the most important goal. A few teachers mentioned fluency to enhance efficient writing and note-taking.

The second theme, handwriting pedagogy, was divided into two sub-themes: knowledge of handwriting skills and pedagogical techniques. In the sub-theme, knowledge of handwriting

skills, half of the teachers identified knowledge of one or more of the motor skills associated with handwriting, such as grip, spacing, and size uniformity. Most of these teachers indicated having taught at the early elementary level. None of the participants mentioned non-motor cognitive processes such as working memory, long-term memory retrieval, planning how to write before writing, and other incoming sensory information. The second sub-theme reported on how the teachers were able to apply pedagogical skills during instruction. The responses on this sub-theme were more specific, with many referencing writing styles and how to make the letters.

In the third theme of personal/professional perspectives, teachers believed that both manuscript and cursive handwriting were still important to teach, with a few indicating handwriting instruction was outdated. However, most teachers felt handwriting instruction should be continued.

The final theme, the current state of handwriting, included teachers' concern about handwriting instruction, with an even more significant number of teachers stating that they believed that handwriting was being neglected. High-stakes testing, too many requirements, and lack of teacher preparation and support were reasons identified for the neglect of handwriting instruction.

The results of this study indicate that most teachers supported continued handwriting instruction, with a need for better teacher preparation programs and professional development addressing specific handwriting skills. Additional research exploring the relationship between knowledge of handwriting skills and chosen pedagogical techniques used for instruction is recommended. A final recommendation was to integrate technology to assist and enhance handwriting instruction.

Nye & Sood (2018) conducted a phenomenological research study to explore the needs of kindergarten teachers and the support needed to prepare their students to learn the skill of handwriting. The participants were nine kindergarten teachers from four elementary schools in Illinois. Perceptions of the teachers were reported in semi-structured interviews.

Five themes emerged from the interviews: 1. Foundational Skills Necessary for Handwriting in Kindergarten, 2. Challenges Related to Teaching Handwriting, 3. Supports Teachers Require to Facilitate Handwriting in Kindergarten Students, 4. How Occupational Therapy Can Provide Support to Facilitate Handwriting, 5. Strategies Teachers Use to Promote Handwriting Skills.

The results reveal four significant needs. The first is a need for more training in curriculum, the knowledge of how students develop, and how to help struggling students. Most of the teachers felt these factors greatly affected their teaching. The second need identified was a need for access to occupational therapy services. Many teachers expressed that occupational therapy was a valuable asset but wasn't readily available.

The next need identified was a lack of training in handwriting assessment. The teachers felt their assessments were too subjective and inconsistent, indicating a need for a more objective, evidence-based set of age-appropriate criteria. The final need revealed was to create a collaborative delivery model where the occupational therapist would coach the teachers to develop their skills in handwriting instruction. These findings are consistent with previous studies but only include a small sample. The authors believe the study may provide insight into the challenges the teachers face and promote collaboration between teachers and occupational therapists.

Summary

This study explored elementary teachers' beliefs, knowledge, preparation, and practice of handwriting instruction. The study included their beliefs of the importance of handwriting, their level of knowledge and preparation, the instructional practices used to teach handwriting, the influencing factors and challenges teachers feel effect how, when, and how much handwriting is taught, and the current state of handwriting instruction. The study examined if teachers feel their beliefs about handwriting instruction align to their administrators' beliefs. The beliefs were explored in-depth with personal teacher interviews to gain perspective into the specific situations from their experience. These experiences may give insight into what may assist schools in providing consistent handwriting instruction.

Chapter 2 reviewed literature on the topic of handwriting. The first section covered literature on the impact and importance of handwriting on our students. The reviews looked at the impact that handwriting has on writing length and quality, reading and phonics acquisition, academics, and brain development. The second section of Chapter 2 reviewed the literature on effective instructional practices for handwriting instruction. Finally, the third section reviewed research that explored teachers' beliefs of knowledge, preparation, instructional practice, and the influencing factors and challenges they believe affect how, when, and how much handwriting is taught.

CHAPTER 3

Methodology

This chapter describes the methodology used to understand how teachers view and approach handwriting instruction. This study explored elementary teachers' beliefs, knowledge, preparation, and practice of handwriting instruction. The study included their beliefs of the importance of handwriting, their level of knowledge and preparation, the instructional practices used to teach handwriting, the influencing factors and challenges teachers feel effect how, when, and how much handwriting is taught, and the current state of handwriting instruction. The study examined whether teachers' beliefs about handwriting instruction align with their administrators' beliefs. The beliefs were explored in-depth with personal teacher interviews to gain perspective into the specific situations from their experience.

A description of the methodology used for reviewing research and related literature, the research design, the process of identifying participants, how the survey instrument was developed, and the data collection and analysis procedures are included.

Research Questions

The research questions addressed in this study were as follows:

1. How do teachers describe their beliefs, knowledge, preparation, and instructional practices in handwriting instruction?
2. What do teachers perceive to be the influencing factors and challenges that affect how, when, and how much handwriting is taught? How do they believe these factors could be addressed?
3. How do teachers perceive their beliefs align with their administrator?

Review of Related Literature and Research

A review of the literature included current research on the effects of handwriting on academic achievement, reading, writing, fine motor development, memory and processing, effective handwriting instruction, and the perceptions of teachers on handwriting instruction. Research material was obtained from the I.D. Weeks online library of the University of South Dakota and other online databases such as Google Scholar, Proquest, Jstor, and Sage. The *Journal of Reading and Writing* was used extensively. The *Publication Manual of the American Psychological Association* (APA) 7th edition (2018) was the guide for the structure and form of this dissertation and the literature review.

Research Design and Rationale

This study used a phenomenological qualitative methods approach. Phenomenology is a qualitative research approach that seeks to understand the lived experiences of individuals in a particular context (Creswell & Poth, 2018). This approach is suitable for exploring complex and subjective phenomena such as beliefs, attitudes, and perceptions. The rationale for using phenomenology to study and explore the knowledge, beliefs, and perceptions of teachers and the influencing factors and challenges they believe affect how, when, and how much handwriting is taught are as follows: (Creswell & Poth, 2014; Leedy & Ormrod, 2016; Leavy, 2023)

1. Understanding subjective experiences: Phenomenology uncovers the subjective experiences of individuals, which can help researchers gain a deeper understanding of how teachers perceive and interpret handwriting instruction. By exploring teachers' lived experiences, researchers can better understand how these experiences shape their beliefs and attitudes toward handwriting instruction.

2. Capturing the complexity of beliefs and attitudes: Teachers' beliefs and attitudes toward handwriting instruction will likely be complex and multifaceted, influenced by various factors such as personal experiences, cultural norms, and professional training. Phenomenology can illustrate this complexity by allowing participants to express their thoughts and feelings in their own words and providing a rich description of their experiences.
3. Exploring the context of practice: Phenomenology allows for exploring the context of practice, including the social and cultural factors that shape teachers' beliefs and attitudes. By examining the social and cultural context in which teachers operate, researchers can better understand how these factors influence their beliefs and attitudes toward handwriting instruction.
4. Informing policy and practice: By gaining a deeper understanding of teachers' beliefs and attitudes toward handwriting instruction, researchers can help to inform policy and practice in education. The insights from phenomenological research could be used to develop more effective teacher training programs or to advocate for greater emphasis on handwriting instruction in schools.

Researcher Description

The act of reflexivity in phenomenology is the process in which the researcher addresses their experiences with the topic and reflects on how their experience may influence their interpretation of the data (Creswell and Poth, 2018). This process will assist in developing credibility and confirmability of the study.

The researcher has worked in education for the past 38 years in various capacities ranging from substitute teaching, first-grade and fourth-grade self-contained classrooms, K-12 vocal

music, special education teacher assistant, preschool autism therapist, and an online second-grade teacher. At the time of the study, her current position was a reading and math interventionist for grades K-4 with specialized training in Reading Recovery©. She has been employed as a reading and math interventionist for the past seven years. Through her work with students at various levels, she is aware of many handwriting difficulties and is interested in how handwriting affects student learning.

As a student through the ’60s and ’70s, she recalls only vague memories of handwriting practice through fourth grade. During undergraduate classes, she had one language arts class that touched on handwriting to show the different styles of manuscript and cursive. Unfortunately, strategies for assisting students who struggle with handwriting or the importance of consistent instruction were not discussed.

As a teacher beginning in the 80s, handwriting was taught in her first and fourth-grade classrooms. More attention was given to handwriting instructions in first grade. In fourth grade, a specific time was designated three times a week for cursive handwriting practice, and a grade was given on the report card.

For most of the ‘90s, she was primarily in the music classroom. She returned to the classroom in 2010, teaching first grade, where handwriting was explicitly taught three times each week. The district pacing guide had the letters taught by the end of the first semester. She believed handwriting was important, but when she was “pressed for time,” handwriting was the first thing omitted from the day.

Reading Recovery© training began in 2016-17. At this time, the researcher became aware of the importance of handwriting to the reading process. She started noticing the majority of her students struggled with letter formation and disliked writing. Through her work as a

reading and math interventionist, her beliefs about the importance of handwriting started to transform.

Her current position required her to work with a team of teachers to assess students' reading and math skills and identify interventions specific to their needs. As a team, they discuss what skills are the "most pressing need." Handwriting is a skill that continues to emerge as a problem, and teachers express their frustration in finding time and resources to address the problem. Currently, there are no handwriting-specific interventions. These issues prompted the researcher to study this topic further.

The researcher used the reflexive journal to recall and record personal experiences throughout the interview and data analysis process. She reflected on how these experiences may impact any conclusions and interpretation of the data. Debriefing sessions with an advisor were used to counter data collection, analysis, and write-up bias.

Participants

A purposeful criterion sampling method was used to select ten teachers with handwriting instruction experience and ensure that participants were equal representatives of each grade K-4. Participants are K-4 teachers from South Dakota Public Schools recruited from current and past researcher colleagues. Choosing participants who are the researcher's colleagues from the primarily rural state of South Dakota allows the researcher to address the following (Creswell & Poth, 2018; Leedy & Ormrod, 2016).

1. Representativeness: Selecting participants from a rural state like South Dakota can provide a more representative sample of teachers with different experiences and challenges than urban or suburban teachers. Using the selected participants can help ensure that the findings are more applicable to broader contexts.

2. Access: Rural areas may have challenges accessing resources and professional development opportunities, which can impact how teachers approach teaching handwriting. The study can gain insights into the unique challenges and opportunities in rural areas by selecting participants from this population.
3. Colleague familiarity: Including the researcher's colleagues can facilitate data collection and analysis. In addition, these individuals may have an established relationship with the researcher and be more willing to participate in the study.

Instruments: Interview Questions

The study conducted ten individual teacher interviews, two from each K-4 grade level recruited from current and past colleagues of the researcher. The semi-structured interview provided the opportunity to add questions based on participants' responses (see Appendix E). The questions were formed based on the literature review and aligned with the research questions (see Appendix A).

The interview included a mapping activity asking participants to create a story map showing their teaching day and what they believe to be most important in teaching. The story mapping activity provided rich data on teachers' daily practices and how they prioritize different activities, including handwriting instruction. A story mapping activity can give researchers a more detailed and nuanced understanding of teachers' beliefs and practices related to handwriting (Leavy, 2023).

The interview examined and explored teachers' beliefs, knowledge, preparation, practice, and the influencing factors and challenges they believe affect how, when, and how much handwriting is taught. The open-ended and iterative questions allowed participants to describe and explain their experiences consistently.

The interview questions were as follows:

Introductory Questions:

1. What is your age and your education related to teaching?
2. How many years have you been teaching?
3. What grades have you taught?
4. What grade level do you currently teach, and how long have you been teaching that level?

Story Map questions:

5. First, I would like to ask you to draw a picture or a story map of your day in the classroom. Then, as you are planning your story, include everything that is expected of you, but think of a way to highlight what is most important to you to show the reader what your priorities are.
6. Can you describe and explain your picture/map?

   **If handwriting is not part of the picture, ask, "Where do you think handwriting fits in?"

Questions aligned to research questions:

7. What do you believe are some ways handwriting affects/impacts typical student learning?

   *Follow-up prompts for questions based on affects from the literature that may not be mentioned, such as: How do you believe handwriting affects brain development, memory processing, reading skills, composition skills, and academic success?
8. What research on the affects of handwriting are you familiar with? How does this information translate into your teaching?
9. What are your beliefs about handwriting instruction for typical students?
10. How and where did these beliefs develop?

11. How do you feel handwriting should be taught? Why?
12. How much time/day/week?
13. When do you believe handwriting skills should be mastered?
14. Did you have handwriting training in college? If so, how do you feel it prepared you to teach handwriting?
15. What support do you have for handwriting instruction?
16. What are some of the obstacles/Factors that may prevent the teaching of handwriting? Which obstacle is the biggest and why?
17. What do you believe would need to be done to address obstacles and supports for teaching handwriting?
18. What do you feel is the current state of handwriting in your school district, state? What are the standards?
19. Do you feel your beliefs on teaching handwriting align with your administrator? Why do you think that way?
20. Is there anything else you would like to share on this topic?

Data Collection

A pilot study of the interview questions and protocol was conducted with selected participants who were not part of the study. Participants were the researcher's colleagues who are K-4 teachers but not teaching in the state of S.D. The participants evaluated the questions for clarity and relevance to the study (see Appendix B).

Participants for the study were purposively selected from current and past researcher colleagues to recruit two teachers at each grade level K-4. Each participant was contacted through email (see Appendix C) and presented with an informed consent form (see Appendix D).

Meeting times were agreed upon, and interviews were conducted electronically using the video conferencing system Zoom to assist with audio recording and transcription of the interview.

All interviews were recorded with the participant's consent. Participants were contacted if a follow-up interview was needed. The interview protocol guided the interview process (see Appendix E). The researcher reviewed the informed consent and reassured each participant that they may withdraw from the study at any point. The researcher provided introductory information about herself to help develop a rapport and allowed the participant time to share the same introductory information. The questioning began after exchanging introductory information, allowing participants ample time to respond.

Field notes were taken for reflective purposes, and questions were added or adjusted in response to the participants (see Appendix F). The researcher reviewed and verified transcripts from Zoom recordings and corrected them as needed. Transcriptions were sent to each participant to review for accuracy, a process called member checking, and transcriptions were revised as necessary. Participants were contacted if a follow-up interview was needed.

Data Analysis

The researcher identified significant statements, coded inductively, and developed themes. A Zig Zag process (Creswell & Poth, 2018) of memoing and reflection assisted in developing the description of interview responses. Journal notes were recorded, and new questions were formulated. Personal bias as a teacher was bracketed out through describing beliefs in a reflexive journal and debriefing sessions with an advisor (see Appendix G). From this reflection, themes were determined to assist in describing the complexity of teacher beliefs on handwriting instruction.

Qualitative Trustworthiness

The researcher used the following guidelines from Creswell and Poth (2018) to enhance the rigor and trustworthiness of the study. Questions were broad to assist in filling gaps in teachers' beliefs about handwriting instruction. The researcher used memoing, where all interviews were recorded and transcribed verbatim, and field notes were compared to the transcript. The transcripts and field notes were read and compared several times through a literal, analytical, and reflexive lens to determine the main themes.

Member checking was employed to ensure the quality of data collection and conclusions, which allows participants to review their responses' analysis and confirm accuracy. The evidence was corroborated through triangulation of interview responses, story/concept maps, field notes, and the reflexive journal. The final study was subject to peer and committee review. The researcher provided evidence of reflexivity and self-disclosure of personal biases.

Several of Shenton's (2004) guidelines were followed to ensure credibility, dependability, transferability, and confirmability.

Credibility:

1. Use a well-established research method: This study used the well-established phenomenology qualitative research approach (Creswell and Poth, 2018).

2. Participant selection: participants were recruited using a purposeful criterion sampling method to gather information from K-4 teachers in S.D. Questions will be reiterative to ensure consistency of responses.

3. Familiarity with participating organizations: the researcher has been in K-4 education for over 30 years.

4. Triangulation of data: This study used multiple data sources, quantitative interview data, reflexive journal notes, and participant content/story maps.

5. Procedures to ensure participant honesty: assuring participants may choose not to answer any questions.

6. Iterative questioning: structuring questions to obtain consistent responses.

7. Frequent debriefing sessions: the researcher met with the advisor and committee members to develop ideas and answer questions.

8. Researcher reflexivity: the researcher reflected on the research and clarified any bias as an ongoing process through a reflexive journal.

9. Researcher background and qualifications: the researcher is a doctoral student in curriculum and instruction with over 30 years of teaching experience.

10. Member checks: transcripts and the interpretation of results were shared with participants to determine accuracy.

11. Provide a thick description of participant experiences.

12. Review of previous research findings.

Dependability:

1. Use of overlapping methods
2. Explicit description of the methodology to allow for replication of the study

Transferability: In-depth review of previous research data to establish the phenomenon of the study, allowing for comparisons to be made.

Confirmability:

1. Triangulation of methods to reduce researcher bias
2. Researcher statement acknowledging researcher beliefs and assumptions

3. Acknowledge the limitations of the study
4. Explicit description of methodology and results allowing for scrutiny

Ethics

The research proposal was submitted to the USD IRB review board for approval. In addition, ethical responsibilities recommended by Creswell and Poth (2018) were incorporated.

1. Statement of confidentiality – the participants understood all information and were kept confidential, and their names were replaced with a number.
2. Removal of all personal identifying information
3. Transcripts were password protected.
4. Respect selected participants' right not to participate.
5. Those who chose to participate were provided Informed consent (see Appendix D). Following Creswell and Poth's 2014 guidelines, the informed consent includes the following:
    a. The participant may withdraw at any time
    b. The purpose of the study and procedures used for data collection.
    c. The procedures used to protect the participants' confidentiality.
    d. The possible benefits for the participants in the study.
    e. The signature of both the participant and researcher.

CHAPTER 4

Results

Chapter 4 discusses the research questions presented in Chapter 1. The purpose of this study was to gain a deep understanding of how teachers view and approach handwriting instruction. The study explored elementary teachers' beliefs, knowledge, preparation, practice, and influencing factors in handwriting instruction. An additional goal was to determine their belief regarding the state of handwriting within their school and district. The following research questions were addressed in this study:

1. How do teachers describe their beliefs, knowledge, preparation, and practice in handwriting instruction?
2. What do teachers perceive as the influencing factors or challenges affecting how, when, and how much handwriting is taught? How do they believe these factors could be addressed?
3. How do teachers perceive their beliefs align with their administrator?

The chapter begins with descriptive information about each participant, such as age, years of experience, grade levels taught, grade level currently teaching, and level of education. Following the descriptive information is the analysis of participants' responses through the development of themes and sub-themes.

Participant Descriptive Information

Ten participants were interviewed for this study. Half (5) of the participants taught at five elementary schools in the researchers' district. The remaining five participants taught at districts containing only one elementary school. The participants' ages ranged from 25 to 62, with an average age of 46.7 years. The number of years of experience ranged from 2-40 years, with the

average being 20.3 years of experience. Six teachers had experience at multiple levels, and two had special education experience. Four teachers had degrees beyond their bachelor's degree (see Table 1).

Table 1

Participant Descriptive Information

Participant	Age	Degree	Years Taught	Grade	Additional Experience
#1	54	Ass., 2 BS	13	2nd	4th, Substitue
#2	25	ElEd BS	2	K	1st
#3	32	ElEd BS, MA Curic. Inst.	9	1st	none
#4	59	ElEd BS/SPED	35	4th	K-4, Sped
#5	26	ElEd BS	5	4th	1st, 5th
#6	50	ElEd MA	26	3rd	4th
#7	54	ElEd BS/Early Ch/ Math Specialist	31	1st	2nd, 3rd
#8	62	ElEd BS/SPED/LD	40	2nd	3rd, Sped
#9	48	ElEd BS/Early Ch/ MA	27	K	none
#10	57	ElEd BS	8	3rd	none

Qualitative Data Analysis

The initial phase of qualitative analysis involved gathering data from semi-structured interviews with 10 participants. The interview was recorded over Zoom with 20 open-ended questions (see Appendix E). Open coding was used to find similar words and phrases to develop themes relating to teachers' beliefs. (Creswell & Poth, 2018).

Findings

Table 2

Data Analysis - Coding

Personal & Professional Beliefs		
Purpose	Instructional Practice	Challenges
Student effects	Skills Standards & curriculum Time Teaching priorities	Expectations Training & guidance Student factors Addressing challenges

The main themes identified in the analysis were 1. handwriting purpose, 2. practice, and 3. challenges. A subtheme of the theme purpose was student effects. Subthemes of the theme practice were skills, standards/curriculum, time, and teaching priorities. Subthemes of the theme challenges were expectations, training, guidance, student factors, and addressing challenges (see Table 2 Coding).

Professional and Personal Beliefs: Purpose.

Handwriting appeared to be of great importance to all participants. One purpose participants gave for handwriting was that it is a means of communication. Participant #1 mentioned, "Most schoolwork is written; it is a lifelong skill and an important means of communication." Further questioning revealed that the participants also believed that handwriting had many positive effects on students. They believed it was important for fine motor development and helped students become better readers. Participant #7 stated, "It goes hand in hand with reading and phonetic instruction." Participant #9 stated, "It (handwriting) is an important part of the beginning process of reading and writing, to making that connection between the sound and the letter and writing it down." A few even mentioned the development of

critical thinking, memory, and creative development. Participant #7 mentioned, "I believe it (handwriting) helps them with their reasoning, their problem-solving, and spatial issues." She also stated, "Cursive actually strengthens our note-taking, and I actually think it leads into their artistic expression as well." Participant #10 mentioned, "Handwriting, in general, aids in comprehension and recall." Participant # 4 commented, "I just think that there's something with the eye-hand coordination and the brain all working together. It's one more step that your brain has to do with that memory processing." All the kindergarten and first-grade teachers believed handwriting is an essential part of the beginning process of reading and writing. Participant # 3 said, "I believe it is a foundational skill of all ELA." Several mentioned that those who struggle with handwriting may develop frustration with writing, the expectations of fluency and legibility, and the expected quantity of writing, especially in the upper grades. Participant # 5 remarked, "There's going to be frustration, shutdowns in other aspects of their day when they can't write down their thoughts." Participant #10 said, "Handwriting, in general, has a trickle-down effect over a lot of other subjects."

Formation of Beliefs: When reporting how their beliefs formed, all participants responded that they hadn't read any research specifically, but conversations with colleagues, their own experiences learning how to write, and practical experience in the classroom helped to develop their beliefs. Regarding research, Participant #1 stated, "I have not read any research individually, but our OT came and talked to our staff for some training and mentioned some research." She also mentioned that her recent training in LTRS introduced her to the importance of orthographic mapping and its connection with handwriting. Participant #2 also stated, "I haven't read any research on my own, but we have talked about some articles at our grade-level meetings. But I have asked for advice from more experienced teachers Participant #4 reported,

"I've had conversations with other colleagues, and also when I was doing student teaching, my mentor teacher talked about just different studies that she has heard of on how handwriting and the formation of letters can really help students with their spelling as well as their reading fluency." Participant #3 stated, "My belief about handwriting comes from my 1st-grade teacher stressing how important good handwriting is." Participant #7 said, "I did pick up on some of that through my early Ed., but I just kind of had to wing it. I opened the book and looked at what they expected and kind of went from there. And over the years, you start to develop your own strategies and even vocabulary."

Professional and Personal Beliefs: Practice.

Participants were asked how they believed handwriting should be taught. Their responses fall into four categories: skills, curriculum and standards, time designated to teach handwriting, and other teaching priorities.

Skills. The participants identified many skills. Fine motor skills and correct pencil grasp were mentioned by all the participants as necessary to learn how to handwrite. Participant #7 reported, "I believe it's a huge factor in their fine motor development." Participant #1 noted, "I started to recognize all these different pencil grasps. And I just thought, what is up with this? And then I was learning from the OT about the pencil grasp and how it can tire the muscles in the hands." Participant #2 stated, "They come to kindergarten, and they're expected to hold a pencil, and a lot of them haven't developed all of the fine motor skills they really, truly need before they're ready for that. And those fine motor skills really will influence whether or not they can write. I feel 'K' are pushed very hard into writing and may not be ready for it." All participants also mentioned explicit teaching of letter formation. Participant #6 said, "I have to take the time to model the correct strokes." Participant #7 states, "I need to talk about formation.

Letters have straight, they have curves, they have ups and downs just so they're familiar with those different strokes."

Participants # 9 and #5 mentioned using rhymes or sayings to teach correct letter formation. Participant #9 described her method, "I do stick with the philosophy of Vowac with the tree, with a trunk section, the tree top, and the roots. When I'm giving examples, I always draw that (the tree), and we talk about which part or parts of the tree the letter will use. I try to make it fun. We have little sayings, you know, for the different letters when we're writing." Participant # 5 said, "It needs to be taught explicitly where you're giving them rhymes to remember how to form the letters as they're practicing and showing them how you form the letter." Legibility was another skill the participants believed to be important. Participant #1 commented, "if they've taken the time to write something, we certainly want to be sure that it's legible." Three Participants mentioned that students should be able to read their own writing. Participant #10 said, "The letter formation and legibility are very important. How are you supposed to read your notes?" Participant #5 states, "They need to know how to form their letters, how to construct them, and just practice writing legibly. Participant #6 mentioned, "When they transition over to cursive, I spend time on them reading it, and they don't know how to read it."

Time. When teachers were asked how much time they spent teaching handwriting, the responses varied, from 2 days/week to 5 days/week to "squeezing it in." Participant #1 reported, "I schedule 2 days/week for 10-12 minutes, but I make sure to model throughout the day." Participant #2 said, "I try to work in handwriting 1-2 days/week for 10-15 minutes." Participant #3 stated, "It should be 10-15 minutes/day, and that I can work that in during the first 2-3 weeks of school, but once everything gets going, you just kind of run out of time, and it kind of gets shoved to the side." Participant #4 says, I try to "squeeze" in 10-15 minutes a day during the

ELA block. I also require my students to use cursive in one other subject besides writing each day." Participant #5 reports, "I've also added it into my morning routine when the kids come into the school. That's kind of the easiest place to add it into the schedule." Participant #6 schedules 25-30 minutes 2 days/week. "I spend 5-10 minutes of direct min-lesson instruction with 15-20 minutes for independent practice. If students do not finish in the allotted time, they are expected to work on it throughout the day." Participant #7 spends 30 minutes 2 days/week. Participant #8 says, "I spend 15 minutes right away in the morning reviewing the manuscript letters. Cursive writing starts by November, then we spend 30-45 minutes each day." Participant #9 schedules five days/week for 15 minutes. "My students do not have the attention span to go longer." The final participant, #10, doesn't schedule any time for direct handwriting instruction. "I encouraged my students to use their cursive writing as much as possible." She also works on legibility a few times throughout the week.

Curriculum and Standards. The discussion of curriculum and standards also produced varied responses. Most of the participants knew what the standards were at their grade level but were not sure what the standards were for grades above or below their own grade level. Participants #4 and #10 didn't report any standards as they weren't required to teach handwriting. Participant #8 said, "Standards just say they're able to make the letters correctly." Participant #6 reported, "We have two standards. One standard is, 'I can form and use manuscript writing,' and then it's 'I can form and use cursive writing.'" Participant #5 commented, "We have a handwriting standard in fourth grade, where the students, I believe it says, I can write, or I can print and write in cursive legibly."

Participants' beliefs on the mastery of handwriting skills also varied. The majority of participants believe manuscript should be mastered by the end of 2nd grade. Participant #1 stated,

"Manuscript should be mastered by the end of 2nd and cursive by the end of 4th." Participant #2 felt, "They should have a strong foundation in K, building on that in 1st and 2nd."
Participant #3 commented, "I would say, ideally, by the end of first grade. But that's not always the case. So. probably second because by the end of first grade, I would say the majority of them are pretty close." Participant #4 believes, "By second grade, I think Manuscript should be mastered. Cursive in third grade and fourth." Participant #5 stated, "Printing, I would say, should be mastered by third grade." Participant #6 commented, "I am expected to teach that standard for mastery in third grade for manuscript as for cursive, it's just introductory." Participant #8 believes, "Printing should be mastered in kindergarten and reviewed in first grade, cursive handwriting, I would say, by the end of third grade." Participant #9 commented, "It should be mastered by the end of K or absolutely by the end of first grade. I think the cursive; I feel like fourth and fifth graders should always be writing in cursive." Participant #10 said, "Manuscript needs to be mastered, probably by 2nd grade. They learn cursive in 2nd, and I would say that they should have that mastered by the end of third grade." All participants believe cursive should be mastered by the end of 4th grade.

The participants all knew the style of writing they were to be teaching. The two styles that were mentioned were Zaner Bloser and D'Nealian. Six of the nine participants used Zaner Bloser, and the remaining three used D'Nealian. Online resources were used by participants 10, 5, 4, and 3, while the rest had district-purchased recourses. Participants #5 and #6 mentioned videos the district had available on the district "live binders." Many participants believed there was consistency in the curriculum or the amount of time spent on handwriting. Participant #1 stated, "We use Zaner Bloser curriculum, but it is not consistent throughout all the grades in the district." Participant #2 also mentioned she thought the district used Zaner Bloser but said, "What

we use in kindergarten is different from first and second grade. We don't use the same language." Participant #3 wasn't sure about the curriculum, "I am not sure where the manuals are. I just get (practice) pages from online. It really isn't talked about at our grade-level meetings." Participant #4 believed K-2 had a curriculum. She mentioned, "I don't have a curriculum because I am not required to teach handwriting, but I do because I feel it is still important, so I get pages online." Participant # 5 stated, "We have Zaner Bloser handwriting, and they gave us a link to that, and what we can be showing, but I find my own resources." Participant # 6 said, "We have our manual here, and there are some online videos." Participant #7 stated, "We have D'Nealian curriculum workbooks, but it's important to not only do it with paper and pencil, but I think we need to do it in the air. We need to do it in sand and play dough. We need that kind of aesthetic learning for kids. Participant #8 said, "We use the D'Nealian workbooks. Participant #9 mentioned that they had just switched curriculum, "We were using D'Nealian, but then we went to Really Great Reading, and I had to incorporate the handwriting on my own. This year, Zaner Bloser added a handwriting practice to Really Great Reading." The last participant, #10, said, "I don't have any. I just find some online for homework to work on legibility."

The methods used by the participants depended upon the resources they had available. As mentioned above, participants # 9 and # 5 mentioned using rhymes and sayings to help teach letter formation. Participants #4 and #7 discussed using different media, such as sand, shaving cream, playdough, and writing in the air, to practice handwriting. Participant #7 said, "But it's important to not only do it with paper and pencil, but I think we need to do it in the air. We need to do it in sand and play dough. We need that kind of kinesthetic learning for kids." Participant #4 described several ways to practice. She mentioned, "We'll do it in shaving cream, sand, just different ways to play with it. Different color letters and rainbow type things, and if I can, we'll

have the kids, we'll use their body and kind of make letters just for fun, and just to review it a little bit."

Participants #1, 3, and #5 mentioned they weren't sure the best way to teach the letters, which should be first, what order they should be taught, are questions the participants wished they knew. Participant #1 stated, "I would love some direction. Should I be doing it in shorter chunks of time twice a day? I don't know. I really want somebody to tell me." Participant #5 mentioned, "I feel very under-prepared with handwriting, with my experience." Participant #3 states, "Another thing I've thought about before is, I know some people do it in a particular order, not all alphabetically. I guess I don't really know what the correct order to teach the letters is." Collectively, they were teaching as they remember being taught. Participant #7 states, "At first, I was just 'winging' it. And over the years, you start to develop your own strategies and even vocabulary. I feel like it's something where we need support on that can help us and make us more prepared." Participant #3 recalls, "My first-grade teacher, she was just so adamant that we had good hand handwriting. So, I feel like she's the reason that I do it."

Teaching Priorities. The story mapping activity showed that the teachers were responsible for multiple subjects, daily 'housekeeping' duties, and the social-emotional well-being of their students (see Appendix H). Participant #3 identified connections between her students, the other staff members, parents, and even community members as things she considered as she planned learning activities. The students' well-being was a priority for all the participants. Their students needed to be ready to learn. Their priorities revolved around the tested subjects, and they were held accountable for them, especially for the 3rd and 4th-grade teachers. The pressures of testing, administration expectations, and wanting their students to score, as well as everyone else in the district, drive their instructional decisions.

Professional and Personal Beliefs: Influencing Factors and Challenges.

Each respondent emphasized the significance of handwriting for students but mentioned encountering numerous challenges in consistently integrating handwriting instruction. These challenges included curriculum expectations, education, preparation to teach handwriting, and other student factors. The teachers also provided ideas and suggestions on how to address these challenges.

Expectations. All respondents reported that time, inconsistent curriculum, and testing expectations were the main challenges. They all feel pressured to have "good scores" and cover all the standards. Participant #5 said, "We have such an intense curriculum in all areas. It is just finding time in the day." Participant #3 mentioned, "I think the pressure from all the testing and administrators, and I don't know, you want to make sure that they're just achieving as much as everybody else and getting as good of scores as everybody else in the district." They believe their administrators support their instructional decisions, but their expectations are more focused on what is being tested. When participants were asked if they believed their administrators had the same beliefs about handwriting as they did, most participants reported that they had never had the conversation or weren't sure. Participant # 3 said, "We've never really talked about it, but she taught first grade before, so I assume she understands the value in it." Participant #5 also said, "I honestly have never had the conversation about handwriting with my former administrator or the new administrator for this year. It's never something that has gotten brought up in our academic discussions." Participant #6 mentioned much the same, "I have no idea. I've never had that conversation with my administrator ever, here anyways, or in my former districts." Participant #7 hasn't had a conversation but states, "I think he supports us, and he trusts in our opinions, so I

would have to say yes." Participant #9 responded similarly, "I do, and I think she respects our opinion even if she didn't feel strongly about handwriting." Participant #8 said, "No, I don't. I don't think they're aware; they're not aware of what's going on." Participant #10 was unsure, "I'm really not sure. If it was approached, he would be supportive." Two participants explicitly mentioned they believed their principals held the same beliefs. Participant #1 mentioned that her principal was the first principal she had that provided information on handwriting. She had brought in the OT to provide the staff with information regarding handwriting, which included tips to improve hand grip, proportions, and formation. Participant #4 said she believed her principal held the same beliefs because "The principal told me how she was happy that I made time to include handwriting in the day even though it wasn't a requirement."

Other challenges reported were a lack of access to curriculum and training on implementing handwriting instruction, inconsistency throughout their school or district, and limited support. About half of the respondents felt they were underprepared and were unsure what they were doing was correct. They weren't sure which letters should be taught first and what language to use for effective instruction. Participant #10 said she felt like "the blind leading the blind." Only one participant out of the group mentioned receiving instruction on teaching handwriting during their college courses. Participant #7 reported having some college preparation in her early childhood classes. Participant #5 said, "My professors made a point that handwriting isn't all that necessary for kids to learn." Participant #1 was the only one reporting that she had been provided any information or training on handwriting by her district. The remaining participants said their school district had not given them any training on handwriting. Another challenge mentioned by most participants is the inconsistency within the school or district. The teachers from the district with more than one elementary mentioned that

handwriting was rarely discussed at the grade-level meetings. Participant #3 mentioned that she didn't have a curriculum manual but thought other schools did. Participants who teach in a district with only one elementary also mentioned a lack of consistency with curriculum and the amount of time spent teaching handwriting. Participant #8 believed the K-3 teachers were competent in how they taught handwriting, but after 3rd grade, there wasn't enough follow-through. Most participants just believed it wasn't a high priority for the school or district. "Participant # 3 stated, "Most people try to include it. But it's not one of your top priorities. I feel like we just take off, you know, and some of those foundational skills are just kind of assumed." Participant #1 said, "All I have to do is go room to room in my own building and see that not every teacher looks at it the same way within my district. So, district-wide boy, I don't see the focus." Participant #5 believes, "I feel like it gets skipped over quite a bit." Participant #2 states, "It is inconsistent, and it's definitely put at the bottom of the list." Participant #6 said, "It's, to me, it's not emphasized very much." Participant #8 feels, "It's a hit and miss, you know, hit and miss, especially after 2nd grade." Participant #4 believes her district does well with handwriting. She notes, "Kindergarten through third grade teaches it, and I think they are expected to teach it. But after that, it's not in any standards." Participant #7 reports, "I know it's used from preschool through third grade consistently. We are pretty firm believers in using it, especially in the younger grades." Participant #9 believes, "I think everyone is on the same page with the importance of it. But I'd like to see us improve in the expectations of using cursive when they're older." The last participant, #10, said, "Kindergarten, first, and second-grade handwriting is a very big part of their curriculum. As they get older from third on, we expect them to already kind of know how to do it, and just then, it's on the legibility."

Student Factors. Student factors were also mentioned as being challenges. Multiple teachers noted that teaching proper handwriting proved challenging due to the students' bad habits and lack of fine motor skills. Participant #3 said, "A lot of kids just form those bad habits on their own, and if they're not receiving any direct instruction, it just is more difficult to fix. Participant #8 mentioned, "At 2nd grade, I review the correct letter formation for manuscript, but I don't spend time correcting because it doesn't help." She quickly reviews and then moves on to cursive. Participant #10 responded, "There is a lack of support at home, and technology is learned before writing, which affects their fine motor skills." Participant #6 also commented on practicing at home, saying, "I wished students practiced more at home."

Addressing Challenges. Participants were asked to provide suggestions on how the challenges of time, curriculum, consistency, training, and student factors for teaching handwriting could be addressed. Most of the participants believed that to address the time and consistency challenges, the state or administration would have to set the time and curriculum standards that would be required. Participant # 10 suggested, "More teachers need to get together and have enough concern where you can approach your administration." She also stated, "If it was important at the state level, the teachers wouldn't have to fight for it." Participant #8 also believed that the teachers at all levels needed to have a meeting to understand what is expected at each level, "What do the lower elementary, middle levels, junior high, and high school teachers expect." Participants #2 and #3 suggested that district leaders and administration would have to set up a schedule that would be consistent from school to school. Participants suggested providing more research and training on how to teach and the importance of teaching handwriting to address the education and training challenges. Participant #4 mentioned that "teachers need to know why they're doing this." Participant #1 said she wanted more science

behind the "why" of teaching handwriting. She has felt that there is too much philosophy, and those philosophies are so varied that "it gets us nowhere." Participant #6 wasn't sure additional training would be helpful without a set schedule. Participants #2 and 5 suggested that scheduling would need to be more creative. Participant #2 believed that "if we can find a way to teach handwriting in small groups rather than whole group, where you can watch each child make the letter." Participant #5 mentioned, "We have to get creative at the upper grades with our schedule. Build it into a "daily five so they have consistent practice." To address student-level challenges, participants suggested that parents be provided information as early and often as possible. Participants #6 and #9 said that students would need more opportunities to practice at home, and the parents would need information on how to help students develop fine motor skills and practice at home. Additional information might help prevent bad habits early on.

Summary

Chapter 4 reviewed the three research questions through qualitative data analysis. Data analysis revealed many reoccurring topics on the teachers' beliefs on handwriting instruction. The responses were broken down and collected in a table to determine topics to answer the research questions. These topics were combined through axial coding into central themes of Purpose, Instructional Practice, and Influencing Factors/Challenges, recorded in Table 2. Chapter 5 will present the overall summary, conclusions, discussion, and recommendations.

CHAPTER 5

Summary, Conclusions, Discussion, & Recommendations

This qualitative study aimed to gain a deep understanding of how teachers view and approach handwriting instruction. The study explored elementary teachers' beliefs, knowledge, preparation, practice, and influencing factors in handwriting instruction. An additional goal was to determine their belief regarding the state of handwriting within their school and district. This study explored the experiences of ten K-4 elementary teachers who had experience teaching handwriting. The participants were from three different school districts in a rural midwestern state. Chapter Five summarizes the study, conclusions, discussion, and recommendations.

Summary

The state of handwriting in our schools has been in question for many decades (Sheffield 1996). The rigor of the current standards developed by the National Governors Association Center for Best Practices (CCSS 2010, 2018), along with mandatory state tests, makes including handwriting instruction even more challenging (Collette et al. 2017). The Common Core State Standards (CCSS) provide general standards for handwriting and do not include how much time each level should spend on handwriting instruction. This lack of guidance for teachers and administrators adds to the inconsistencies schools have seen in handwriting instruction (Vander Hart & Fitzpatrick,2010).

Review of Related Literature

Researchers have explored handwriting instruction and have found teachers feel confused by this lack of guidance and the pressures from the rigor of the remaining standards (Collette et al., 2017). Sharp & Titus (2016) found that most teachers still believe handwriting is important

and should be continued but also feel there are too many requirements for which they are responsible. One study showed that teachers feel handwriting instruction has decreased by 50% after CCSS was implemented and as a result the quality of students' written work has been affected (Collette et al., 2017). McCarrol & Fletcher (2017) found that teachers thought handwriting was necessary for success in most other academic areas but felt administrators and curriculum specialists didn't value teaching handwriting. Some teachers also believe that technological advancements are removing the need for learning handwriting (Sharp & Brown, 2015).

When teachers do not feel prepared to teach handwriting, they tend to avoid doing it (Phelps & Stepel, 1989; Sheffield, 1996; Bonneton-Botte et al., 2023). Explicit handwriting instruction has been shown to improve writing skills (Graham & Santangelo, 2016; Bonneton-Botte et al., 2023). Researched-based practices have been the gold standard for all curriculum areas, yet our teachers are unsure of research-based handwriting instruction. Research-based practices should be a part of teacher training (Wolf et al., 2017). When teachers do not have handwriting training, they aren't consistent with the amount of practice time they provide their students and do not always introduce letters in a way that is not confusing for students. When teachers aren't sufficiently trained, they may not be aware of how vital systematic instruction is and how this may affect their students' overall learning (Phelps & Stepel, 1989; Sheffield, 1996).

Handwriting does affect overall student learning. Research has found a strong relationship between handwriting and math, reading, and writing scores in first grade (McCarrol & Fletcher, 2017). For 4th or 5th grade students, taking notes by hand helps with a better conceptual understanding of the subject matter (Horbury & Edmons, 2021). For preschool students, handwriting affects visual memory processing, which is critical for categorizing and

learning letters (James & Engelhardt, 2012; Li & James, 2010; Kiefer et al., 2015). Handwriting uses kinesthetic memory (Vanderhardt & Fitzpatrick, 2010). Handwriting is associated with writing performance. Even though students may use technology to write, handwriting fluency correlates to typing fluency (Feng et al., 2019).

The research indicates that handwriting is still valuable. If we are to provide our students with all the tools to be successful in school and life, teachers will still need to incorporate handwriting into the school day. Most teachers inherently believe it is important, and administrators, curriculum specialists, University boards, and policymakers have a part in assisting our teachers.

Methodology

A purposive criterion sampling method was used to choose ten participants who taught grades K-4. There were two teachers from each grade level. The qualitative analysis consisted of a semi-structured interview with ten participants conducted in July and August 2023. The interview was recorded over Zoom with 20 open-ended questions (see Appendix E). Open coding was used to find similar words and phrases to develop themes relating to teachers' beliefs. (Creswell & Poth, 2018). Field notes were taken for reflective purposes, and questions were added or adjusted in response to the participants. The researcher reviewed and verified transcripts from Zoom recordings and corrected them as needed. Transcriptions were sent to each participant to review for accuracy, a process called member checking, and transcriptions were revised as necessary. The researcher identified significant statements, coded inductively, and developed themes. A Zig Zag process (Creswell & Poth, 2018) of memoing and reflection assisted in developing the description of interview responses. Journal notes were recorded, and themes and ideas were formulated.

Personal bias as a teacher was bracketed out through describing beliefs in a reflexive journal and debriefing sessions with an advisor. From this reflection, themes were determined to assist in describing the complexity of teacher beliefs on handwriting instruction. Triangulation of the interview data, the field notes, story maps, a reflexive journal, and member checking contributed to the study's credibility.

Findings

Through the analysis of interview data, field notes, a reflexive journal, and story maps, three main themes were identified: handwriting purpose, instructional Practice, and challenges. A subtheme evolving from the purpose of handwriting was how it affects students. Skills, standards and curriculum, time, and teaching priorities were subthemes that evolved from the central theme of Practice. Expectations, training, guidance, student factors, and addressing challenges were subthemes that developed from the main theme challenges (see Figure 2 Coding).

Purpose – student affects.

All the teachers were able to express their thoughts and beliefs about how important they believed handwriting was for their students. Even without reading and knowing the research, they all had an excellent intuitive grasp of the importance of handwriting for fine motor development, reading, phonics, writing, and all academics. Several believed that it helped with memory processing, but they also felt they didn't have enough time in their day for their students to develop proficiency.

Practice.

Each teacher had a different way of incorporating handwriting into their day. The primary teachers highly committed to initiating letter formation and fostering writing development. They genuinely wanted to ensure all their students had the same instruction but struggled with all the

other demands and skills they needed to address. The intermediate teachers felt it was important as well but didn't feel they were able to spend as much structured time teaching handwriting and were working primarily on legibility.

Many teachers tried to be creative with time and methods, using what they knew about student learning to help make handwriting instruction fun and effective. They knew the style they were to be teaching, but many didn't have a manual or workbooks to guide their teaching. So, many participants were incredibly frustrated at not knowing exactly the "correct" way to teach handwriting. Most felt they were "learning as they go" and felt uncomfortable when teaching handwriting. There was a sense they felt there was a significant gap in their training and guidance.

Challenges.

As the teachers were discussing handwriting, the challenges they faced daily continued to appear throughout most of the interview. Their story maps were a powerful visual of why they struggle to fit in all that is expected. You could see and feel the frustration they experience with all the standards, testing expectations, and meeting their students' additional needs. The importance of Social Emotional Learning (SEL) was a high priority. They understand that if a child is not emotionally regulated, there will be no learning.

The most significant challenges they felt they faced were time and preparation. The days and weeks are fixed in time, and handwriting is another thing to fit into their schedule. When they put handwriting in their day, they know they are giving up something else. Many felt if they knew how to teach handwriting best, they could be more effective and efficient and maybe wouldn't feel like they were giving something up. One participant was sincere and unsure how

much extra training would help unless it included specifically when it should be included in their day and how long.

Another challenge mentioned was the amount of support from the administration. Most were unsure of how their administrators felt about handwriting. Handwriting wasn't a topic that was discussed during meetings, curriculum time, or in general conversation. Only one participant mentioned her administrator initiating professional learning about handwriting. This participant was very appreciative of the information yet was extremely perplexed as to why, after all her years in education, this was the first time she had heard about the impact handwriting has on our students.

Technology and how it is affecting students was mentioned as an additional challenge. Today's students spend more time using technology at a younger age, which means they do not use pencils, crayons, markers, or scissors as much as students have in the past. The kindergarten teachers see students who barely know how to hold and use these items. They know that fine motor development is essential to learning how to handwrite. They also know that pushing students who aren't ready leads to anxiety in their students. Most students come to school with some knowledge of how to write but have already formed bad habits that are hard to correct. Correcting the bad habits and working on developing fine motor readiness in a classroom of 20+ is a challenge.

To address these challenges, they feel they would need strong administrators who are able to provide the information on the research, training in effective practice, and a curriculum guide that will include time for handwriting instruction. They also feel colleges and universities should consider where they can include more specific training on why and how to teach

handwriting. Finally, they believe more information about the importance of handwriting should be provided for the parents to reach the students sooner.

Conclusions

Many conclusions can be made from the responses to the research questions. Teachers genuinely believe handwriting is a fundamental skill important for literacy and academic success. Teachers know how handwriting affects many areas of learning but aren't familiar with the research to support their belief. Teachers are concerned about their level of preparation and whether their current practice is 'best practice.'

The most prominent challenge teachers face each day is time. When do they fit handwriting in? How long and how many times a week should handwriting be included in the day? Inconsistencies exist among our teachers, and they understand that inconsistency is not the best practice, leading to frustration. Strong leadership, conversations, and more training about handwriting instruction are needed to address challenges.

Discussion

This phenomenological study aimed to gain a deep understanding of how teachers view and approach handwriting instruction. The study explored elementary teachers' beliefs, knowledge, preparation, instructional practice, and influencing factors and challenges in handwriting instruction. An additional goal was to determine their belief regarding the state of handwriting within their school and district. This discussion is guided by the alignment of the research and the emerging themes from the study.

In a society where technology use is becoming more prominent, handwriting continues to have a purpose. The teachers in the study appeared to know how handwriting impacts students'

learning. Each participant was able to state at least two or three ways that handwriting affects learning that align with the research.

Research has shown that handwriting is related to academics (Hornbury & Edmons, 2021; James & Englehart, 2012; Kiefer et al., 2015; Li & James, 2016; McCarroll & Fletcher, 2017; Worthington, 2011); and overall, the teachers in this study indicated that understanding. The Worthington (2011) case study of middle school students suggests handwriting proficiency plays an essential role in students' success in school. Several participants mentioned they believed handwriting helped students' comprehension, memory, recall, and possibly the development of critical thinking. Likewise, the study of Hornbury and Edmons (2021) indicated that 10–11-year-old students showed more conceptual understanding and recall after taking notes by hand rather than just typing them. The studies of James and Englehart (2012) and Li and James (2016) also showed that handwriting activates the memory and processing portion of the brain in preschool children. When students learn through the motor action of handwriting, their fusiform gyrus, the visual word recognition portion of the cerebral cortex, is more activated. This portion of the brain is also responsible for higher-level cognitive functions.

The current study participants believed handwriting was a foundational skill of English language arts (ELA). They stated that they felt handwriting helped with phonics and reading acquisition. Kiefer et al. (2015) supports this belief. Kindergarten students who were instructed in phonics skills along with handwriting performed better in word reading and word writing tests versus students who were taught phonics through typing. James and Engelhardt (2012) showed through MRI imaging that the fusiform gyrus, the visual recognition portion of the brain where letter acquisition begins, was more active for those students who learned through handwriting.

These researchers believe it is the physical motor action of handwriting that affects the visual processing, which they feel is critical for learning to categorize the letters.

Fine motor development was identified as a crucial skill by most of the participants and aligns with the findings of Stievano et al. (2016). A study by Stievano et al. (2016) found that handwriting fluency was associated with visuospatial fluency, being able to copy complex figures and that fine motor plays a significant role in how well students learn to handwrite. The study review by Bonneton-Botte et al. (2023) said handwriting was a complex combination of visual-motor coordination, motor planning, tactile, kinesthetic, cognitive, and perceptual skills.

Most participants felt that legibility and fluency affected academics because students who struggle take longer to form the letters, impacting the quality and timeliness of their writing as they were thinking more about how to write the letters than the content they were writing. They also believe poor legibility makes work challenging to read, and the teachers would need to have students explain what they wrote. Participants indicated that explicit handwriting instruction is only expected in the early grades; legible writing is expected by fourth grade and is their primary focus at that level. Similarly, research has found that teachers report legibility as their primary focus of handwriting instruction, especially from fourth grade and higher (Sharp & Brown, 2015; Sharp & Titus, 2016). Many participants felt if students aren't fluent and legible by fourth-grade levels, it can negatively impact their overall academic success. This belief by participants aligns with a study by Santangelo & Graham (2016) that found handwriting fluency is correlated with composition quality, length, and fluency of written work. Several participants felt that the bad habits were too hard to break and could lead to frustration with writing, especially in the upper grades where the quantity of writing is increased. Contrasting research has demonstrated that the handwriting skills of legibility, fluency, and formatting of middle-grade students can be

remediated (Worthington, 2011). Worthington (2011) notes that handwriting can be remediated with consistent, explicit intervention, even at the middle school level. Still, it is vital for students to understand the purpose of their handwriting and be reminded of it each time they engage in writing.

The current study participants demonstrated a strong understanding of the effects handwriting has on student learning when aligning their beliefs with existing research. But, without a comprehensive understanding of the collective impact and guidance of the research, teachers may not feel the urgency to include handwriting consistently. Handwriting is more than just legibility.

Participating teachers had a collective belief that handwriting was important. However, the participants' current practice was not consistent, as most of them mentioned they felt that handwriting was taught inconsistently throughout their school district. The amount of time each teacher scheduled in their day for handwriting was different, as was the number of days during the week. This inconsistency in the amount of time devoted to handwriting instruction is similar to findings in other studies. McCarrol and Fletcher (2017) reported that the teachers reported similar practices. McCarrol and Fletcher (2017) found that teachers were spending anywhere from one to five days each week and 10 to 15 minutes each scheduled time. Coker et al. (2016) found teachers spent only 9.6% of the instructional day engaged in any writing. The teachers in Vanderhardt and Fitzpatrick's (2016) study reported spending 19 minutes each day and 3.3 days each week. This amount of time decreased over the course of the year. Several participants in the current study mentioned that they also included handwriting more at the beginning of the year. Malpique et al. (2017) reported that most teachers spent less than 30 minutes of recommended handwriting practice daily. Their study concluded that student handwriting automaticity was

related to how much time was allocated for handwriting practice. Students didn't have enough time to build their muscle memory.

The primary teachers in this study spoke of explicitly teaching the letters and their formations as well as using several different modes, such as shaving cream, sand, rainbow writing, and using their bodies to teach handwriting. This practice aligns with a best practice found in studies by Graham and Santangelo (2016) and Bonneton-Botté et al. (2023); copying letters from models, memory, and teaching letters with motion models was significant for successful handwriting instruction. Graham and Santangelo (2016) and Bonneton-Botté et al. (2023) found explicit, consistent teaching was shown to improve handwriting. Similarly, a study by Vanderhardt and Fitzpatrick (2016) found explicit teaching of handwriting as best practice, stating effective practice greatly improves the quality of teaching and learning. Recommended research-based practices include daily instruction, using different modalities, explicit modeling, teaching from memory and fluency, providing time for student self-evaluation, and integrating writing in many areas (Vanderhardt & Fitzpatrick, 2016; Bonneton-Botté et al., 2023).

The upper-grade teachers in the current study mentioned that technology was taking up more time in their day with the addition of keyboarding practice. They also mentioned that using technology with word processors could assist students who struggle with handwriting in completing some of their written assignments. The teachers' beliefs in the current study align with Hornbury and Edmons (2021), who found that handwriting and technology support learning, and it is important to incorporate both. The study of Bonneton-Botté et al. (2023) mentioned that technologies could assist with handwriting instruction and remediation by developing programs that can help with assessment and individualized instruction. At the same

time, studies by Stevenson & Just (2014) and Stievano et al. (2016) indicate that keyboarding fluency does not increase enough to be a helpful writing tool until after 4th grade.

Recognizing the significance of handwriting while encountering difficulties integrating it consistently into daily instruction posed a significant challenge for the teachers in the present study. The participating teachers mentioned they feel underprepared to provide quality instruction. They do not perceive that handwriting is a priority in their school district and do not believe they have the support needed to become better prepared. Prior research suggests that the teachers involved in the present study are not the only ones who experience feelings of being overwhelmed due to the demands of standards and testing scores, inadequately prepared, and lacking support and guidance. Sharp & Brown (2015) also identify this problem, stating, "A significant disconnect exists between research-based recommendations and current classroom practices regarding handwriting instruction" (p. 28, 2015).

The challenge of time was recognized by the participants in the Collette et al. (2017) study. The participants believed that 50% of handwriting instruction had decreased since implementing the CCSS (Common Core State Standards). The teachers also reported they felt that the quality of written work was impacted by attending to more standards and less handwriting. The respondents from the McCarrol and Fletcher (2017) study also found that time was a significant deterrent for teaching handwriting. Additionally, they found curriculum specialists didn't seem to place value on handwriting instruction and provided no guidance for allocating time to teach handwriting. The study by Sharp and Brown (2015) reported teachers believed the skills they were teaching in handwriting aligned with standards. Still, other curriculum demands didn't leave enough time for the students to develop proficiency.

In closing, teachers in the present study indicate a general understanding of the importance of handwriting. Yet, there is a disconnect between what teacher seem to know and what is being practiced in their schools. Teachers have many demands for their valuable instructional time and are expected to make decisions that will provide the best outcomes for their students. Standards have been developed to assist teachers with making instructional decisions, but there is more to teaching than just the standards. Each student's social and emotional needs must be considered as well, which adds another level to all that is expected of our teachers. Teachers will use best practices when they are familiar and comfortable with them. When teachers receive research-based training, they will deliver quality instruction, while those who do not receive this training seem to avoid teaching handwriting (Pehlps & Stemple, 1989; Sheffield, 1996).

Recommendations for Practice

This research's primary goal was to explore elementary teachers' insights and their beliefs about the importance of handwriting instruction. The following recommendations are a result of considering the themes identified from participants' responses and the reviewed literature:

- Teachers believe they are underprepared to teach handwriting. Initial and follow-up training in research-based, explicit handwriting instruction is recommended. Having continued discussions among colleges would help keep teachers focused. Providing research on handwriting instruction in our teacher training programs would assist beginning teachers.
- Teachers feel the pressure from the required standards and tests—reevaluation of standards and the importance of testing by stakeholders to examine how students and teachers are impacted.

- Teachers have a perception that handwriting instruction is inconsistent in their district. Informing administrators and curriculum specialists of the research regarding handwriting would be helpful as they decide how to address this inconsistency.
- Teachers maintain that students need more experience and practice at home. Informing parents of the research regarding handwriting and providing resources before students develop bad habits would assist in this area.

Recommendations for Further Study

This qualitative study explored elementary teachers' beliefs, knowledge, preparation, practice, and influencing factors in handwriting instruction. Considering the results, recommendations for future studies to add to the research in this area are as follows:

- Expand the number of participants and the locations where the participants teach.
- Utilizing a quantitative survey could help reveal correlations or relationships.
- Expanding the study to district administrators, college curriculum directors, and parents would add additional levels to the beliefs on the importance of handwriting.

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Appendix:

Appendix A: Research Question – Interview Question Matrix

	Background Information	Research Q 1	Research Q 2	Research Q 3
Interview Q 1	**X**			
Interview Q 2	**X**			
Interview Q 3	**X**			
Interview Q 4	**X**			
Interview Q 5		**X**	**X**	
Interview Q 6		**X**	**X**	
Interview Q 7		**X**		
Interview Q 8		**X**		
Interview Q 9		**X**		
Interview Q 10		**X**		
Interview Q 11		**X**		
Interview Q 12		**X**		
Interview Q 13			**X**	
Interview Q 14		**X**	**X**	
Interview Q 15		**X**	**X**	
Interview Q 16				**X**
Interview Q 17		**X**		
Interview Q 18		**X**		
Interview Q 19		**X**		
Interview Q20		**X**	**X**	

Appendix B: Pilot Study Interview Review

Please review the research interview questions for: clarity, relevance to research and provide suggestions.

Question	Clarity	Applicable	Suggestions/notes
1.	Yes No	Yes No	
2.	Yes No	Yes No	
3.	Yes No	Yes No	
4.	Yes No	Yes No	
5.	Yes No	Yes No	
6.	Yes No	Yes No	
7.	Yes No	Yes No	
8.	Yes No	Yes No	
9.	Yes No	Yes No	
10.	Yes No	Yes No	
11.	Yes No	Yes No	
12.	Yes No	Yes No	
13.	Yes No	Yes No	
14.	Yes No	Yes No	
15.	Yes No	Yes No	
16.	Yes No	Yes No	

.

Appendix C: Participant Request Email

Dear _____,

I hope this email finds you well. I am writing to ask your assistance with a research study I am conducting as part of my doctoral graduate program.

The purpose of the study is to gain a better understanding of teachers' attitudes and beliefs about the importance of handwriting in the classroom, and to understand the factors that influence their views on this subject. This research will contribute to the field of education by providing insights into the current state of teachers' beliefs and attitudes about handwriting, and by informing the development of effective teaching practices in this area.

Participation in this study is completely voluntary, and all information gathered will be kept confidential. The study will consist of an interview that will take approximately 45 minutes to complete. The informed consent is attached to this email.

I would be honored if you could participate in this important research project. If you have additional questions about the study, please feel free to contact me.

Attached is an informed consent letter. If you choose to participate, please read, and sign the form and return it to me through email.

Thank you for your considering my request.

Sincerely,

Lori Fox

Appendix D:

INFORMED CONSENT FORM FOR PARTICIPATION IN RESEARCH STUDY ON TEACHERS' KNOWLEDGE AND BELIEFS ABOUT TEACHING HANDWRITING.

Introduction: This study aims to understand teachers' beliefs about teaching handwriting. Your participation in this study is voluntary, and you are free to withdraw from the study at any time without any consequences. This form provides you with information about the study and its procedures, as well as what you can expect if you decide to participate.

Purpose of the Study: The purpose of this study the study is to gain a deep understanding of how teachers view and approach handwriting instruction. The study will explore the subjective perspectives, and attitudes of teachers towards handwriting instruction, including their beliefs about its importance; their level of knowledge and training in this area; the strategies they use to teach handwriting; the factors teachers feel effect how, when, and how much handwriting is taught; and whether teachers feel their beliefs align with their administrators' beliefs.

Procedures: If you choose to participate, you will be asked to participate in a zoom interview that will take approximately 45 minutes to complete. The interview will consist of questions about your knowledge, beliefs and practices related to teaching handwriting. You may also be asked to provide some demographic information, such as your age, gender, and teaching experience.

Risks and Benefits: There are no known risks associated with participating in this study. The benefits of participating include contributing to the understanding of teachers' beliefs about teaching handwriting and the development of educational policies and programs related to this subject.

Confidentiality: The information you provide will be kept confidential. The data collected from this study will be stored in a secure location and will only be accessed by the researcher.

Compensation: There is no compensation for participating in this study.

Voluntary Participation: Your participation in this study is entirely voluntary, and you are free to withdraw from the study at any time without any consequences. If you have any questions or concerns about the study, you may contact the researcher at lori.fox@k12.sd.us.

Consent to Participate Responding to the request email, and signing the informed consent indicates that you have read this informed consent form and that you understand the nature of the study. You are also indicating that you are willing to participate in the study voluntarily.

_____participant signature Date: _____

_____researcher signature Date: _____

Appendix E: Interview Protocol

Project: Teacher knowledge and beliefs on the importance of handwriting

Time of interview:

Date:

Place:

Interviewer:

Interviewee:

Position of interviewee:

Project description:
This project is being conducted to gain a better understanding of the knowledge and beliefs of teachers on the importance of handwriting. Understanding your beliefs based on your experiences can help in providing information needed to better prepare teachers and leaders when choosing curriculum and in-service opportunities.

Review informed consent: This interview will be recorded to ensure accuracy of transcription. You may discontinue participation at any time. You do not have to answer any question that you feel uncomfortable answering. If you need a break at any time, feel free to take one. Your responses will be confidential, and you will be assigned a pseudonym in the study. A copy of the transcripts and the study will be sent to you for review.

Introductory information: tell participant some information about yourself to develop rapport. Begin with introductory questions.

Introductory Questions:

1. What is your age and your education related to teaching?
2. How many years have you been teaching?
3. What grades have you taught?
4. What grade level do you currently teach, and how long have you been teaching that level?

Story Map questions:

5. First, I would like to ask you to draw a picture or a story map of your day in the classroom. Then, as you are planning your story, include everything that is expected of you, but think of a way to highlight what is most important to you to show the reader what your priorities are.
6. Can you describe and explain your picture/map?

   **If handwriting is not part of the picture, ask, "Where do you think handwriting fits in?"

Questions aligned to research questions:

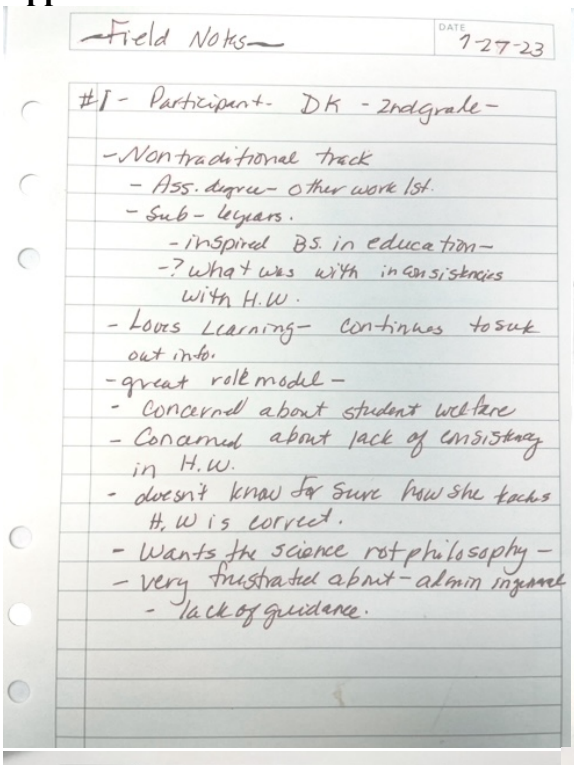
7. What do you believe are some ways handwriting affects/impacts typical student learning?

   *Follow-up prompts for questions based on affects from the literature that may not be mentioned, such as: How do you believe handwriting affects brain development, memory processing, reading skills, composition skills, and academic success?
8. What research on the effects of handwriting are you familiar with? How does this information translate into your teaching?
9. What are your beliefs about handwriting instruction for typical students?
10. How and where did these beliefs develop?
11. How do you feel handwriting should be taught? Why?
12. How much time/day/week?
13. When do you believe handwriting skills should be mastered?
14. Did you have handwriting training in college? If so, how do you feel it prepared you to teach handwriting?
15. What support do you have for handwriting instruction?
16. What are some of the obstacles that may prevent the teaching of handwriting? Which obstacle is the biggest and why?

17. What do you believe would need to be done to address obstacles and supports for teaching handwriting?
18. What do you feel is the current state of handwriting in your school district, state? What are the standards?
19. Do you feel your beliefs on teaching handwriting align with your administrator? Why do you think that way?
20. Is there anything else you would like to share on this topic?

Assure participant of confidentiality of responses and potential future interviews.

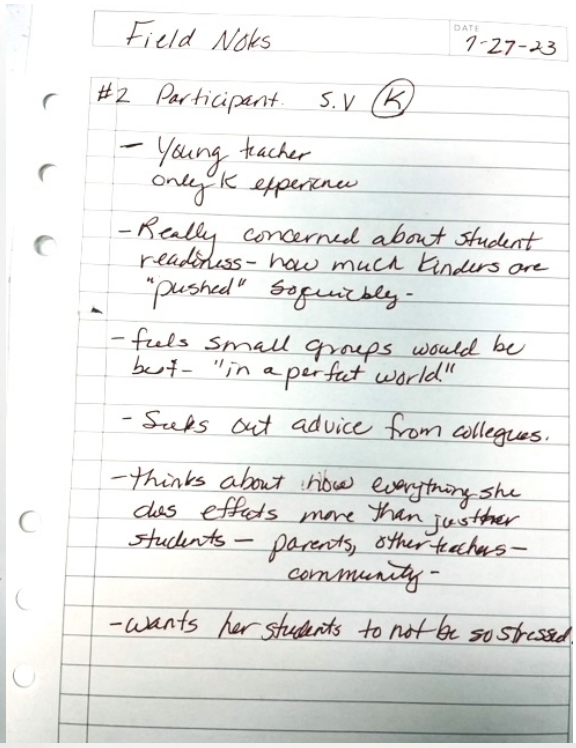
Appendix F: Field Notes



Field Noks — DATE 1-27-23

#1 - Participant - DK - 2nd grade -

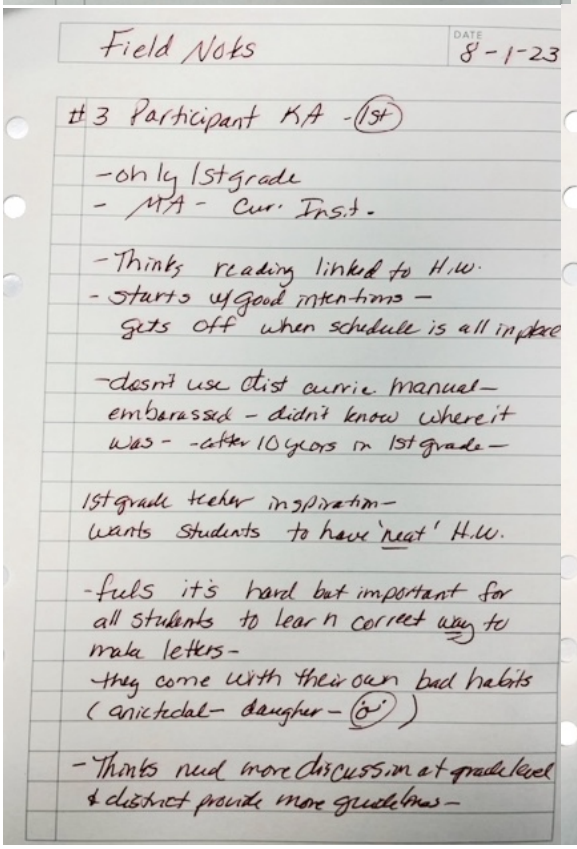
- Non traditional track
  - Ass. degree - other work 1st.
  - Sub - 4 years.
    - inspired B.S. in education -
    - ? what was with inconsistencies with H.W.
- Loves Learning - continues to seek out info.
- great role model -
- Concerned about student welfare
- Concerned about lack of consistency in H.W.
- doesn't know for sure how she teaches H.W is correct.
- Wants the science not philosophy -
- very frustrated about - admin issues
  - lack of guidance.



Field Noks — DATE 1-27-23

#2 Participant S.V (K)

- Young teacher
  only K experience
- Really concerned about student readiness - how much kinders are "pushed" academically -
- feels small groups would be best - "in a perfect world."
- Seeks out advice from colleagues.
- thinks about how everything she does effects more than just her students - parents, other teachers - community -
- wants her students to not be so stressed.



Field Noks — DATE 8-1-23

#3 Participant KA - (1st)

- only 1st grade
- MA - Cur. Inst.

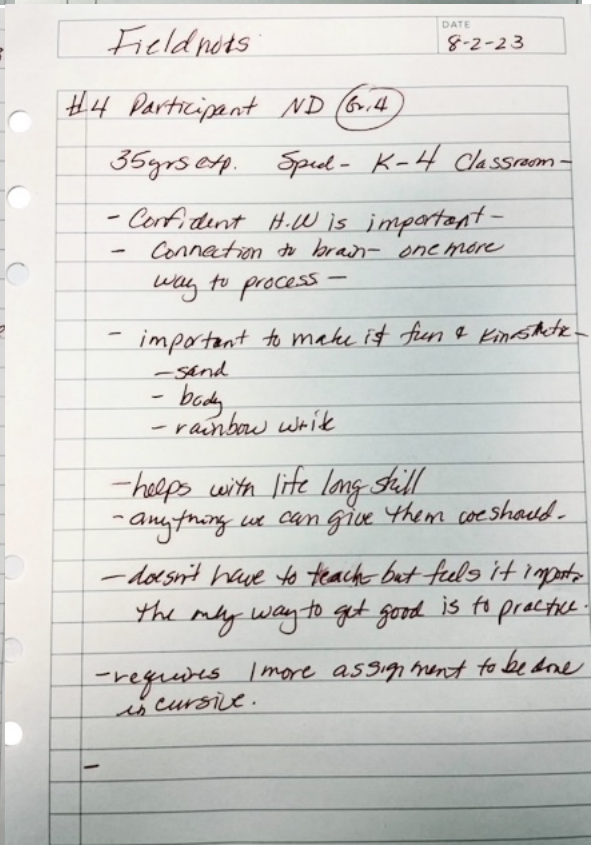
- Thinks reading linked to H.W.
- starts w/ good intentions -
  gets off when schedule is all in place

- doesn't use dist curric. manual -
  embarrassed - didn't know where it was - after 10 years in 1st grade -

1st grade teacher inspiration -
wants students to have 'neat' H.W.

- feels it's hard but important for all students to learn correct way to make letters -
  they come with their own bad habits
  (ambidextral - daughter - (o))

- Thinks need more discussion at grade level & district provide more guidelines -



Field Noks — DATE 8-2-23

#4 Participant ND (6.4)

35 yrs exp. Spec - K-4 Classroom -

- Confident H.W is important -
- Connection to brain - one more way to process -

- important to make it fun & kinesthetic -
  - sand
  - body
  - rainbow writ

- helps with life long skill
- anything we can give them we should.

- doesn't have to teach but feels it's important the only way to get good is to practice.

- requires 1 more assignment to be done in cursive.

-

Field Notes — DATE 8-2-23

5 Participant AR (Gr. 4)

Younger — 1st, 4, 5

- Learned from mentor teacher as student teacher —
- Sees how frustrated many students get w/ writing when H.W. is difficult
- affects all areas — writ in everything.
- helps w/ comprehension -
- tries to incorporate w/ daily 5 in ELA Blk.
- No T.M. — finds practice pp online uses dist. videos.
- thinks younger kids need explicit instruction for letter formation —
  - Kinesthetic
  - rhymes
- But no sure correct way - order
- teachers need more guidance — consistent time & pacing.

Field Notes — DATE 8-2-23

6 Participant CW (Gr. 3)

- Older 3rd 4

- effects how much students write & quality -
- Students get frustrated.
- follows Grade level guidelines 2 hrs week —
- technology is becoming more imp.
- Not sure about how best to teach letters -
  - uses dist. videos —
- Not sure more instruction or info. on handwriting will help — would have to give something up - with "testing" not willing to give up more time —

Dist. would have to mandate —

Field Notes DATE 9-1-23

7 Participant CP (Gr. 1)

Older — Math Specialist Early Child.

- Very sure of H.W. importance.
  - basic ELA Skill -
  - connected to reading & phonics
  - memory
  - comprehension

teaches w/ Voyage - Phonics - multisensory - sand - playdough yoga

" wiggly it at beginning" — developed practice through time -

has manual & work books — but expects - throughout all work —

Early childhood talked about ways to develop fine motor -

- It is important at her School - teacher believes in it

Field Notes — DATE 9-4-23

8 Participant AM (2nd)

Oldest — Sped 2nd & 3rd.

Believes its important for success — lifelong skill
- helps comp.
- note taking -

Reviews manuscript — doesn't try to fix bad habits — "It doesn't work!"

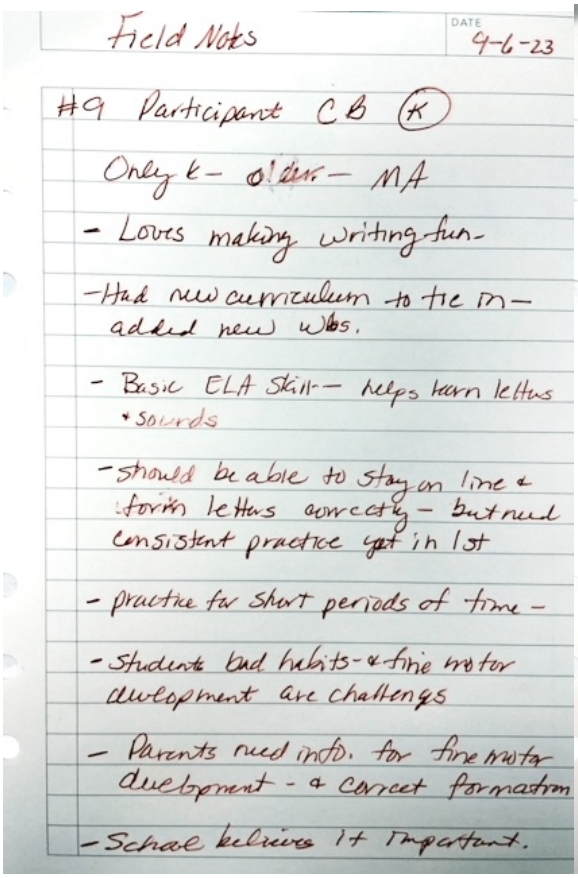
begins cursive — stresses correct formation there & then its ok. —

Spends 30 mins 4 x/wk. —

believes they need more practice after 2nd grade, but 3rd & 4th grade teachers don't teach it -

- Not sure she wants to continue if rest don't continue —

Teachers need to all be on same page - & know expectations of entire school.



Field Notes DATE 9-6-23

#9 Participant CB (K)

Only k – older – MA

- Loves making writing fun.

- Had new curriculum to tie in – added new wbs.

- Basic ELA Skill – helps learn letters + sounds

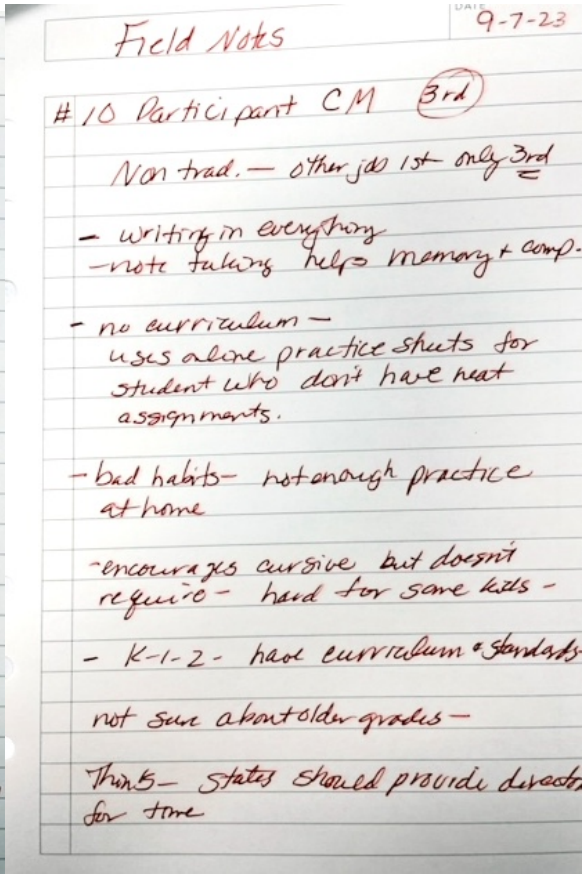
- should be able to stay on line & form letters correctly – but need consistent practice yet in 1st

- practice for short periods of time –

- Students bad habits – & fine motor development are challenges

- Parents need info. for fine motor development – & correct formation

- School believes it important.



Field Notes DATE 9-7-23

#10 Participant CM (3rd)

Non trad. – other job 1st – only 3rd =

- writing in everything – note taking helps memory + comp.

- no curriculum – uses online practice sheets for student who don't have neat assignments.

- bad habits – not enough practice at home

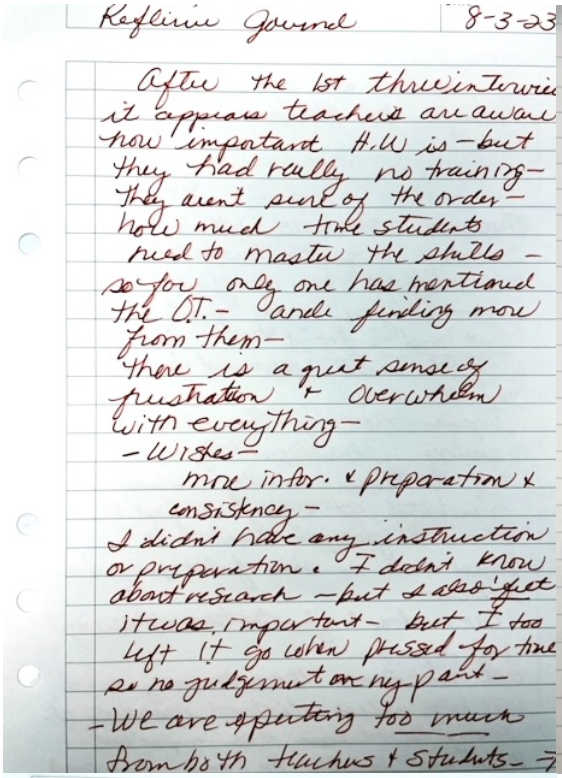
- encourages cursive but doesn't require – hard for some kids –

- K-1-2 – have curriculum + standards

not sure about older grades –

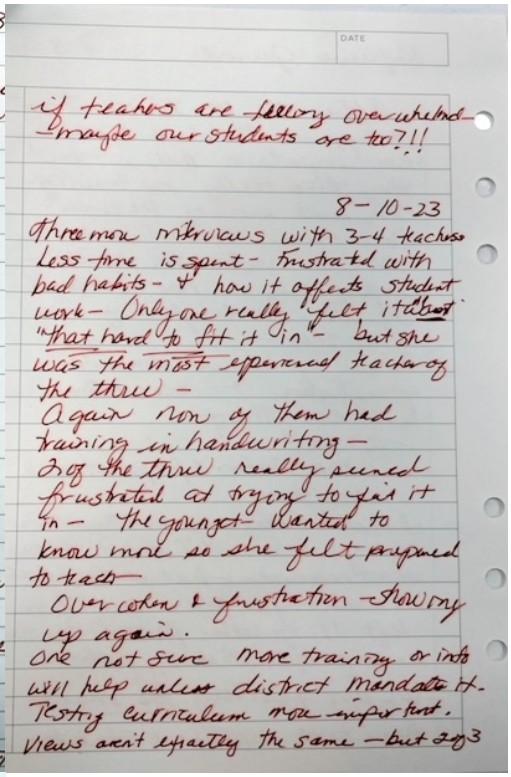
Thinks – States should provide direction for time

Appendix G: Reflexive Journal



Reflexive Journal 8-3-23

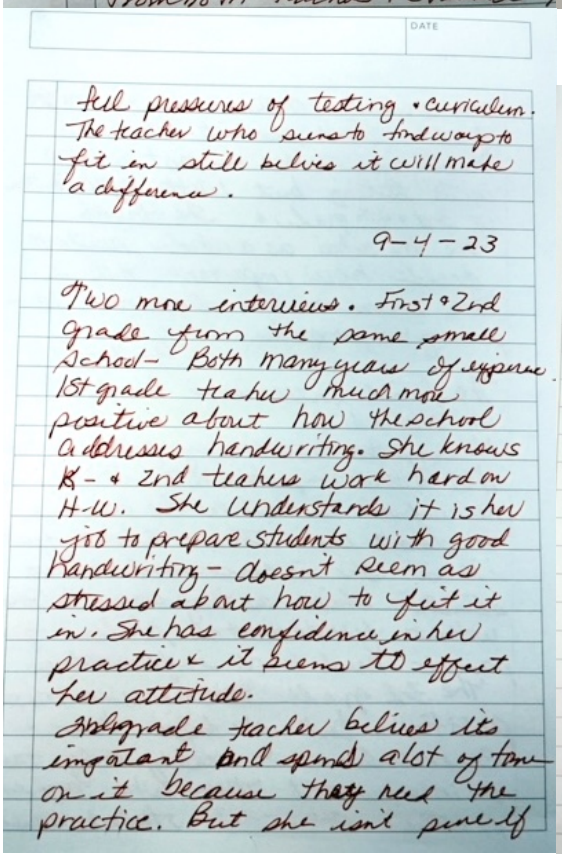
After the 1st three interviews it appears teachers are aware how important H.W is - but they had really no training - They aren't sure of the order - how much time students need to master the skills - so far only one has mentioned the OT. - and le finding more from them - There is a great sense of frustration + overwhelm with everything - - Wishes - more infor. + preparation + consistency - I didn't have any instruction or preparation. I don't know about research - but I also get it was important - but I too left it go when pressed for time + no judgment on my part - - We are expecting too much from both teachers + students - ?



if teachers are feeling overwhelmed - imagine our students are too?!!

8-10-23

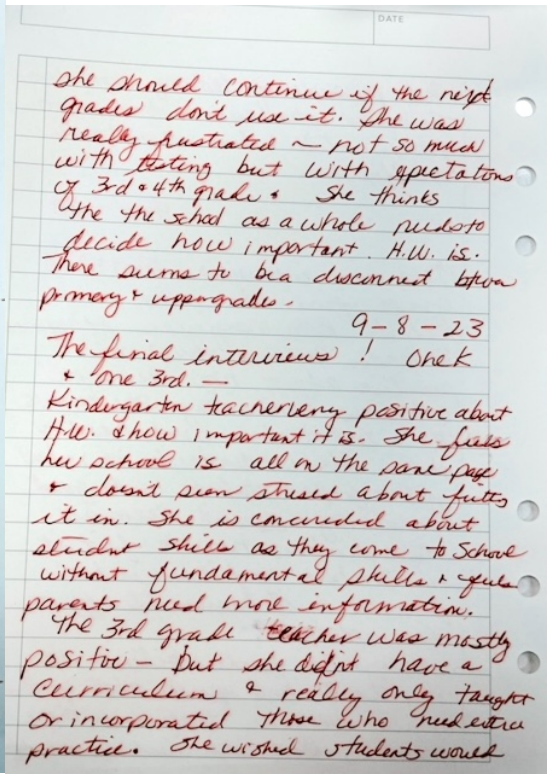
three more interviews with 3-4 teachers Less time is spent - frustrated with bad habits - + how it affects student work - Only one really felt it "that hard to fit it in" - but she was the most experienced teacher of the three - Again none of them had training in handwriting - 3 of the three really seemed frustrated at trying to fit it in - The youngest - wanted to know more so she felt prepared to teach - Overwhelm + frustration - showing up again. One not sure more training or info will help unless district mandate it. Testing curriculum more important. Views aren't exactly the same - but 2 of 3



full pressures of testing + curriculum. The teacher who seems to find ways to fit in still believes it will make a difference.

9-4-23

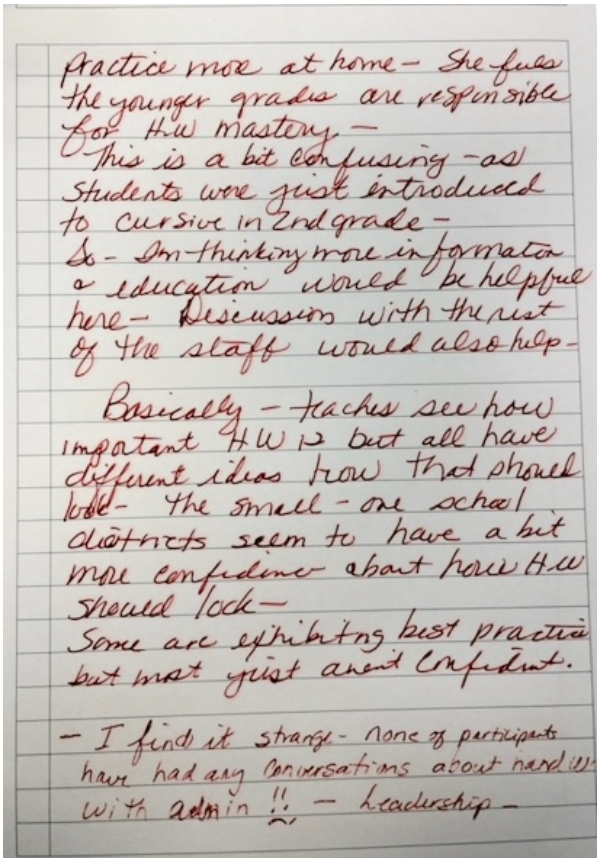
Two more interviews. First + 2nd grade from the same small school - Both many years of experience. 1st grade teacher much more positive about how the school addresses handwriting. She knows K - + 2nd teachers work hard on H.W. She understands it is her job to prepare students with good handwriting - doesn't seem as stressed about how to fit it in. She has confidence in her practice + it seems to effect her attitude. 2nd grade teacher believes its important and spends alot of time on it because they need the practice. But she isn't sure if



she should continue if the next grades don't use it. She was really frustrated - not so much with testing but with expectations of 3rd + 4th grade + She thinks the the school as a whole needs to decide how important H.W. is. There seems to be a disconnect btwn primary + upper grades.

9-8-23

The final interviews! One K + one 3rd. - Kindergarten teacher very positive about H.W. + how important it is. She feels her school is all on the same page + doesn't seem stressed about fitting it in. She is concerned about student skills as they come to school without fundamental skills + feels parents need more information. The 3rd grade teacher was mostly positive - But she didn't have a curriculum + really only taught or incorporated those who needed extra practice. She wished students would

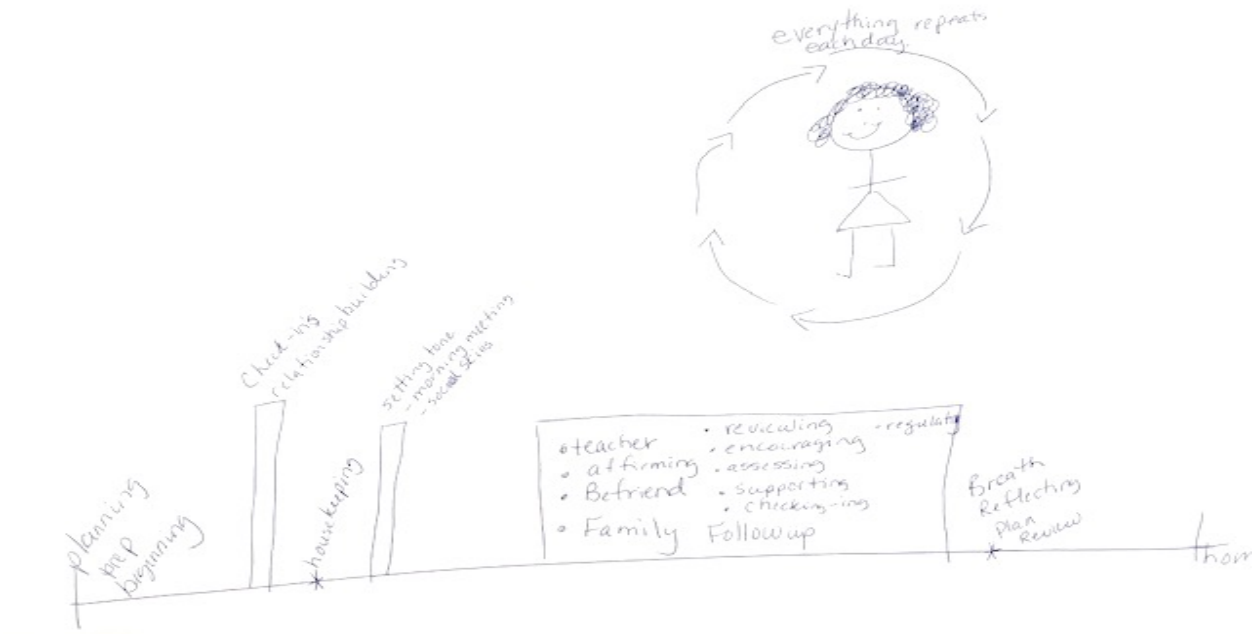


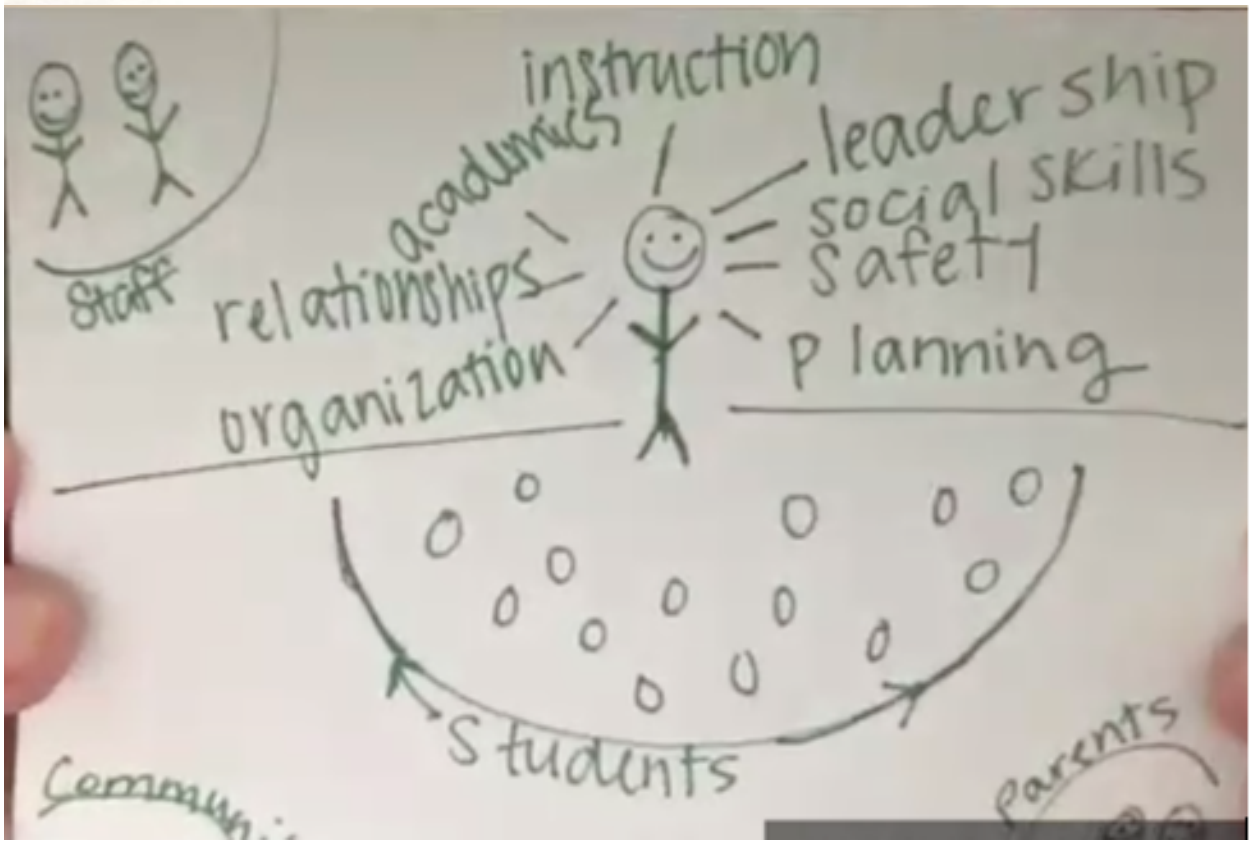
practice more at home - She feels the younger grades are responsible for H.W mastery -
This is a bit confusing - as students were just introduced to cursive in 2nd grade -
So - I'm thinking more information & education would be helpful here - Discussion with the rest of the staff would also help -

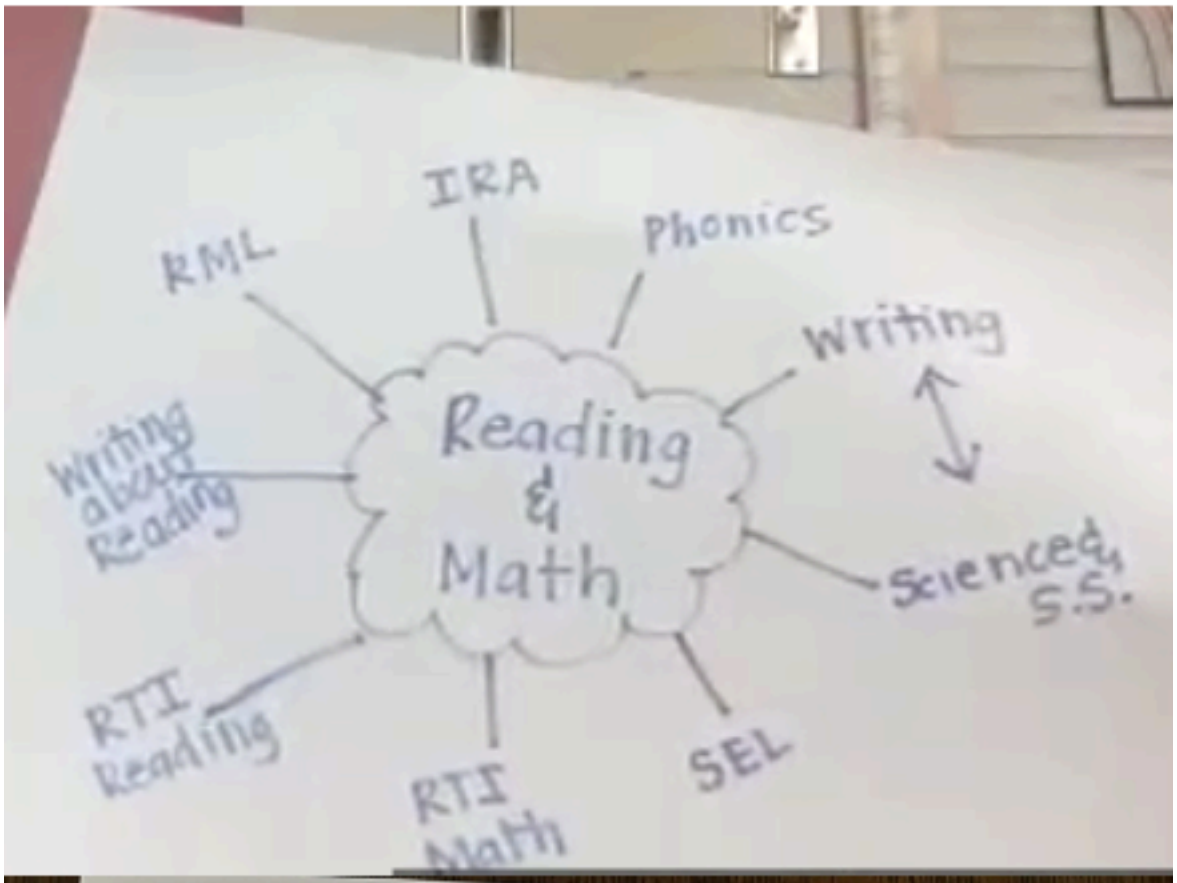
Basically - teachers see how important H.W is but all have different ideas how that should look - The small - one school districts seem to have a bit more confidence about how H.W should look -
Some are exhibiting best practice but most just aren't confident.

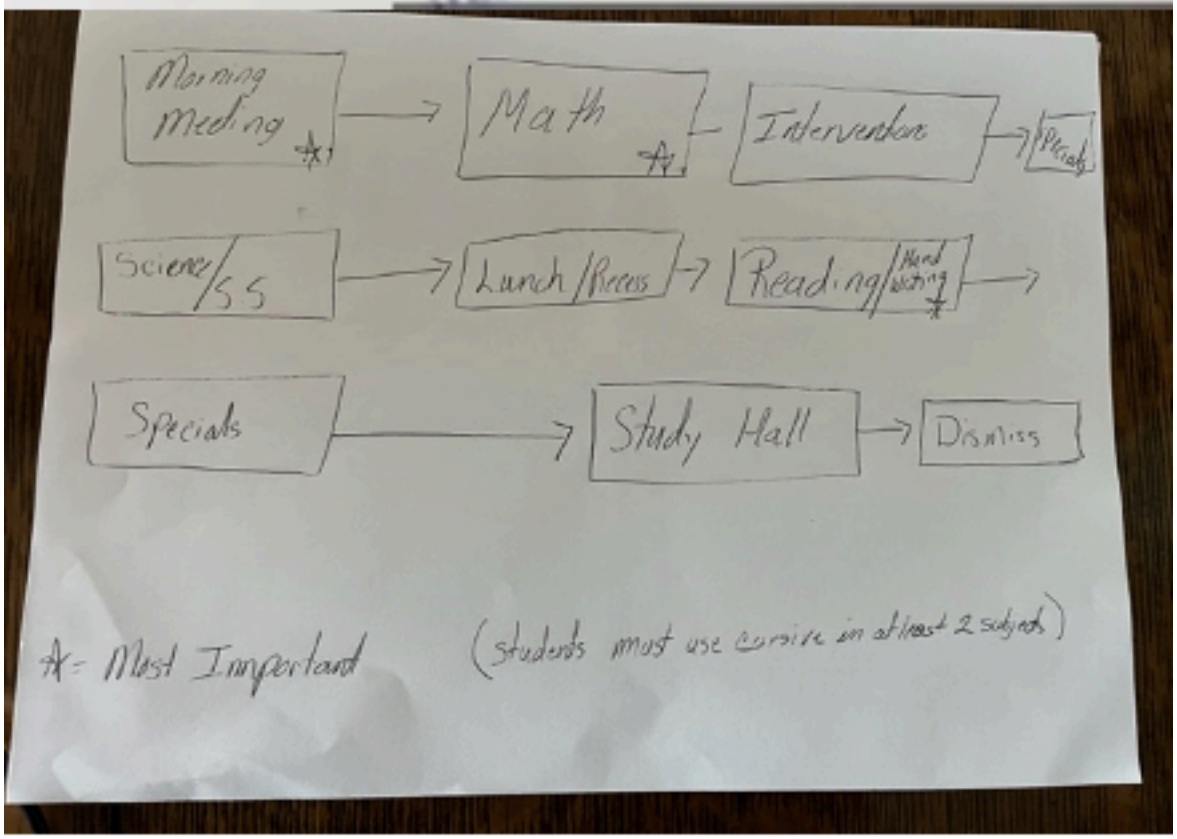
- I find it strange - none of participants have had any conversations about hard W with admin !! - leadership -

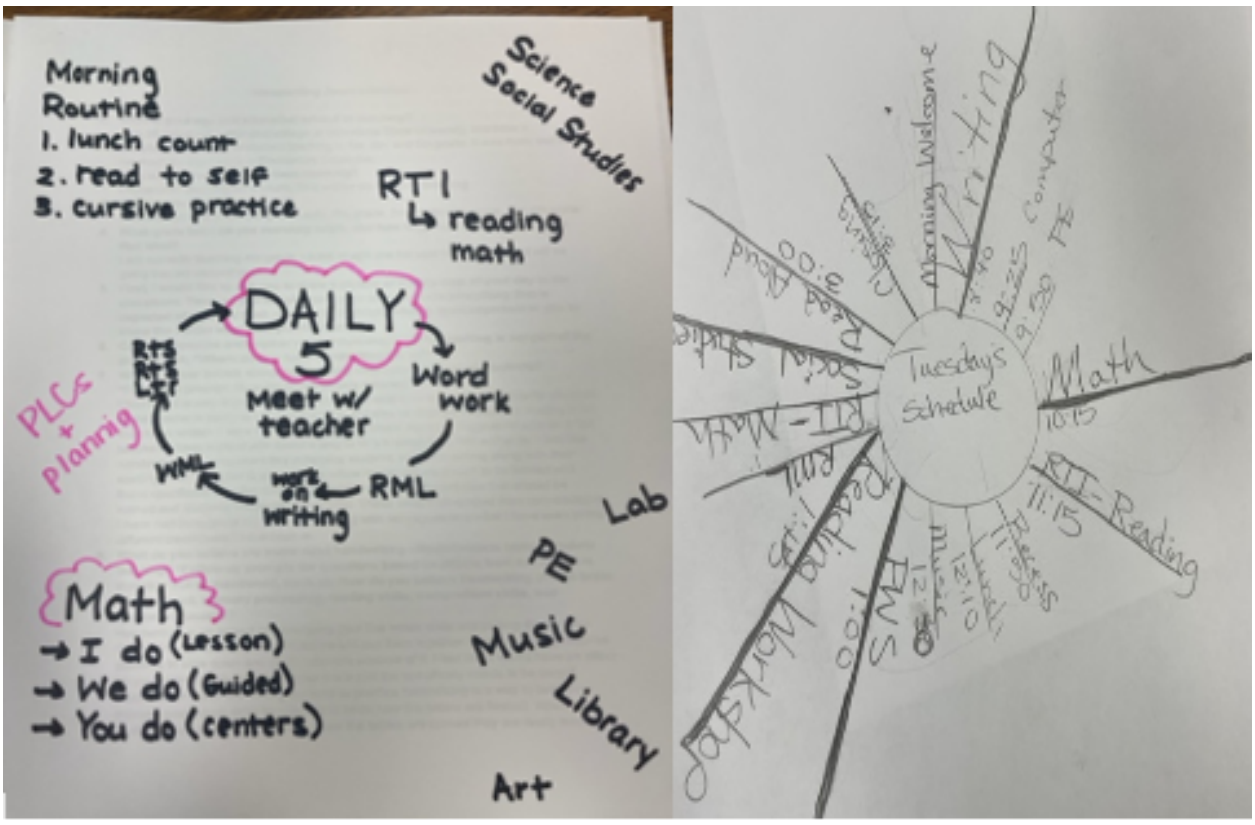
Appendix H: Story Maps





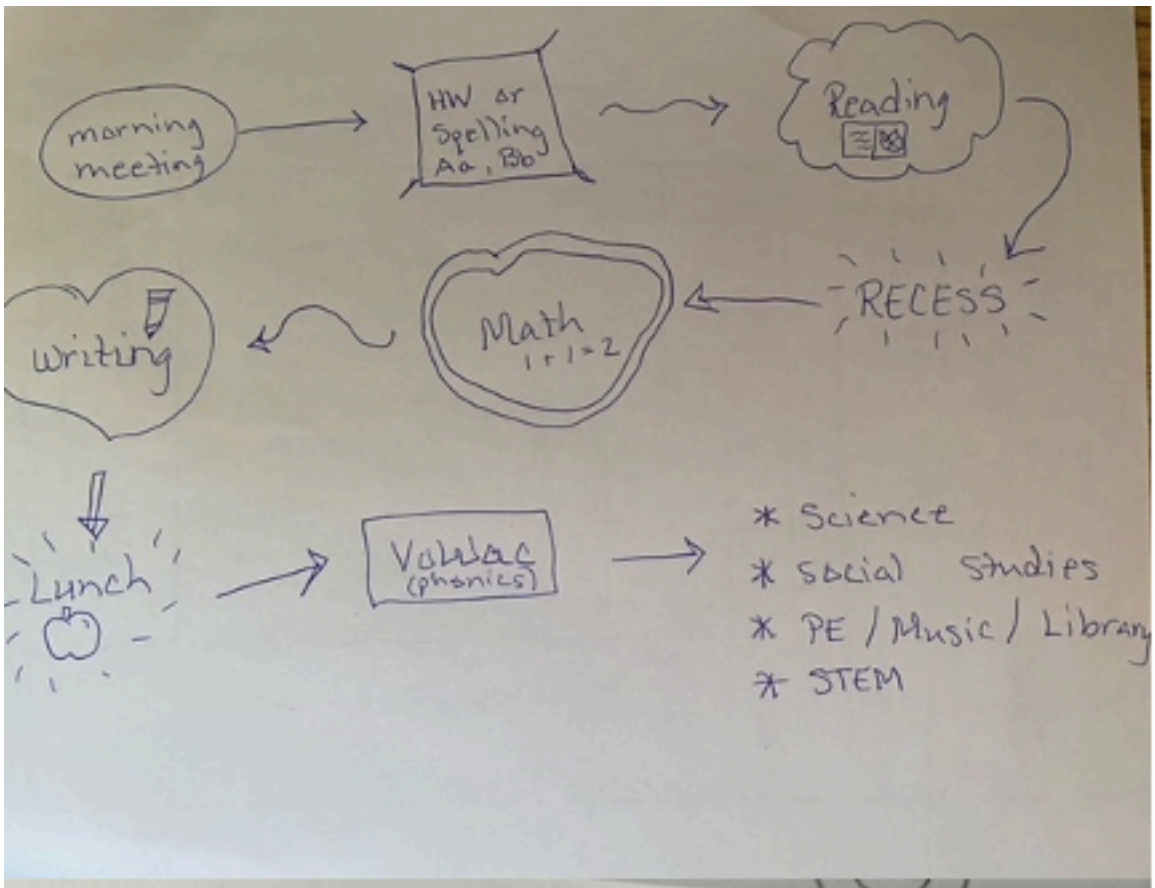

IRA
RML
Phonics
Writing
Reading & Math
Writing about Reading
Science & S.S.
RTI Reading
RTI Math
SEL


Morning Meeting
Math
Intervention
Science/SS
Lunch/Recess
Reading/Word Study
Specials
Study Hall
Dismiss
= Most Important
(students must use cursive in at least 2 subjects)



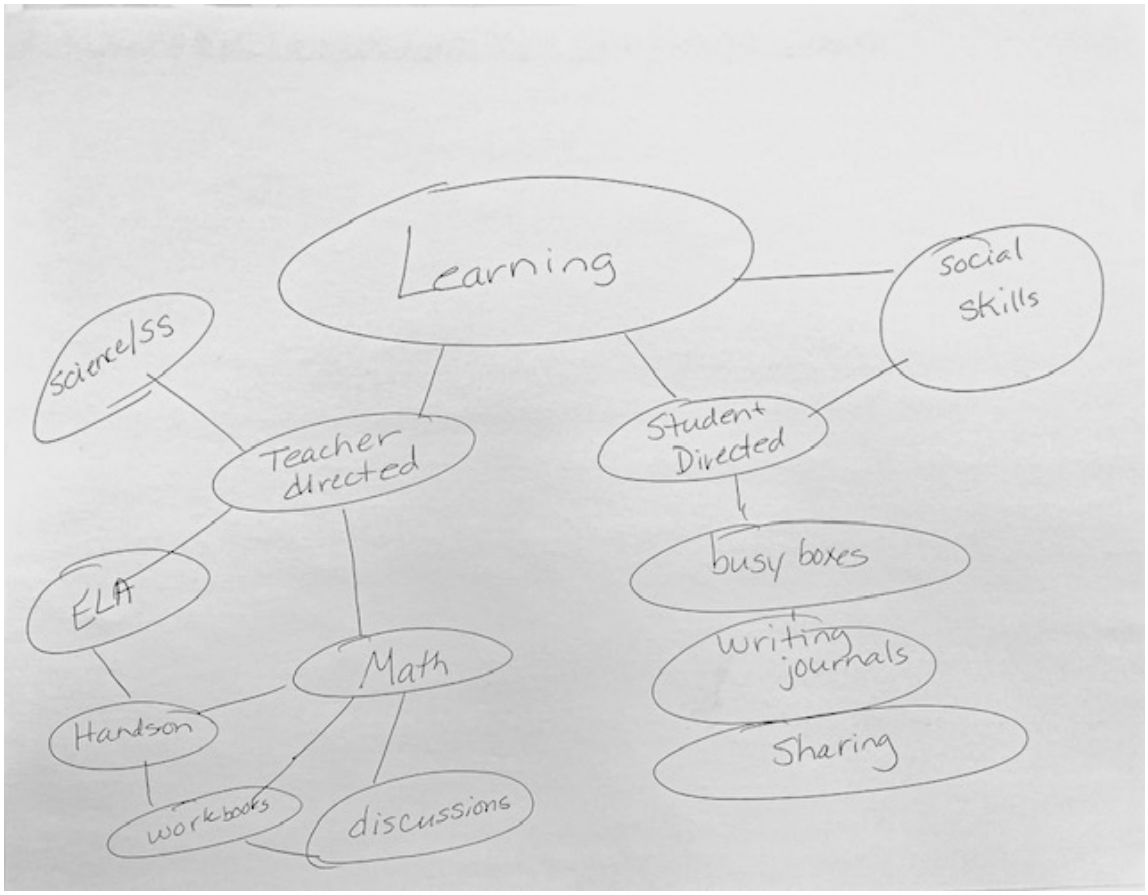
Teacher → Relationships with students →

teaching subjects → Get students thinking outside of the box → Testing Coordinator → Accuracy of test & done in a timely manner → Sophmore class advisor.



2nd schedule
Madden

8:00 - 8:15 M.A
8:15 - 9:00 Handwriting
9:00 - 10:00 Math
10:00 - 12:00 Reading
12:00 - 12:50 lunch
12:50 - 1:45 Vowlac
1:45 - 2:15 Specials
2:15 - 3:00 - English
3:00 - 3:40 - Science / S.S.


Learning
Science/SS
Teacher directed
ELA
Math
Handson
workbooks
discussions
Student Directed
social skills
busy boxes
writing journals
Sharing