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Differentiation Revealed: A Multiple-methods Qualitative Study on the Implementation of Differentiated Instruction in a Mixed-ability Elementary Classroom

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Differentiation Revealed: A multiple-methods qualitative study on the implementation of differentiated instruction in a mixed-ability elementary classroom.

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Abstract

Differentiated instruction as a philosophical approach to teaching has been around for decades. In recent weeks differentiation has come under fire as being an approach to teaching that is simply too difficult for teachers to implement. While teachers may attend a workshop or take a graduate class on the topic of differentiation and choose not to embrace the philosophy, there are also teachers who have successfully implemented differentiation. The argument against differentiation is based on the amount of effort required to simultaneously implement all components of differentiation.

To address these concerns the following question provided guidance for the present multi-method qualitative study: What does differentiated instruction look like in an elementary classroom? The purpose of this multi-method qualitative study was to unpack the thinking of teachers who have successfully implemented differentiated instruction. This goal was achieved through interviews, observations, and an analysis of artifacts from three case studies following three elementary teachers over a four-week window during the final quarter of the school year.

The research was conducted in a large school district in southwest Missouri. Results indicated teachers who implement differentiated instruction share common beliefs, attitudes and characteristics. Additionally, ongoing professional support is important for the successful implementation of differentiated instruction.

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First and foremost, I wish to thank my Lord and Savior for the strength and ability to accomplish this goal.

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Thank you to my editors, Alicia Moore and Kathy Wimberley whose eagle eye were applied to the arduous task of cleaning up my writing. Thank you to my supervisor, Kathy Gross, for your flexibility and understanding of the demands of a monumental task such as writing a dissertation.

Dedication

This dissertation is dedicated in loving memory to Rickey D. and Donna Kay Wedgeworth whose bequest provided the means necessary to pursue my doctorate. May the fruits of my study be used to provide for their daughter and grandchildren for years to come.

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Chapter 1

INTRODUCTION

Children are the focal point of American public education. No child is refused the right to free public education. This noble and just purpose is one of the factors that sets the United States of America apart from many other countries. When we consider free public education on a macro level the concept feels altruistic and utopian. We can rest well knowing that every child has access to free public education. If we narrow our focus to the classroom teacher, our focus shifts to the person who has the greatest direct impact on our students (Hattie, 2009). Through this narrow focus, we begin to see with more clarity how complicated our noble endeavor might be. Teachers are faced with educating diverse groups of students and supporting them in meeting common state and national standards. Students might enter the classroom with various readiness levels and diverse interests and backgrounds; however, the charge given to the teacher is to provide an appropriate education for every student in the classroom. These are truly high expectations.

High expectations abound in the field of public education. After all, the future of our country depends on the quality of the education provided to the next generation. The effects of these expectations manifest themselves in different ways; however, the effects can be felt at every level of leadership in education. The state commissioner of education, the superintendent of the school district, the building principal, the teacher and even the students can sense the pressure of high expectations. High expectations are necessary for the success of our students and the sustainability of our country. However, in the absence of a definable and repeatable process for reaching these high expectations, the feeling of helplessness can take root.

Some teachers might decide it is too difficult to reach every student and walk away from education; some teachers may decide to remain in education while being satisfied with only meeting some of their students' diverse learning needs. Teachers need a definable and repeatable process that will scaffold their efforts as they work toward becoming teachers who can effectively meet the diverse needs of the students in their classrooms. Differentiated instruction provides the definable, repeatable process necessary for teachers to succeed. While there is no silver bullet in education, differentiation supports teachers in managing the challenges of meeting diverse needs found in every American public school classroom (Tomlinson & Imbeau, 2010).

Statement of the Problem

Although meeting the needs of all learners seems logical and appropriate, it is not without its critics. In fact some have said that differentiation is too difficult to implement and therefore is an ineffective strategy and should no longer be suggested as a means for supporting the diverse needs of students in the classroom (Delisle, 2015). One school of thought is that differentiation is too cumbersome for teachers to implement. A teacher in the American classroom does not have time to commit to planning more than one lesson for each class per day. It would be too much to ask already overwhelmed teachers to consider the interests, learning profile and readiness levels of every student in the classroom.

Considering the principles of differentiation will provide an objective lens through which a teacher can consider the merits of differentiation. Several instructional strategies such as RAFTs, cubing, choice boards and contracts have been suggested to support teachers' implementation of differentiation (Tomlinson, 2003; Tomlinson, 2014). The uses of pre-assessments and formative assessments have been suggested as important factors in the design of

differentiated lessons. Flexible grouping is suggested to ensure that all learners will have the opportunity to work with a variety of people over the course of a unit of study. There is not a lack of suggestions as to how to implement differentiation. One might easily infer that teachers are already provided with the necessary definable, repeatable process mentioned in the introduction. If this is the case, then we should find evidence that teachers are implementing differentiation on a wide scale.

Archambault et al. (1993) conducted a national survey with third and fourth-grade teachers to see to what extent the teachers differentiated instruction for gifted learners. The analysis of the results of nearly 4,000 participants revealed a startling conclusion. Very little modification was made to accommodate the needs of advanced learners (Archambault et al., 1993). The study described above illustrates that the topic of effective implementation of differentiated instruction has been part of education conversations for the past two decades; limited implementation has been problematic since the early 1990s. One might presume that the field of education has fully embraced and effectively implemented differentiated instruction since the topic has been on the national stage for the past twenty years. One might also presume that we should be able to find more evidence of differentiation in response to increased demands placed on public school teachers over the past two decades.

Westberg and Daoust (2003) replicated the original study conducted by Archambault et al. (1993) and found that teachers' classroom practices had not changed during the ten years since the original study was conducted. These two reports, mentioned above, conducted by the National Research Center on the Gifted and Talented, spanning ten years, conclude that teachers are not implementing differentiated instruction on a large scale. Perhaps differentiation is too difficult to implement. While many books and articles exist in support of the practice of

differentiating instruction (Delisle, 2015), there remains a roadblock to implementation in the classroom.

Either differentiation can be implemented with fidelity or we need to begin a national conversation on a new definable and repeatable plan that will allow teachers to meet the high expectations of American public education.

It is time to find teachers who manage to implement differentiation with fidelity and closely examine their practices. Rather than taking a shotgun approach to studying the topic, we need a laser-like focus on teachers who will act as exemplars when it comes to implementing differentiation. Unpacking the thinking and practices of teachers who are successful might be the key to finding a definable repeatable process for differentiation.

Purpose of the Study

The purpose of this multi-method qualitative study is to examine the thinking of teachers who have successfully implemented differentiated instruction. This goal will be achieved through interview, observation, and analysis of artifacts such as lesson plans, assignments and assessments which are self-identified by the teacher as constituting a differentiated lesson. Through the analysis of multiple teachers, each representing a case study, the practices of a differentiated teacher will be documented.

Research Questions

To support the exploration of teachers' practices the following questions will be used to guide the research. What does differentiated instruction look like in an elementary classroom? The following sub-questions will provide further clarity.

1. What effect does the teacher's mindset have on differentiation?
2. How does the teacher identify learning goals and essential understandings?

3. How does the teacher determine where students are in relation to the learning goal?
4. How does the teacher approach grading and assessment?
5. How does the teacher adjust instruction to address students' needs?
6. What are the teacher's implicit beliefs about diversity within the classroom?

Definitions and Terms

To facilitate an understanding of this study, the following terms are defined. Definitions were operationalized by the researcher through a review of literature unless otherwise cited.

Attitudes involve the inclination or orientation toward an idea or concept. In the case of this study it is an inclination toward differentiation.

Beliefs involve the confidence that somebody or something is good or will be effective (Center for Cognitive Coaching, 2012)

Common Core State Standards are English/Language Arts and Mathematics standards created from a broad-based effort to develop consistent standards for K-12 classroom throughout the country (Common Core State Standards, 2010).

Curriculum is the content that is taught to students.

Curriculum Components represents the textbooks, resources, and guides provided to teachers in the school district. All teachers are expected to use the district-adopted curriculum.

Differentiated Instruction is a philosophical approach to teaching (Tomlinson & Imbeau, 2010) in which students' readiness, interests, and learning profiles are considered for the purpose of designing lessons so that all learners meet with success. This all happens in the context of an environment based on the principles of a growth mindset. According to Tomlinson (2014) "in differentiated classrooms, teachers ensure that students compete against themselves as they grow and develop...always moving toward designated content goals" (p. 4).

Instructional Strategies are the approaches teachers use to allow students to interact with the curriculum and concepts being taught.

Growth Mindset is the belief that a person can influence their ability to perform in a given area through hard work and effort (Dweck, 2006).

Fixed mindset is the belief that a person's ability is static regardless of how hard they work to improve their skills (Dweck, 2006).

Lesson plans are the specific steps a teacher intends to take during a lesson which he/she believes will support the students in reaching the learning goal.

A learning goal is the specific measurable, observable outcome the teacher hopes the students will achieve by the end of the lesson and/or unit of study.

Assessments are the measurement tools used by teachers to determine the degree to which students have met the learning goal.

Assignments are the specific activities designed by the teacher to support the students in reaching the learning goal through independent practice at home or in the classroom.

Flexible Grouping is the use of a variety of student groupings based on the instructional goals of the lesson and the academic and social needs of the students (Tomlinson and Imbeau, 2010).

Diversity in the context of the present study refers to the unique academic, social and emotional needs of a student.

Limitations

While every effort will be made to conduct research that is unbiased and generalizable to a greater population, the researcher recognizes the following limitations of the present study.

1. While the results of the study will have no impact on the researcher's employment, the researcher is an employee of the district in which the research will be conducted; some of the participants may be familiar with researcher.
2. The overall demographic of the applicant pool is largely homogenous making generalizability difficult. The elementary teachers in the school district selected for the study are predominantly white females.
3. The sample size will remain small due to the number of researchers (one) involved in the study and the nature of analyzing qualitative research. This may limit the opportunities to generalize to a larger population.
4. Because of the interpretive nature of qualitative research, the researcher may introduce his own bias into the analysis of the study. Debriefing interviews will be conducted throughout the course of the study whereby a colleague not related to the research will ask the researcher questions about the thought process of the researcher while conducting the study.

Significance of the Study

Results of this study will be of particular interest to teacher preparation programs, as the study will highlight characteristics of practitioners who are effectively implementing differentiation. These characteristics and attitudes may serve as indicators of future success for pre-service teachers. Principals and human resource managers for school districts might also be interested in the results of this study as it will outline characteristics that might help them identify high-quality candidates for vacancies in their school system. In a time when school districts must weigh candidate choices carefully, clear criteria by which they can choose the best candidate are extremely important. The results of this study will provide insight into the thinking and dispositions of teachers who differentiate instruction.

This study might also be of interest to teachers in the K-12 setting. As reflective practitioners, they will have the opportunity to consider the degree to which they have adopted and embodied the attitudes, beliefs and characteristics outlined in the results of the study.

Finally, the educational community at large might find this study of particular interest as it will add to the ongoing discussion on the merits of differentiated instruction as a viable and appropriate instructional strategy to be used in American public schools.

Chapter 2

Review of Literature

The following review of selected studies from the field provides a strong framework for the proposed study. As Creswell (2007) mentions, the review of literature helps to place the present study in context of the larger body of research on the topic. This review is organized to provide a clear definition and framework for effective teaching through the lens of differentiated instruction, establish ways in which one might determine if a teacher is implementing differentiated instruction, and explore change agents which might support growth in teachers who are not yet implementing differentiated instruction.

Differentiation Defined

Differentiated instruction is a term that is used by educators to describe a variety of strategies and instructional practices. The following section will use a review of the literature to clearly outline and define differentiated instruction.

Purpose for differentiation. Differentiated instruction benefits students at all levels of education (Lightweis, 2013). When differentiation is implemented with fidelity, students are able to explore concepts and ideas to a greater degree than they would with a more traditional approach to teaching (Archambault et al., 1993). In fact, the implementation of differentiated instruction can benefit students neurologically since the philosophical approach of differentiation recognizes the ways in which the brain functions. Each brain is unique and each brain is looking through its own individualistic lens to make patterns and build schema, creating new neural pathways in the context of an emotionally safe environment (Tomlinson & Sousa, 2011). Differentiation provides this safe environment and provides students with learning experiences

that will allow them to build the necessary neural pathways to meet the learning goals set forth by the teacher.

Differentiation is more than a set of instructional strategies. A philosophical approach to differentiation requires a teacher to shift his thinking. According to Tomlinson and Imbeau (2010), "learning to differentiate instruction well requires rethinking one's classroom practice and results from an ongoing process of trial, reflection and adjustment in the classroom itself" (p. 13). Reflection may be a natural part of teaching, but it is important that teachers focus their reflection on topics that will have an impact on increasing student achievement. Differentiation is designed to support a student's need to interact with new learning in a meaningful way. The purpose of differentiation is to allow every student to learn something new every day. The high expectations of American public school classrooms can easily be met if the true purpose of differentiation is met.

Management of differentiation. Classroom management is a key factor for the successful implementation of differentiation (Hudson, 2013). Teachers must have a grasp on routines and procedures (Tomlinson & Imbeau, 2010) in order for students to be able to simultaneously work on different assignments and activities or even participate in learning contracts. A culture of mutual respect is essential in a differentiated classroom. Additionally, it is helpful if the teacher has a firm grasp on cooperative learning. This allows students to understand how healthy groups function and can serve as a basis for a home team (Tomlinson & Imbeau, 2010) while the teacher explores the use of flexible grouping. Noise management is essential as students will be working in small groups. Excitement will build as students are engaged in tasks that address their interests, learning profile and readiness levels. A system to manage noise will be a key ingredient to managing a differentiated classroom.

Assessment. The idea of administering pre-assessments and giving formative assessments is neither new nor is it specific to the functions of differentiated instruction. Differentiation gives a context for all of the information we gather about our students (Wormeli, 2006). In a differentiated classroom, teachers can use the information they gather to design intentional lessons. Instead of filing the interest surveys away or adding the pre-test to a stack of papers, the information gleaned from these assessments becomes vital to lesson planning in a differentiated classroom. While there may be many ways to implement differentiation, a primary focus of the teacher must be on the diverse needs of the students within specific instructional contexts (Watts-Taffe, Laser, Broach, Marinak, Connor & Walker-Dalhouse, 2012). In other words, students' instructional needs may vary from one context to the next. In a language arts class, they may have a high degree of readiness whereas in a math class, their readiness may not be as far along as some of their classmates. Part of the challenge of differentiation is to consider how one student's needs might change from one content area to another. The easiest way to determine the needs of students is through assessment.

Interactions with students. Nelson, Demers and Christ (2014) reported on a study they conducted in which a questionnaire was used to evaluate students' perceptions of the classroom environment. Through the analysis of responses from 1,465 middle school students across 48 states, the researchers found that differentiated instruction was an important factor to be included in the Responsive Assessment for Classroom Teachers (REACT). The results of this study confirm the importance of differentiated instruction as a key component for a positive learning environment. While students might not label the environment as differentiated, the work of Nelson, Demers and Christ (2014) makes it clear that the components of a differentiated

classroom are recognizable to middle school students as components that support their learning and create a positive, comfortable environment.

While the merits of differentiation are supported in the literature review above, this is of little consequence unless teachers embrace differentiation. Willingness and preparation of the classroom teacher to implement differentiation is a key ingredient to ensuring that students will reap the benefits described above.

Evidence of Teachers' Implementation of Differentiated Instruction

The topic of differentiated instruction has been a national discussion for decades. Large scale studies involving teachers across the nation have examined implementation of differentiated instruction. The following is a review of studies where the results will provide further evidence of the complexity surrounding implementing differentiated instruction.

Historical perspective. Archambault et al. (1993) conducted a national survey with third and fourth-grade teachers to see to what extent the teachers differentiated instruction for gifted learners. The analysis of the results of nearly 4,000 participants revealed a startling conclusion. Very little modification was made to accommodate the needs of advanced learners (Archambault et al., 1993). This is not to say that advanced learners are the only students who benefit from differentiation; indeed, all students benefit from the effective implementation of differentiation. The study described above illustrates that the topic of effective implementation of differentiated instruction has been a topic of conversation for the past two decades and limited implementation was problematic in the early 1990s. One might presume that the field of education has fully embraced and effectively implemented differentiated instruction since the topic has been on the national stage for the past twenty years. One might also presume that we could find more

evidence of differentiation in response to increased demands placed on public school teachers over the past two decades.

Westberg and Daoust (2003) replicated the original study conducted by Archambault et al. (1993). The Classroom Practices Survey that was used in the original study was only modified to remove demographic items (Westberg and Daoust, 2003). The questions on the original survey remained the same for replication. Westberg and Daoust (2003) found that teachers' classroom practices had not changed during the ten years since the original study was conducted. Two reports conducted by the National Research Center on the Gifted and Talented spanning ten years also concluded that teachers are not implementing differentiated instruction on a large scale.

Perhaps these findings are a matter of teachers' inaccuracy in self-reporting. Westberg, Archambault, Dobyns and Salvin (1993) reported on the use of the classroom practices record. Structured observations were conducted in 46 classrooms to determine the degree to which the needs of advanced students were met in the regular classroom setting through the use of differentiated instruction. The results of the observation showed that students received little differentiation in the area of reading, language arts, mathematics, science and social studies (Westberg et al., 1993). The academic subjects listed in this report comprise a majority of the school day for an elementary student. The study conducted by Westberg et al. (1993), demonstrated that the self-reporting classroom practices survey (Archambault et al., 1993), produced accurate data regarding the reality of differentiated instruction in American public schools.

Differentiation suggests that teachers help every student apply and transfer what they are learning to various contexts. This is one of the great challenges of the Common Core State

Standards. Every student is expected to make application and transfer of their learning. Differentiation provides a mechanism for all teachers to meet the expectations set forth by the Common Core State Standards (Tomlinson & Imbeau, 2014).

Lesson planning. Implementation of differentiation becomes even more challenging when we consider teachers who are new to the profession or teachers who have pursued an alternative route to certification (Tricarico & Yendol-Hoppey, 2012). Unfortunately, some teachers feel ill-equipped to write effective lesson plans regardless of their pre-service training. Adding the challenge of planning lessons with the diverse needs of learners in mind only complicates an already daunting task. To better understand this issue, Tricarico and Yendol-Hoppey (2012) conducted a study that explored alternative certification candidates' development as planners and implementers of differentiated lessons. This qualitative study included three cases from a larger pool of 15. The cases included in the study were based on purposeful sampling which targeted maximum variation within the sample (Tricarico & Yendol-Hoppey, 2012). All participants in the study were enrolled in an apprentice program designed to support non-education majors in gaining teacher certification. A key component of the program was an apprenticeship in elementary school classrooms.

The apprentices were expected to write and revise three lesson plans that included differentiated instruction strategies. To facilitate this, Tricarico and Yendol-Hoppey (2012), provided professional development sessions that included lecture, group planning, analysis of differentiated lessons, and video analysis of differentiated lessons. The results of the study revealed that prior to learning how to differentiate lesson plans, the apprentices needed to acquire skills in "developing collegial relationships, effective classroom management, ability to plan for a standard, understanding of student need, and openness to feedback (Tricarico & Yendol-

Hoppey, 2012, p. 148). We can conclude from this study that planning a differentiated lesson is far from intuitive.

Another finding was that providing support for application through coaching was an essential component in supporting teachers' self-regulation of teaching. When teachers were provided with information on creating differentiated lessons and then provided with coaching support as they made application of those lessons, the teachers self-regulation increased. Tricarico and Yendol-Hoppey (2012) explained that the field experience in concert with feedback from a coach had a profound impact on the teachers' ability to make application of the coursework they experienced in differentiation.

A final discovery from the study conducted by Tricarico and Yendol-Hoppey (2012) suggested that self-regulation is a quality found in the apprentices who most quickly assimilated differentiation into their lesson planning practices. They define self-regulation in part as "a teacher's conscious goal-setting and proactive stance towards making a change in the classroom" (Tricarico & Yendol-Hoppey, 2012, p. 154). The ongoing work of embracing differentiation happens in the act of reflecting on one's practices and continually making improvements.

Teacher self-efficacy. In a study conducted by Wertheim and Leyser (2002), Israeli pre-service teachers were studied to examine efficacy, beliefs and choices of differentiated instruction strategies. The study included 191 pre-service teachers and used the teacher efficacy scale to allow participants to self-report on the instructional strategies they use and their efficacy in implementing those strategies. The findings of Wertheim and Leyser (2002) revealed that when teachers had a higher sense of self-efficacy, they were more willing to use a variety of instructional strategies to support the diverse needs of their learners.

Perhaps it is a matter of expertise. Carolan and Guinn (2007) conducted informal observations of master teachers who implement differentiated instruction. The focus of the observation was on the overarching beliefs, daily routines, and subtle strategies used by the teachers. One finding was that the teachers were intentional about creating a caring classroom environment in which differences were seen as assets. Carolan and Guinn (2007) also acknowledged that the affective aspect of differentiation is often overlooked. It is important for teachers to consider the social and emotional aspects of differentiation.

While Carolan and Guinn's report is compelling, it stops short of a formalized study; they simply observed five master teachers. While it was good to acknowledge the importance of recognizing differences as assets and considering the emotional aspect of differentiation, we still need to know what are underlying attitudes and beliefs the teachers observed by Carolan and Guinn (2007) that produced such a mindset?

Differentiation can be found in small pockets among teachers who are efficacious and experienced as described in the literature review above. What characteristics, behaviors and attitudes compel a teacher to implement differentiation? Could identifying characteristics, behaviors and attitudes increase the occurrence of differentiation in classrooms across the country? How might support teachers receive through professional development impact their implementation?

Agents of Change

Many factors can affect teachers' willingness to change. The following section explores various avenues through which change in teacher behavior might be achieved.

Teacher support. A common type of teacher support is delivered in the form of professional development. VanTassel-Baska (2012) suggests that professional development

must take into consideration the ongoing nature of teacher growth. She further states that teachers must be willing to reveal their practices and be willing to reflect on their practices. Weber, Johnson and Tripp (2013) conducted a study where they provided a multi-step process for supporting teachers' implementation of differentiation. The support involved grade-level teams participating in book discussions, a large group instructional workshop presented by an expert in differentiation, and finally classroom visits for the purpose of providing specific materials and conducting individual meetings with teachers. Weber et al, (2013) found a variety of levels of implementation of differentiated instruction. Even though all teachers received the same support some teachers embraced the philosophy of differentiated instruction and some teachers were reluctant to implement differentiated instruction.

A district-wide initiative focused on integrating technology and implementing differentiated instruction was met with success after a three-year systematic deployment of a multi-step professional development program (Gunn & Hollingsworth, 2013). Researchers found that teachers felt more comfortable with implementing differentiation in each subsequent year they were surveyed as a result of the systematic, methodical professional development used to support their implementation of best practices. However, Gunn and Hollingsworth (2013) acknowledged that the challenge will be to sustain the enthusiasm for the technological and pedagogical best practices that have been promoted. It is also worth noting that as new faculty and staff join the district, it will be important to provide the same level of support, particularly for those new to the field.

Similarly, Cobb (2010) reports that teachers who used differentiated instruction by assigning technology-based assignments found significant increases in student achievement in the treatment group. While this study supports the connection between differentiated instruction

and the use of best practices in technology, it failed to address the degree to which teachers' value systems can affect the implementation of differentiated instruction.

It is important to note that according to Guskey (2002), while the path to change in teacher behavior may begin with professional development, it will end with a teacher's belief that the suggested change will indeed benefit students. In fact, Guskey provides a model where teachers receive training through professional development, and then implement the changes. Student achievement is impacted as a result of the change in teacher's practice and only then are the teacher's attitudes and beliefs effected (Guskey, 2002). Simply put, most teachers are not going to naturally assume that differentiation or any other instructional strategy will work. According to Guskey, teachers will need to see evidence of increased student achievement before their beliefs and attitudes regarding differentiation will be impacted. Support through professional development will not be enough to increase a teacher's efficacy and mindset.

Teacher efficacy and mindset. In the context of professional development for differentiation, teachers must believe that differentiation will lead to something that is good or effective for their students. The effective implementation of differentiated instruction depends on changes in the teachers' behaviors (VanTassel-Baska, 2012). When a teacher accepts this belief as their own, they can begin their journey toward a differentiated classroom. How can we impact a teacher's belief? Several authors (Baglibel, Samancioglu, Ozmantar & Hall, 2014; Dallas, Uptown & Sprong, 2014; Duman, Doroglu, Kayka & Yilmaz, 2014; Ruppar, Gaffney & Dymond, 2014) believe that while it is challenging, it is possible for teachers' beliefs to change. Specifically, Duman et al. (2014) conducted a qualitative study among pre-service teachers in Turkey. They found that pre-service teachers' attitudes toward changes in educational reforms were directly impacted by their "political views, educational philosophies and general attitudes

toward change" (Duman et al., 2014, p. 627). Duman et al. also cite the constant state of change as a reason that pre-service teachers are skeptical of change and generally exude an attitude of apathy toward education reform.

Rupar et al. (2014) conducted a qualitative study to look at special education teachers' decisions about literacy instruction. Four themes emerged through their research. Context, beliefs about students, teaching and learning, expectations, and self-efficacy formed the basis for the decisions that teachers made regarding literacy instruction. Through the qualitative analysis, Rupar et al. discovered that teachers' beliefs about the students they were teaching had a profound impact on how they approached teaching. Specifically, the language used by participants to describe their decisions highlighted their beliefs about their students. It was also discovered that teachers' self-efficacy is profoundly impacted by teachers' beliefs about students' abilities and the teaching and learning process in general.

Dallas et al. (2014), studied university faculty attitudes toward inclusive teaching strategies. In their findings, it became evident that years of experience, academic discipline in which the participant is teaching, and prior training all impacted participants' attitudes toward inclusive teaching. In a study conducted by Baglibel et al. (2014), researchers found that teachers' attitudes toward change were directly impacted by the type of leadership in the building. Specifically, principals who approached change as initiators were most successful in positively impacting teachers' attitudes toward change.

The studies mentioned above illustrate that attitudes of teachers can be affected by internal factors (self-efficacy, years of experience) and external factors (rate of change, leadership). However, a gap still remains in understanding how teachers' attitudes effect their implementation of differentiation.

Tomlinson, Brimijoin and Narvaez (2008) add that professional learning communities "help keep everyone together and focused on the initiative, ensure a forum for modeling as well as exploring the initiative, provide the support and pressure needed to bring about second-order change via a peer accountability and strengthen working relationships" (p. 44).

Strickland (2009) reminds us that "differentiation requires sustained motivation, hard work and support from an entire school system" (p. 6). It will only be through continued support of colleagues and supervisors that a teacher will be able to pursue the goal of a differentiated classroom. Disconnected, isolated professional development will not support teachers' implementation of differentiation (VanTassel-Baska, 2012).

Hoaglund, Birkenfeld and Box (2014) point out that "new teachers who are not required to undergo a 'training period' find themselves thrown into a classroom assuming full responsibility" (p. 523). In other words, teachers might know what to do in a classroom, but they have great difficulty in executing what they have learned in college. Even during student teaching and other internships, there is little awareness among pre-service teachers of the ancillary responsibilities of a classroom teacher. This reality can only be grasped by assuming responsibility of teaching a group of students over a sustained period of time.

Summary

This chapter provides a review of literature which establishes the importance of differentiated instruction in the context of K-12 education. Current literature that supports teachers' implementation of differentiated instruction was also reviewed. While studies have been conducted on the challenges of effective implementation of differentiation in our current education system, a gap still remains in identifying the characteristics, behaviors and attitudes of teachers who implement differentiated instruction. In the following chapter I will outline a study

designed to address this gap in the literature. Figure 1 details how the research questions will address existing gaps in the literature related to teachers' implementation of differentiated instruction.

Figure 1

Existing literature and research questions

Elements of Literature Review	Remaining Gaps	Research Questions
Differentiation Defined	While literature exists describing strategies that support differentiation there are no case studies providing an in-depth look into the practices of elementary teachers who differentiate instruction.	What does differentiated instruction look like in an elementary classroom?
Evidence of Teachers' Implementation of Differentiation	While studies have been conducted to examine teachers' implementation of differentiation, no case studies have explored in-depth the planning of teachers who effectively implement differentiated instruction.	How does the teacher identify learning goals and essential understandings?
		How does the teacher determine where students are in relation to the learning goal?
		How does the teacher approach grading and assessment?
		How does the teacher adjust instruction to address students' needs?
Agents of Change	While literature exists on factors that might affect teachers willingness to change the majority of the literature focuses on external factors.	What effect does the teacher's mindset have on differentiation?
		What are the teacher's implicit beliefs about diversity within the classroom?

Chapter 3

Method

Research Design

This qualitative study used multiple case studies (Creswell, 2007) to address the aforementioned research questions. Multiple observations of participants, interviews with participants, and analysis of artifacts such as lesson plans, assignments and assessments used in the classroom provided insight necessary to address the following research question. What does differentiated instruction look like in an elementary classroom? The following sub-questions will provide further clarity.

1. What effect does the teacher's mindset have on differentiation?
2. How does the teacher identify learning goals and essential understandings?
3. How does the teacher determine where students are in relation to the learning goal?
4. How does the teacher approach grading and assessment?
5. How does the teacher adjust instruction to address students' needs?
6. What are the teacher's implicit beliefs about diversity within the classroom?

Target Population and Sample

We will begin by discussing the school district used in the study, then narrow our focus to the two elementary schools selected for the study and finally focus on the participants (teachers) selected for the study.

The district. Participants were selected from a large school district in southwest Missouri. The district is comprised of five high schools, nine middle schools, and 36 elementary schools. Total enrollment for the 2013-2014 school year was 24,905 students. White students comprise a large majority of the student population (20,004, 79.8%). Black students represent

the second largest subgroup in the population (1,946, 7.8%). Also included in the student population are Hispanic and Latino students (1,316, 5.3%), students who identify themselves as multi-racial (924, 3.7%), Asian and Pacific Islanders (746, 3%), and Native Americas (120, 0.5%). Table 1 shows the total number of students by ethnicity and the percentage of the total student population represented by that ethnicity.

Table 1

Race and Ethnicity within Student Population

Race and Ethnicity	Total Number of student population	Total Percentage of student population
White	20,004	79.8
Black	1,946	7.8
Hispanic and Latino	1,316	5.3
Multi-racial	924	3.7
Asian Pacific Islander	746	3
Native American	120	0.5

To better have a context of how the faculty and staff compare to other districts within the state, we will look at years of experience and education of the staff, teacher to student ratio, staff to student ratio, and administrator to student ratio. The district exceeds the state in average years of experience of professional staff (12.5 years and 12.3 years respectively), and percent of faculty with a master's degree or higher (65% and 58.9% respectively). Ratios are provided to compare the number of students to all teachers in the building (i.e. classroom teachers, art teachers, music teachers etc.) and to compare the number of students to regular classroom teachers. The district lagged behind the state in student to teacher ratio (1:15 and 1:13 respectively), student to classroom teacher ratio (1:20 and 1:18 respectively), and student to administrator ratio (1:293 and 1:195 respectively).

Another metric for the health of the district was performance on standardized tests as compared to state and national averages. The district performed well. The district average ACT score was higher than the state and national average in each subtest and for the composite score for 2014. In fact, district average ACT scores have exceeded state and national average scores in each subtest and composite scores for the past ten years. Of the 1,597 graduates who took the ACT in 2014, 655 (41%) scored at or above the national average.

The state of Missouri administered an end-of-course (EOC) exam for English I, English II, Algebra I, Algebra II, Biology I, American History, and Government. Table 2 shows a comparison of the percentage of students within the district who scored proficient or advanced on the EOC exam and the percentage of students across the state that scored proficient or advanced on the same EOC exam. Proficient or advanced is recognized across the state as an indicator that students have satisfactorily mastered the content in the course they have been tested over. Table 2 shows a comparison between the district percentage of students who scored proficient or advanced and the state-wide percentage of students who scored proficient or advanced.

Table 2

Percentage of students scoring proficient or advanced on EOC

Content Area	Percentage of students across the district	Percentage of students across the state
English I	55.4	60
English II	73.3	74
Algebra I	53.6	54.9
Algebra II	88.5	63.6
Biology I	63.6	67.1
American History	40.3	48
Government	62	62

These exams are administered to any student enrolled in the course regardless of what year (i.e. ninth grade, tenth grade, etc.) they take the course. The district lagged behind the state in all areas tested with an EOC exam with the exception of Algebra II and Government. The district is within one percentage point of the state average in English II and close to one percentage point in Algebra I. The gaps in other content areas range from 3.5% (Biology I) to nearly eight percent (American History). The data reveals that in three of the seven courses assessed through state-wide testing, less than 60% of the district's students were able to demonstrate proficiency in the content they studied.

The Missouri Assessment Program (MAP) is another state-wide assessment administered in Missouri. The MAP test was given to every student in third through eighth grade. Table 3 shows a comparison of the percentage of students who scored proficient or advanced within the district and the percentage of students who scored proficient or advanced across the state.

Table 3

Percentage of students scoring proficient or advanced on the MAP

Grade Level	Percentage within the district	Percentage across the state
3	36.4	42.3
4	41.7	46.3
5	50.5	50.7
6	42.8	48.0
7	58.0	56.0
8	53.0	51.0

The district lagged behind the state in grades three through six. Note that the gap varies from less than one percent in grade five to approximately five percent in grade three. While these scores reveal that less than half of all students across grades three through six were able to demonstrate proficiency, it is evident that this same level of performance is consistent across the

state. The district was average in performance among other districts as evidenced by state assessments.

The schools. The present study focused on elementary school teachers. While differentiation can happen in elementary and secondary classrooms, the elementary level was selected due to the researcher's background and familiarity with elementary education. MAP data from 2014 was reviewed to determine the two highest performing elementary schools within the district. The rationale for this approach was to support the concept of purposeful sampling by ensuring that participants in the study contributed to student achievement as measured by standardized testing. While standardized testing is not the only metric for student achievement, it is a generally agreed upon measure of student performance. For the purpose of this study, results of the MAP will be used as an indicator of the implementation of high-yield instructional strategies such as differentiated instruction.

The two schools identified to participate in the study were geographically located in the southwest portion of the school district and are less than five miles apart.

School A served kindergarten through fourth grade students with a total student enrollment of 443. Enrollment at School A has declined over the past three years; however, it still remained in the top five largest student populations among elementary schools in the district. Students receiving free and reduce priced lunch at School A total 125, which comprises 28.1% of the student population. Free and reduce priced lunch is a generally accepted measure of the amount of poverty represented in a school. Among the elementary schools in the district, percentages of students on free and reduced lunch ranged from as low as 15.3% to 93.3%, which established School A as one of the most affluent elementary schools in the district.

Student mobility is another area where School A benefited. With 36 elementary schools, students can transfer between neighborhood schools with relative ease. Generally speaking this metric is an indicator of the transient nature of a given student population. Student mobility ranges from 120.7% of the student population, meaning that students may leave and return to the school multiple times within a school year, to as low as 27.1%. School A had a student mobility factor of 35% making the student population among the most stable in the entire district. White students comprised 92.3% of the population of School A while all other ethnicities comprised less than three percent each.

In-school and out of school suspensions for the 2013-2014 school year varied widely across the district, ranging from 147 and 133 respectively to as low as two in-school suspensions and two out of school suspensions in some elementary schools. During the last school year, School A reported only 2 in-school suspensions and four out-of-school suspensions, which is an indicator that disciplinary action was far less frequent at School A than it is in other schools across the district.

School A had one teacher for every 20 students. This ratio is among the highest teacher-student ratios of all elementary schools across the district. The teachers at School A were well educated with 72.1% of the teachers holding a master's degree or higher. Average years of experience at School A was the second highest in the district among elementary schools at 16.3 years of experience on average.

School A performed well on the MAP. In English/Language Arts, 65.6% of third grade students and 53.9% of fourth grade students scored proficient or advanced. In Mathematics, 82.2% of third grade students and 52.8% of fourth grade students scored proficient or advanced.

School B serves Kindergarten through fourth grade and had a total student enrollment of 512 which made it the third largest student population in the school district. Only 76 students (15.3%) at School B qualified for free or reduce-priced lunch which means that School B had the smallest concentration of students in poverty among all elementary schools in the district. The student population of School B was 85.4% white, while all other ethnicities were less than 5% each. School B had the lowest mobility factor percentage at 27.1% indicating that the school's population is not transient. In-school suspensions totaled 14 during the last school year and out-of-school suspensions totaled four making School B among the schools with the least number of incidents resulting in suspension.

The staff members at School B were well educated with 83.1% of faculty with a master's degree or above. This is the highest percentage of all elementary schools in the district. School B also had the second highest average years of experience among all elementary schools with an average of 15.3 years. At School B there was one teacher for every 20 students making the teacher-student ratio among the highest throughout the elementary schools in the district.

Table 4

Comparison of district profile with School A and School B profiles.

Criteria	District				School A		School B	
Percentage of 3rd Grade Prof. & Adv. on MAP - ELA	36.4				65.6		69.7	
Percentage of 3rd Grade Prof. & Adv. on MAP - Math	45.7				82.2		80.7	
Enrollment	12,300				443		512	
	Lowest 214		Highest 561					
Percentage of free and reduced price lunch	60.8				28.1		15.3	
	Lowest 15.3		Highest 93.3					
Percentage of students identified as white	79.5				92.3		85.4	
	Lowest 56.3		Highest 92.3					
Mobility Factor	64.1				35.0		27.1	
	Lowest 30.9		Highest 120.7					
Number of incidents resulting in an in-school (ISS) or Out-of-School (OSS) suspension	Lowest		Highest		ISS	OSS	ISS	OSS
	ISS	OSS	ISS	OSS				
	2	2	147	133	2	2	14	4
Teachers' Average Years of Experience	Lowest 5.7		Highest 18.1		16.3		15.3	
Student to Classroom Teacher Ratio	Lowest 15		Highest 29		20		20	

The teachers. Three participants were selected for the study which allowed for saturation (Guest, Bunce and Johnson, 2006). Each teacher was given a pseudonym to protect her identity. Two participants were teachers at School A and one participant was a teacher at School B. The teachers were invited to participate at the recommendation of the building principal. These recommendations were made based on criteria provided to the principal by the researcher (see Appendix A). The principal from School A recommended one first grade teacher

and one second grade teacher. Both teachers accepted the invitation to participate in the study. The principal from School B recommended one first grade teacher and one second grade teacher. The second grade teacher accepted the invitation. No reply was obtained from the first grade teacher in spite of repeated attempts by the researcher to contact the teacher.

First and second grade regular classroom teachers were the focus of the participant sample for multiple reasons. Standardized testing did not begin until third grade in the state of Missouri. Given that the study was conducted in late spring, the data collection was less disruptive to first and second grade classrooms as they were not engaged in standardized testing. Additionally, since high-performing schools are the basis of selection, it was of particular interest to determine how teachers in grades preceding testing years supported student achievement so as to prepare students for high performance in third and fourth grades.

Sylvia, a white female, was a second grade teacher at School A and was in her fourteenth year of teaching, making her a full tenured teacher with the district. Her first year was at another elementary school within the district and the last thirteen years have been at School A. Sylvia taught second grade at School A for the past nine years. She holds a bachelor's degree in elementary education from an accredited four-year, public university in Missouri and plans to begin her master's degree in the fall.

Ruth, a white female, was a second grade teacher at School B and was in her sixth year of teaching, making her a newly tenured teacher with the district. She taught fourth grade in her first year of teaching and has taught second grade for the past five years. All of her experience has been at School B. Ruth holds a bachelor's degree in Psychology. She received her teaching certification through a master's degree program at an accredited four-year, public university in southwest Missouri.

Mary, a white female, was a first grade teacher at School A and was in her eleventh year of teaching. Her first three years were at a private school in southwest Missouri. After staying home with her children for ten years, she returned to teaching at School A. She has taught first grade at School A for the past eight years. Her first year back in the classroom was a job-share and she has been full time for the past seven years. Mary holds a bachelor's degree in education from an accredited four-year private university in southwest Missouri and is currently pursuing her master's in curriculum and instruction through an online program at an accredited four-year university in a neighboring state.

Data Collection and Instrument

Data collection began with an initial interview using a structured interview protocol (see Appendix B). The purpose of the initial interview was as follows: to gather background information on the participant (education, training, experience); to establish each participant's initial impressions of differentiated instruction; and to establish contact prior to the observations.

Each interview was audio recorded using a digital voice recorder. The duration of each initial interview ranged from 14 minutes and 30 seconds to 15 minutes and 15 seconds. During the interview, a request was made for artifacts that demonstrate the participant's implementation of differentiated instruction. The request included lesson plans as well as copies of assignments, assessments, and projects.

Each participant scheduled one observation with the researcher as a function of the initial interview. The participant's classroom schedules varied widely (see Appendix D). Some participant's schedules afforded for longer continuous observations and some schedules only accommodated shorter segments of time. The scheduled observations ranged in length between one hour and two hours. Several factors complicated the efforts made to conduct unannounced

observations. Ruth and Mary both had student-teachers which required coordination with their schedules to accommodate video tapings. The timing of the observations also complicated matters. The nature of the end of the school year in elementary schools is such that unexpected interruptions abound. Field trips, assemblies, extended recess, fire drills, and guest presentations from a local library were some examples of unexpected interruptions which made unannounced observations problematic. In lieu of unannounced observations, participants were notified within 24 hours of observation. This short-notice approach limited the possibility of embellished lessons due to the videotaped observations as teachers would likely not have time to significantly revise lessons.

Each part of the instructional day was videotaped at least one time. Short-notice observations occurred on varying days of the week and varying times of the day for each participant, thus creating a complete picture of the degree to which differentiated instruction is fully implemented. The time frame of short-notice observations varied from 20 minutes to 97 minutes. The video recordings were conducted over a span of four weeks in the spring of the school year. Each participant was videotaped for a minimum of six hours of instructional time. Table 5 shows the date, day of the week, duration, and content area for each observation of all three participants. The scheduled observation for each participant is indicated with an asterisk.

Table 5

Scheduled and short-notice observations of each participant

Participant	Date	Duration	Content Area
Ruth	Tuesday, April 28*	1 hr. 24 min.	Reading Strategies Lesson and Book Clubs
	Thursday, April 30	1 hr. 6 min.	Writing and Social Studies
	Friday, May 1	1 hr. 3 min.	Math and Social Studies
	Thursday, May 7	57 min.	Reading Strategies Lesson and Book Clubs
	Thursday, May 14	53 min.	Math workshop and writers workshop
Sylvia	Thursday, April 23*	2 hr. 14 min.	Word Work, Math Workshop and Reader's workshop
	Thursday, April 30	1 hr. 25 min.	Math Workshop and Social Studies
	Tuesday, May 5	20 min.	Social Studies
	Wednesday, May 6	55 min.	Writers Workshop
	Monday, May 11	1 hr. 30 min.	Math Workshop and Reader's Workshop ELA CCI
Mary	Thursday, April 30*	1 hr. 27 min.	Reader's Workshop and Guided Reading
	Monday, May 4	1 hr. 27 min.	Writer's Workshop, math workshop and content
	Tuesday, May 5	50 min.	Reader's Workshop and word study
	Tuesday, May 12	1 hr. 40 min.	Writer's Workshop, Math workshop and content
	Wednesday, May 13	55 min.	Reader's Workshop

Each observation was videotaped using the video feature on an iPad mini. The video was then transferred to a MacBook Pro and loaded into the iMovie application. This allowed the researcher to save the video in a secure location and to back-up the video on an external hard drive. The video was made available to the teacher for reflection if she chooses.

The Differentiated Instruction Observation Look-Fors (Appendix A) was used during the viewing of the video. The six categories were each represented on a separate sheet of paper to allow for efficiency in note taking and to facilitate within-case and cross-case analysis. Notes were made to cite specific instances when the teacher demonstrated behaviors listed on the

checklist. A separate file folder was created for each observation, and notes were made for each category for each observation. The following categories were examined during each videoed observation of each participant: learning environment, learning goals, ongoing assessment, adjustment for student needs, tasks, groupings, and management.

Seven criteria were explored within the category of learning environment. The degree to which the teacher and students respect one another, the interest the teacher shows in students as individuals, and the degree to which there is active participation by a broad range of students provided insight into the learning environment in each classroom. Additionally, the degree to which students seem comfortable with one another, opportunities for collaborative learning experiences, the degree to which the teacher places an emphasis on student growth, and the routines and rituals that are in place provided insight into how students feel and worth together in the classroom.

Five criteria were explored within the category of learning goals. The degree to which the participant provided clarity about the learning goal, whether or not all students are working toward the same learning goal and the teacher's efforts to connect the learning goal to student's interests and experiences provided insight into how the participant's established a clear focus for their students. The criteria of students' opportunities to examine big ideas, essential questions, concepts and principles, and the students' opportunities to explore knowledge in context provided insight into how the students interacted with the learning goals.

Six criteria were examined within the category of ongoing assessment. The participants' use of pre-assessment, on-going assessment and multiple assessments were all examined to provide a complete picture of how assessments impact instruction. The degree to which assessments were used to gauge what student have learned, and the degree to which participants

used assessments to help students understand their progress provided insight into the ways participants used assessments. The final criteria provided insight into the amount of class time that was devoted to inquiry and reflection.

Seven criteria were examined within the category of adjustment for student need. The degree to which lessons made appropriate provisions for a range of student needs, and the degree to which the participants proactively planned for differing student readiness, interest and learning profile provided insight into the participants' intentional planning for the diverse needs of their students. The degree to which there is differentiation of content, process and product provided insight into the participants' ability to provide variety in the ways in which they differentiated. The teacher's use of instructional strategies that are appropriate to the learning goals and the degree to which the teacher used a range of instructional strategies gave insight into the participants' ability to align their instructional practices with their intentions to differentiate.

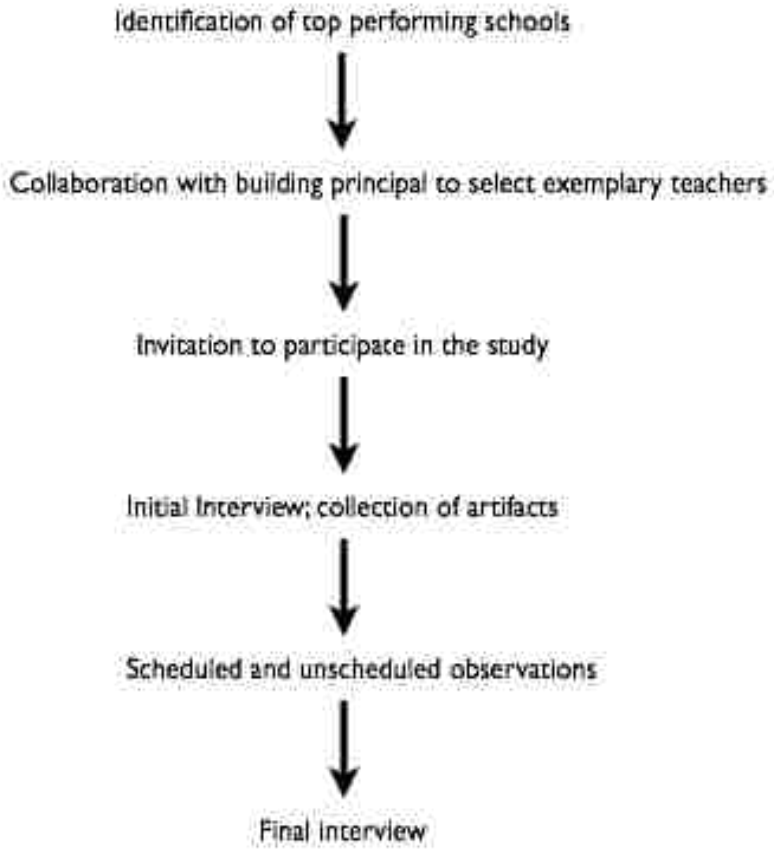
Six criteria were examined within the category of tasks. The degree to which the tasks are aligned with common learning goals and with one another provided insight into the participant's ability to maintain focus on the learning goal while planning differentiated tasks. The degree to which tasks require high levels of thinking, the degree to which tasks are appealing from a student perspective and how the tasks represent a wise use of students' time provided insight into how the tasks planned by the participants' impact the students. The degree to which the tasks approximate the thinking and doing of people who do similar work in the real world, and the degree to which the tasks provide appropriate challenge and scaffolding provided insight into the connections students are able to make between their tasks and real-world contexts.

Six criteria were examined within the groupings and management category. The participants' efforts to place students in a variety of groups within a short time span, and the degree to which there are clear guidelines and expectations for how students should work individually and as a group provided insight into how the participants manage students while they work collaboratively. The degree to which students know how to get and give help, the degree to which the participant share responsibility with students, the degree to which participants use space, time, and materials flexibly, and the degree to which the participants act as a coach or facilitator of learning provided insight into amount of ownership the participants were willing to give their students.

Following the observations, participants participated in a post-observation interview. This interview was constructed based on the observations of the researcher through the videotaped sessions. The purpose of this interview was to allow the participants to reflect on their implementation of differentiation during their scheduled and short-notice observations. The answers to the questions of the post-observation interview provided further insight into the attitudes and beliefs of the participants regarding differentiation. Figure 1 outlines the data collection process used for this study.

Figure 2

Data collection process



Data Analysis

Holistic analysis was used to provide a complete picture of each participant in the case study. The thorough within-case analysis supported the cross-case analysis by accurately reflecting the attitudes, beliefs, and characteristics of each participant. The following describes in detail the process used for within-case and cross-case analysis.

Interviews. Within-case analysis was conducted, followed by cross-case analysis to determine themes within the case and the degree that there are themes across cases (Creswell, 2007). Upon completing the initial interviews, participants' responses were transcribed using

Microsoft Word and then transferred into an Excel spreadsheet and categorized by question. The responses from each participant were reviewed multiple times. Upon completion of the post-observation interviews participants' responses were once again transcribed using Microsoft Word and then transferred into an Excel spreadsheet and categorized by question. After multiple reviews of the post-observation transcription, analysis was conducted for evidence of change in participants' behavior due to participation in the study. The post-observation interviews were semi-structured. Some questions were the same as or similar to questions to the initial structured interview and some questions were specific to the observed behavior of the participant during the videotaped observation. To conduct the cross-case interview analysis, the responses to each participant's interview were reviewed multiple times. If two or more participants agree, or use the same or a similar phrase, a code was established. A separate cross-case interview was conducted for the initial interview, the post-observation interview.

Observations. Notes were taken on each observation according to all six categories found in the Differentiated Instruction Look-for (see Appendix A). Each category represented a separate sheet of paper. Notes were filed by each observation. Five observations were conducted for each participant. For within-case analysis the notes from each observation were collated by category and reviewed multiple times. If a phrase or event occurred in three out of five observations it constituted a code. A yellow highlighter was used to identify within-case themes for the observations. To conduct the cross-case analysis for all fifteen observations, field notes were collated according to category. If ten out of fifteen observations show the same or similar event, a code was established.

Artifacts. Within-case analysis included the review of multiple weeks of lesson plans. Cross-case analysis of artifacts will include multiple reviews of all artifacts using the categories

in the profile given to principals. The artifacts were analyzed by using codes that were used to establish themes during cross case analysis.

Data Validation

Data validation was achieved through the use of multiple strategies suggested by Creswell (2007). The use of interviews, artifacts, and observations provided a triangulation of data which supports data validation. Peer debriefing interviews also supported efforts to ensure data validation. The researcher invited a colleague to conduct a debriefing interview during the data collection and analysis phase of the study. A final interview was conducted after all the analysis was complete. Each interview was videotaped, transcribed, and analyzed in an effort to expose any bias on the part of the researcher. This strategy held the researcher accountable for accurate descriptions of what happened during the data collection. Member checking was another important source of data validation. The researcher took the data, analysis, interpretations, and conclusions back to the participants in the interest of giving them an opportunity to voice any concerns about the accuracy of the data. Finally, detailed descriptions gave the reader vivid context of the research; they will more easily decipher appropriate opportunities to transfer the findings to other contexts.

Confidentiality

Research permission began with the Institutional Review Board (IRB) at the University of Arkansas - Fayetteville. The appropriate paperwork was submitted and no research was conducted until the research protocol was approved by the IRB.

Informed consent letters were e-mailed to principals of the schools selected and teachers selected as participants outlining the purpose of the study and ways in which the data would be

used. Details about the procedure and process for videotaping were outlined in the consent letter.

Each participant was assigned a pseudonym and each school was given a pseudonym to protect the confidentiality of each participant and each site. Only the researcher will know the assignment for each participant.

Role of the Researcher

The researcher took an active role due to the nature of qualitative research. The role of observer was defined by the Differentiated Instruction Look Fors (see Appendix A) and the pre-observation and post-observation interviews followed a semi-structured interview format. As an employee of the district in which the research was conducted, it bears noting that the researcher was not personally familiar with any of the participants; however due to the nature of his work he was familiar with other staff in School A and School B.

This chapter detailed the sample used in the study, the procedures for data collection, the instrument used for data collection, and the procedure used for analysis with interview data, observation data and artifacts. The following chapter will detail the data collected for all three cases.

Chapter 4

Results

Introduction

The purpose of this chapter is to present data that will support answers the research questions: What does differentiated instruction look like in an elementary classroom? The data will also provide insight into following sub-questions that will provide further clarity.

1. What effect does the teacher's mindset have on differentiation?
2. How does the teacher identify learning goals and essential understandings?
3. How does the teacher determine where students are in relation to the learning goal?
4. How does the teacher approach grading and assessment?
5. How does the teacher adjust instruction to address students' needs?
6. What are the teacher's implicit beliefs about diversity within the classroom?

The data presented in this chapter were collected from three participants. Two interviews were conducted with each participant. The initial interview was conducted prior to any observations. The second interview was conducted at the conclusion of the observations. Each participant was observed on five different occasions over a period of four weeks during the final quarter of the school year. Each participant was observed on different days of the week during different times of the day to provide a complete picture of each participant. Artifacts were collected from each participant. During the initial interview the participants were asked to provide a copy of any artifact they feel supports them in their implementation of differentiated instruction. Participants provided a wide variety of artifacts ranging from tools for classroom management to lesson plans.

The results section is organized as follows. Each case study is analyzed beginning with a detailed description of the classroom environment and a synopsis of each observation session. Analysis of the interviews is followed by analysis of each observation and concludes with an analysis of the artifacts. Within-case analysis and cross-case analysis of the observation is

structured around the Differentiated Instruction Look-fors (Hockett, 2010) instrument provided to the principals (see appendix A). The six categories that gave structure to the observation were discussed in detail in the previous chapter: learning environment, learning goals, ongoing assessment, adjustment for student needs, tasks, and groupings and management.

The data reported in chapter four is a reflection of the participants' best efforts to meet the criteria listed on the Differentiated Instruction Look-fors (Hockett, 2010). Some of the participants' efforts are not exemplary but will be reported to provide the purest reflection of all three cases.

Within-Case Analysis: Sylvia

Sylvia, a white female is in her fourteenth year of teaching thirteen of which have been at School A. She has nineteen students in her second grade class. Her classroom has a tile floor with one blue rug positioned along the north wall and centered beneath the SmartBoard. Two sets of windows line the east wall that faces the parking lot and the south wall of the classroom is lined with storage cabinets and hooks for student backpacks. The door is located in the southwest corner or the room adjacent to two desktop computers and additional storage cabinets along with plastic tubs that house student reading materials.

A kidney shaped table is located in the northeast part of the classroom. At this table, Sylvia conducts her small group instruction for reading and math and conferences with students during writing. Students are seated at six tables positioned in the middle of the south portion of the room. The tables are comprised of two trapezoid shaped tables that make a hexagon shape. In the center of the hexagon lies a caddy filled with pencils, markers, pens, scissor and glue. All students seated at the table share the contents of the caddy. Students sit on exercise balls, but chairs are available to students who wish or need to use one.

Anchor charts hang on the north and west walls. These anchor charts contain information covered in numeracy and literacy lessons throughout the year. High frequency and site words were posted on the southeast wall. The lighting consisted of halogen ceiling lights which were covered with blue translucent paper and a floor lamp near the kidney shaped table.

Description of observations. A total of five observations occurred over the course of four weeks. The first observation was on Thursday, April 23 for the duration of two hours and fourteen minutes. Word work, math workshop and reader's workshop were observed during the first observation. The second observation was on Thursday, April 30 for the duration of one hour and 25 minutes. Math workshop and social studies were observed during the second observation. Tuesday, May 5 was the third observation during social studies for the duration of 20 minutes. The fourth observation was on Wednesday, May 6 during writer's workshop for the duration of 55 minutes. The final observation occurred on Monday, May 11 for the duration of one hour and 30 minutes. Math workshop and reader's workshop were observed during the final observation. Table 6 shows the observation schedule for the case study of Sylvia.

Table 6

Observation schedule for case study of Sylvia.

Sylvia	Thursday, April 23*	2 hr. 14 min.	Word Work, Math Workshop and Reader's workshop
	Thursday, April 30	1 hr. 25 min.	Math Workshop and Social Studies
	Tuesday, May 5	20 min.	Social Studies
	Wednesday, May 6	55 min.	Writers Workshop
	Monday, May 11	1 hr. 30 min.	Math Workshop and Reader's Workshop ELA CCI

The first observation was a scheduled observation that occurred on Thursday, April 23 for a total duration of two hours and fourteen minutes. According to the posted class schedule

the instruction during this time frame should include word work, math workshop and reader's workshop. The lesson on this particular day began with word work which involved students sorting words according to various vowels sounds, blends or digraphs. Sylvia assigned word work to students based on their performance on formative assessments so not all students were working on sorting the same list of words. Students were then called to the carpet for a morning meeting where Sylvia made various announcements. She also explained the math test that students would take and allowed students to ask any questions for clarification of the instructions.

After students completed the math test Sylvia called them to the carpet and gave them a whole-group mini-lesson on homophones. Sylvia provided a mentor text which provided exemplars on the use of homophones and asked questions for comprehension to the whole group. Afterwards Sylvia met with students she had grouped homogeneously based on readiness levels. When not working in small groups students worked independently on materials found in their personal reading tubs. Students not meeting with Sylvia completed assigned tasks and participated in centers designed to support their literacy. Sylvia met with a total of three small groups. Each group discussed an assigned reading.

The second observation occurred on Thursday, April 30, for the duration of one hour and 25 minutes. According to the posted schedule the time was scheduled for math workshop and social studies. Math instruction began with an explanation of the assigned worksheet. Sylvia met with small groups of students to work on identifying shapes. She asked the first group to recognize the three-dimensional shape and call it by name. She had the second group consider how many of one type of three-dimensional shapes might fit into another type of three-dimensional shape. At the end of the session with the second group, Sylvia taught the students

how to draw three-dimensional shapes. She are gave students the option of drawing more three-dimensional shapes as a part of their center time. Students not meeting with Sylvia worked in small groups on completing a workbook page and then self-monitoring their participation at learning stations. Students were given the opportunity to work individually or in small groups. During this observation most students chose to work in small groups to create symmetrical designs using small geometric figures.

The Social Studies lesson was a lesson on Zoocenomics. This is a project designed to allow small teams of students to create a zoo. Sylvia determined the homogeneous teams. Each team was responsible for making choosing animals to be in the zoo, and for designing every aspect of the zoo. During the lesson students worked on a map of their zoo and discussed pricing for the zoo.

The third observation was conducted on Tuesday, May 5 for the duration of 30 minutes. The students earned extra recess time earlier that day, so the lesson was cut short which resulted in 20 minutes of instruction. According to the posted schedule the observed time was focused on Social Studies. Students came in from recess and Sylvia explained that instead of Zoocenomics they would be rehearsing a project for the Mother's Day tea scheduled for the following Friday. The first script they rehearsed involved all students. The student split into teacher assigned groups to work on teacher-assigned roles.

The fourth observation occurred on Wednesday, May 6 for the duration of 55 minutes. According to the posted schedule the students were to be engaged in writer's workshop but Sylvia chose to use this time to continue preparing for the Mother's Day tea party. The whole group lesson began with a video of a reader's theater performance of The Ugly Duckling performed by kindergarten students from another school. As students watch they realized the

performers were from another country and were considerably younger than themselves. Sylvia frontloaded the viewing by asking students evaluate the performers. The students in Sylvia's class agreed that the stage presence of the performers in the video was excellent, and they noticed that the students did not speak English. Sylvia had been intentional about using this video because she wanted the students to focus on the body language of the performers. She challenged the students to consider their own stage presence and make improvements and adjustments as needed.

Sylvia gave small groups of students time to work on their scripts, then she walked around the room to monitor students' behavior and progress. One group was practicing the Tortoise and the Hare and another group was practicing the Brimintown Rappers. Students self-monitored and self-started during their rehearsal for their reader's theater.

The observation ended with a whole group activity. Sylvia gave students a sentence to correct. After some solo think time Sylvia asked for volunteers to make editing suggestions. She used the document camera to make changes to the sentence as students made suggestions. As a final task, students re-wrote the sentence correctly, had a friend check it, and then gave it to Sylvia.

The final observation occurred on Monday, May 11 for the duration of 1 hour and 30 minutes. According to the posted schedule the students would be engaged in math workshop, reader's workshop, English/Language Arts and Continuous Classroom Improvement.

As the observation began students were seated on the carpet with slates and markers. Sylvia began several rounds of naming a geometric shape and having students draw the shape. When students were finished drawing the shape they placed the slate on their head to facilitate Sylvia checking for students' comprehension of the questions she asked.

While still on the carpet, Sylvia explained the options for students during the reading instructional block. Students could participate in centers according to their assigned station that is posted on a pocket chart located on the bulletin board or they could read silently or they could read a book in order to complete an "accordion book" assignment.

Sylvia chose the accordion book project because of the positive feedback she received. After she showed the students some exemplars of the accordion book, Sylvia explained her plan to administer three DRA tests so she would not be available for questions. The DRA testing is an individually administered reading test. Sylvia met with students at her kidney-shaped table to administer the test.

Once students completed the DRA tests Sylvia invited the students to the carpet for whole group instruction. She used Time for Kids as an informational text on sea turtles. She suggested a connection between the article and their continuing Zoocenomics unit. After previewing the article Sylvia instructed students to read the article aloud with a partner. She encouraged those who finished early to discuss what they learned about during the reading. Afterwards Sylvia asked comprehension questions and also invites students to make inferences and to evaluate the turtles' actions.

Interviews. Two interviews were conducted with Sylvia. The initial interview occurred on April 20, 2015 at 7:30 a.m. in her classroom at School B. The interview followed a structured protocol (see Appendix A). The post-observation interview occurred on May 19 at 7:41 a.m. again in Sylvia's classroom. This interview followed a semi-structured interview protocol (see Appendix G) to allow for probing on specific lessons observed. This interview protocol was developed after careful analysis of all five observations of Sylvia's classroom. Any repetition of questions from the first interview was intentional in an attempt to measure growth or change of

Sylvia's perception of differentiation during the course of the study. Some questions targeted areas that were not evident during the five observations.

During the initial interview, Sylvia cited Kagan Cooperative Learning as the only formal training that has supported her efforts to differentiate instruction, and she mentioned "a couple of book studies" (Initial Interview, Sylvia) that have helped her although she was not able to remember the name of the text that she used. She did not mention prolific authors in the area of differentiation such as Tomlinson, Wormeli or Imbeau. Asked to define differentiation, Sylvia had no trouble providing a response, "Easy. It's meeting each child where they are and growing them from their level forward. Not necessarily reaching a particular goal, but reaching them where they are in every subject…a little at a time" (Initial Interview, Sylvia). Sylvia communicated that differentiation is necessary because students are at different levels in different areas. She added that it is important to make sure students understand areas where they have strengths and areas where they need to make improvements.

During both interviews Sylvia described what makes differentiation difficult. Both times her response addressed motivation, however, during the initial interview she also commented on the importance of challenging students and making sure the work is at the appropriate readiness level. During the post-observation interview her perspective on motivation had more to do with the time of year and the volume of interruptions.

> Just a steady diet of interruptions and then focus…but even as a teacher, there is just something about that last day approaching that gets everyone a little antsy and ready and I definitely think you lean toward lazy if you can. So…it's a constant battle internally in my brain to not let that happen and to not go that direction. (Post-observation, Sylvia)

Sylvia responded to a question about the internal dialogue that helps her stay focused by explaining that she asked herself reflection questions that will challenge her to think of ways to

make learning more fun and engaging for the students. She acknowledged that the students get bored easily at this time of year, so she is always asking herself "how can I teach this in a different way so that I can read all my learners and so that at the end they will say, 'oh, that was fun!'" (Post-observation Interview, Sylvia)

As for making differentiation easy, Sylvia responded slightly differently in the two interviews. During the initial interview she cited easy access to the internet and easy access to resources as things that make differentiation easy. Additionally, she mentioned "seeing the kids grow" (Initial Interview, Sylvia) as a motivator and something that made differentiation easy for her. Specifically in the context of the four weeks during the observation, Sylvia mentioned that the students are well versed in the routines and procedures of the classroom. She said, "I mean, it's easy to bust them up into any kind of group and they're well trained" (Post-observation Interview, Sylvia). Due to the groundwork laid at the beginning of the year, Sylvia explained differentiation and flexible grouping is an easy way to manage her students. At this point in the year Sylvia feels that her students know her expectations of how to work in groups and how to treat their classmates.

During both interviews Sylvia described what she has noticed in her students as a result of her differentiation. Prior to the observations, Sylvia responded that all of her students were making progress and that their time was being used wisely. In the post-observation interview, she mentioned engagement and willingness, even eagerness, to come to school. She relayed a story of a parent offering to a student to miss school and the student being adamant that he was at school because his group was depending on him. Sylvia recognized that her differentiation made it necessary for her students to be at school. In regards to how she decides when to differentiate, Sylvia stated that it is less about deciding when she will differentiate and more about deciding

how she will differentiate. In her initial response, she cited examples of differentiation during each content area. She reiterated this during her post-observation interview when she stated, "I always differentiate unless we are doing a test. And then, even sometimes…like a math test. They don't all take a math test. So, it's not a question of when, it's a question of how" (Post-observation, Sylvia).

Sylvia was consistent in both interviews in her response to a question about her decision on offering choice. She offers choice through literacy and numeracy centers. During the post-observation interview, Sylvia cited the centers on homophones as a specific example. Students had access to the center if they felt like they needed more work on the topic. She clarified that at the beginning of the year she provides a little more direction of student's activities. She feels that at the end of the year they can accurately self-assess but acknowledged "they have to be taught how to pick activities that will be a good use of their time" (Post-observation Interview, Sylvia). Sylvia feels comfortable with students choosing any of the activities in the literacy stations because she has been intentional to design activities that will support their instruction.

The purpose of including the following information in the within-case analysis, captured in the post-observation interview, is to support a clearer picture of Sylvia's thinking regarding differentiation. Sylvia communicated that while she was pleased with her implementation of differentiation during the four-week window of the observations, it was not as strong as it had been at other points in the school year. The timing of the year and frequency of interruptions (i.e. field trips, assemblies etc.) made differentiation more challenging. As far as highlights of differentiation during the window of observations she mentioned the math stations during the geometry unit and the "Zoocenomics…[she] thought the students had a lot of high-level

conversations they wouldn't have had if I had given them a pile of worksheets" (Post-observation Interview, Sylvia).

Sylvia was unfamiliar with the concept of growth mindset. After hearing a brief explanation of the concept she affirmed that it aligns with her philosophy of education.

> Oh, it for sure does. I'm thinking of one little girl in particular in here who had a fixed mindset about math and she…it took a lot of work to…you know, I had to prove to her, I had to prove that she really could learn. And we did that more through small group instruction because she was not confident to ever share an answer or discuss in a mini lesson, whole class discussion sort of way. And it's miraculous when they feel like they can do it how much better they can do. So, I mean, I think for sure a growth mindset is the kind of mindset that we want all students to have if possible. (Post-observation Interview, Sylvia).

Sylvia also agreed that the idea of growth mindset is consistent with the philosophy of differentiating instruction. She mentioned that "when you're differentiating, you'd have to present them with tasks at which they can be successful at first and then slowly scaffold their learning so they don't even notice it's getting harder" (Post-observation Interview, Sylvia). Her belief in growth mindset compels her to make plans to differentiate the support she provides for students so they're able to achieve.

When deciding on learning goals, Sylvia begins with Common Core State Standards (CCSS) to determine what her students will need to know, she then compares those with the Grade Level Expectations (GLEs) and she looks for areas where they overlap. Finally she considers "how can we all still enjoy this without it being miserable" (Post-observation Interview, Sylvia). Specific examples of application of this included the math lesson on geometry that was observed during the observation window. Geometry is addressed in both the CCSS and GLEs. The Zoocenomics unit addressed multiple standards from the Literacy and Numeracy CCSS and GLEs. The overall concepts that she wanted to cover included "supply and

demand, opportunity cost and scarcity" (Post-observation Interview, Sylvia). This is the first time she has taught the unit and found it challenging to help second grade students understand scarcity. She accomplished this through the work informing her students that a "storm" had damaged their zoo and limited their supplies.

To emphasize student growth instead of student competition, Sylvia responded that she was intentional from the beginning of the year to establish that all students have strengths and areas for improvement. "We start at the beginning, early on as we are establishing the classroom community that, you know, who knows how to tie your shoes and who doesn't and I bet you're really good at basketball and you have beautiful penmanship…" (Post-observation Interview, Sylvia). Sylvia shared that she communicates to each of her students that they are all teachers and all learners. When asked about how academic diversity might benefit her classroom, Sylvia affirmed that it does. She also cited the liability of the alternative to academic diversity that in her thinking would be like tracking the used to be prevalent in the 1970s. Sylvia noted that diversity is important "because [her students] are going to be working with people who are brighter than they are and people who are less bright…" (Post-observation Interview, Sylvia). She sees the diversity in her classroom as preparation for what students will find in the world beyond the classroom.

Sylvia uses a pre-test for every unit she teaches. Her groupings for the each unit are made based on student's performance on the pretests. Students move among groups from on unit to the next. Sylvia acknowledged "there are some kids that usually are in red or green" (Post-observation, Sylvia). Red refers to her more advanced learners and green for the learners who need more scaffolding. For an interdisciplinary unit such as economics she grouped them "based on overall academics" (Post-observation, Sylvia). Sylvia placed students in homogeneous

groups based on the students who in her assessment would be able to generate more robust ideas. She referenced a text on project-based learning published by Buck Institute for Education that suggested the practice. She has studied the book along with a small group of her colleagues. For the Reader's Theater, students were allowed to choose their own part to read based on their comfort level. Sylvia read each script allowed as student followed along. Through a combination of reading level and willingness for theatrics, students were allowed to self-select their own part for the Reader's Theater.

Sylvia was not able to provide examples of ways she differentiated product. Students had the opportunity to personalize the product they turned in (i.e. a writing piece or their accordion book assignment) and Sylvia assigned a variety of products over time (i.e. various types of writing) but she generally expected students to submit one type of product for each assignment.

Sylvia provided four attitudes of a teacher who differentiates, "Flexible, hard-working and unique" and added that "you're going to have to reinvent the wheel every time based on the group of kids that you have." Characteristics include, "hard-working, technologically savvy and creative." Sylvia stated that a teacher who differentiates believes that "every child is different, every child is capable of growing and improving" (Post-observation Interview, Sylvia).

Sylvia then responded to a series of questions about her grading philosophy, her own experience as a student with differentiation and her advice to new teachers about differentiation. Commenting on her grading philosophy, Sylvia described herself as a "big pre-tester, but not a big tester of practice." She mostly grades final assessments and projects. Sylvia said, "I don't spend a lot of time grading. I spend more time planning than I do grading" (Post-observation Interview, Sylvia).

Sylvia could not think of a time when she personally benefitted from differentiation as a student. She cited a horrible long-term memory as the reason why she couldn't remember anything. The experience her own children have had in school provides motivation for her to differentiate instruction. Sylvia's children are bright students and according to Sylvia were not challenged in many of their classes. "It took me several years of watching worksheet teaching and sit and get to them before I really started to evolve" (Post-observation, Sylvia). Observing how a lack of differentiation affected her children provided motivation for her to implement differentiated instruction.

This led to Sylvia's advice to new teachers about reasons to differentiate, Sylvia had this to say:

> At the end of the day, you will feel like a better teacher. At the end of the year, your parents will be happier. You will have much more positive community feedback because your kids are going to feel successful. If you've differentiated successfully, your kids will walk out the door saying, "I did good today" (Post-observation, Sylvia).

Throughout both of Sylvia's interviews it appears that students are a primary focus of her classroom and that she desires for each student to experience growth in every content area.

Learning environment. The category of learning environment included seven criteria. The observations related to these seven criteria provide insight into Sylvia's implicit beliefs about diversity in the classroom. At least three of the five observations contained six of the criteria establishing a significant frequency of the occurrence. The six criteria were as follows:

> The teacher and students respect one another.
> The teacher shows interest in students as individuals.
> There is active participation by a broad range of students.
> Students seem comfortable with one another.
> The teacher creates collaborative learning experiences.
> There are routines and rituals in place that help students feel they belong and are valued.

The post-observation interview addressed that an emphasis on student growth toward important goals versus on student competition was not observed.

In four out of the five observations Sylvia and her students displayed respect for each other. During the second observation, Sylvia stated multiple times that she was going to trust students to self-monitor their progress during station time in Math. She told the students that she might spot check their work, but they were not required to show their work to her prior to heading to their station time. Later in the observation, Sylvia asked students if they are working hard or playing to further encourage self-monitoring. During the third observation, students were allowed to sit anywhere in the classroom as they rehearsed their Reader's Theater scripts. Some students decided to sit at their tables, other students sit on the carpet or floor. Each student had a role in the Reader's Theater and seemed comfortable and satisfied with their role.

During the fourth observation, students rehearsed the Reader's Theater but some of their classmates were absent. Instead of instructing the students how to solve the problem, Sylvia asked the students to brainstorm solutions. Several students offered ideas and Sylvia instructed each group to decide on a solution that would work best for them. All Reader's Theater groups were able to self-start and worked well together as indicated by the way the students communicated and interacted. During the fifth observation Sylvia gave students the opportunity to work independently or to work with partners on self-selected tasks during reading rotations.

Sylvia showed interest in students as individuals in three out of the five observations. During the second observation, Sylvia worked with an individual student on adjusting a design he created to make it symmetrical and she sought out an individual student to follow up on the student's progress toward a reading goal. Sylvia noticed one student who was off-task and asked the student a reflective question to encourage her to refocus.

Sylvia showed interest in individual students during the fourth observation while students cleaned out their reading boxes. Sylvia asked reflective questions of individual students who struggled with organization for the purpose of helping the students decide what to keep and what to discard. During the fifth observation, Sylvia asked individual students about their choices for the accordion book assignment. She affirmed one student's choice to choose a book that would challenge him.

A broad range of students showed active participation in all five observations. During the first observation, all students were engaged in center time or with Sylvia in small reading groups during Reader's Workshop. Students participated in a variety of tasks all centered around literacy. Similarly during the second observation students were engaged in math rotations. Sylvia worked with small groups of students at her table, while other students engaged in centers or in independent work at their table.

During the third observation each student had a part in multiple Reader's Theater scripts. All students were engaged in following along with the script and practicing reading with fluency. Likewise, during the fourth observation the students were engaged in small groups to rehearse their reader's theater. Some students read multiple parts to cover for absent classmates. The fifth observation provided evidence of a broad range of student participation through the active engagement of students in a math review game and later when Sylvia allowed students to participate in self-selected tasks according to several projects they needed to finish.

Sylvia's students showed evidence of being comfortable in the classroom in four of the observations. The second observation contained several instances of student cooperation. For example, students worked together in a variety of groupings during center time with no disagreements in spite of the fact many students had to share materials. During the third and

fourth observations students worked on Reader's Theater script and initiated multiple rehearsals of their script. Students also helped each other pronounce words and encouraged each other. Additionally, during the fourth observation students willingly asked classmates to check their work for accuracy and helped each other correct mistakes before turning in the assignment. During the fifth observation, students worked in groups to play a math review game. Students willingly allowed classmates to take turns and no arguments were observed.

Sylvia's efforts to create a collaborative learning experience were evident in all five observations. During the first observation students worked in teacher-assigned centers during Reader's Workshop. They were engaged in collaborative learning experiences for the purpose of supporting students in literacy. Some centers required students to work together to solve problems; other centers were designed to allow students to work side-by-side to meet a learning goal. During the second observation, Sylvia gave students the opportunity to engage in math stations similar to the stations described in the first observation. Students collaborated to create symmetrical designs using small geometric shapes and later worked in collaborative groups on a Zoocenomics project. All students worked well together with the exception of one group who struggled with conflict. Sylvia encouraged the group not to argue.

During the third and fourth observations, students worked collaboratively to rehearse a Reader's Theater by supporting each other with word pronunciation. Each group self-started rehearsals. Students also worked together to fill in for missing classmates during the fourth observation. A math review game during the fifth observation provided an opportunity for students to collaborate in support of all students meeting math goals.

During all five observations students showed evidence of being cooperative with routines and rituals in Sylvia's classroom. During the first and second observations, students

immediately began the transition between rotations when Sylvia rang a bell, requiring no verbal prompting from her. All transitions took less than two minutes. Additionally, students easily accessed materials as needed.

During the third observation students transitioned from recess, quietly entered the classroom without verbal prompt from Sylvia and immediately began working on assigned tasks. During the fourth observation Sylvia used the chime again while students work on the Zoocenomics unit of study. Students immediately stopped what they were doing and turned their attention to the teacher. While reviewing math concepts on the carpet during the fifth observation, students are observed placing their slates on their heads so Sylvia could check their answers. This procedure occurred without prompting from Sylvia. Table 7 is a representation of Sylvia's efforts to create a healthy learning environment.

Table 7

Sylvia's Learning Environment

Theme	Code	Formulated Meaning	Context	Frequency
Implicit beliefs about diversity	Learning Environment	Teacher and student respect	"I'm going to let you self-monitor" (Observation Two, Sylvia).	5 out of 5 observations
		Teacher's personal interest in students	"So you're going to pick a book that is more challenging? Good idea" (Observation Five, Sylvia)	3 out of 5 observations
		Student Engagement	All students engaged in learning centers during Reader's Workshop and Math Workshop.	5 out of 5 observations
		Student comfort	Students willingly taking turns during a math review game.	5 out of 5 observations
		Collaborative Environment	Small groups of students working on Zoocenomics	5 out of 5 observations
		Routines and Rituals	Students transition at the chime of a bell during station rotations.	5 out of 5 observations

Learning goals. Five criteria were examined within the category of learning goals. The evidence of these five criteria from the observations provided insight into how Sylvia identifies learning goals and essential understandings. All five of the criteria were observed in at least

three of the five observations establishing a significant frequency of the occurrence. The criteria were as follows:

> There is clarity about what students should know, understand and be able to do.
> Students examine big ideas, essential question, concepts and principles.
> Students explore knowledge (e.g. facts, terms) and skills in context (e.g. of ideas, of real-world problems.
> The teacher connects learning goals to students' interests and experiences.
> All students are working toward a common learning goal.

Sylvia provided clarity about what her students should know, understand and be able to do during all five observations. During the first observation Sylvia gave students clear direction during small group instruction regarding words they are to focus on during their time together. At the end of the small group session Sylvia shares with the group what the focus will be for their next small group meeting. The second observation began with Sylvia explaining her expectations and learning goals for the math station rotations. Sylvia worked with three math groups. During each rotation she shared with the group the focus of the learning. While the broad goal is a better understanding of geometric shapes, each group has different outcomes based on readiness. Later during the second observation, Sylvia reminded the whole class the purpose and expectations for the Zoocenomics unit.

The expectations for the third observation was to increase fluency within the context of the Reader's Theater script they were preparing. At the beginning of the fourth observation Sylvia challenged her students to evaluate the performance of other students performing a Reader's Theater seen on a Youtube video. During the fifth observation Sylvia explained the rules and the purpose of the math review game before students began. Later in the observation she stated the purpose and expectations of the accordion book project and provided exemplars for students to review.

Sylvia's efforts to support students as they examine big ideas, essential question, concepts and principles were evident in three observations. During the first observation, Sylvia asked students to state the big idea related to the reading they were discussing. The student's response was inaudible, but it was clear that Sylvia's intention was to challenge the students in the group to think broadly.

The Zoocenomics unit provided opportunity for the exploration of big ideas and concepts during the second and fifth observation. Sylvia made intentional efforts to connect the work students were doing to create a zoo to their own personal experience of visiting the local zoo. She posed questions which caused students to consider multiple aspects of owning and maintaining a zoo.

Students were observed exploring knowledge and skills in context during four out of the five observations. During the second and fifth observations, Sylvia engaged the students in thinking like a zoologist and encouraged them to even use the language of an actual zoo owner. Students worked in small groups to design, fund and maintain a fictitious zoo. During the third and fourth observations, Sylvia encouraged students to use their reading fluency for a "real-world" performance of a Reader's Theater for their Mother's Day tea. Sylvia referred to the practice time as a rehearsal, further validating the legitimacy of the students' performance.

Sylvia's efforts to connect learning goals to students' interests and experiences were evident in three of the observations. As a resource for inspiration and to give context to their Zoocenomics project, during the second and fifth observations Sylvia reminded students of their recent trip to the local zoo. During the fourth observation Sylvia asked students to evaluate other students performing the Reader's Theater as them. During the fifth observation Sylvia assigned

the task of creating an accordion book. She told them this decision was in response to the good feedback students had given to her.

Students worked toward a common learning goal during all five observations in Sylvia's classroom. The learning goals for each of the five observations are discussed above in the learning goals section. Sylvia clearly stated each learning goal at the beginning of the lesson. She reminded students of the purpose of their learning and activities periodically during the observations. Table 8 represents Sylvia's efforts in clearly state the learning goals.

Table 8

Sylvia's learning goals

Theme	Code	Formulated Meaning	Context	Frequency
Identifying learning goals and essential understandings	Communication to students	Clarity	"I want you to be thinking about what they do well and what they could do better and what you could do better" (Observation Four, Sylvia).	5 out of 5 observations
		Big Ideas	"What was the big idea?" (Observation One, Sylvia) Question posed during small reading group.	5 out of 5 observations
		Exploring knowledge and skills	"This would be called a rehearsal" (Observation Three, Sylvia) Comment made in reference to students' practice for the Reader's Theater	4 out of 5 observations
		Connections to students' interest	"You are going to do another accordion book because of the good feedback I got from the last one" (Observation Five, Sylvia).	3 out of 5 observations

Ongoing Assessment. Six criteria were examined within the category of ongoing assessment. The evidence of these six criteria from the observations will provide insight into how Sylvia approached grading and assessment. Three of the criteria were observed in at least three of the five observations establishing a significant frequency of the occurrence. The three criteria were as follows:

> On-going/formative assessment of student readiness, interest and learning profile has informed the teacher's instructional planning.
> The teacher uses assessment to gauge what students have learned.
> Significant class time is spent on inquiry and reflection.

Sylvia used pre-assessments of student readiness, interest and learning profile to gauge students' entry into the unit or lesson during the first two observations. This is not to say pre-assessments did not inform Sylvia's decisions; however, it was not evident during the observation. While Sylvia used multiple assessments during the observation, these assessments were not for the same learning goal. Some observations covered multiple content areas (i.e. Math and Social Studies) and Sylvia assessed each learning goal; however there was no evidence of multiple assessments of one learning goal during any of the observations.

Sylvia used formative assessments during all five observations. First of all, Sylvia wrote anecdotal notes during multiple rounds of Guided Reading as students read aloud. As students read aloud, Sylvia is writing notes to monitor and track the student's progress. During the second observation, Sylvia administered a test to monitor students' progress in spelling words based on their readiness level. Later, during the observation, Sylvia assesses students' ability to identify two-dimensional and three-dimensional shapes during small group instruction in math workshop.

During the Reader's Theater rehearsal, Sylvia listened for fluency in student's reading both in the whole class rehearsal and when students worked in small groups. At the end of the

fourth observation Sylvia used a sentence with multiple mistakes, projected on the SmartBoard to assess students understanding of basic grammar and punctuation conventions. Sylvia asked students to correct the mistakes. Then she collected the papers and used them as an indicator of the students' progress. The fifth observation began with Sylvia's students using marker board slates to solve problems. She prompted the students to show her answers and checked each slate for accuracy. Later during the observation, Sylvia administered a district common assessment used to inform teachers of a student's progress in reading fluency and comprehension.

Sylvia provided evidence of using assessments to gauge what students have learned during three observations. She asked her students comprehension questions during the first and fifth observations. During the first observation the comprehension questions were in the context of small group instruction. Sylvia monitored students' understanding of the text they were assigned to read. During the fifth observation the comprehension Sylvia asked questions of three different students during the administration of the district common assessment. Again, the purpose was to assess the degree to which students understood the information they read.

During the second observation, Sylvia used the spelling assessment to gauge whether students had mastery of the homophones they were to spell. Sylvia was also able to gauge student learning in math through use of the slates during the fifth observation as described above.

Sylvia provided opportunity for students to reflect on their personal performance during three of the observations. After listening to the students' rehearsal of the Reader's Theater as a whole class, Sylvia explained the importance of sentence fluency and provided an opportunity for students to reflect their progress in respect of fluency. She then gave students the opportunity to brainstorm ways to improve fluency for the Reader's Theater performance. During the fourth observation, students watched a video clip of a performance of a Reader's Theater. Sylvia

encouraged students to consider how their performance and stage presence would compare to that of the students they watched in the video. After giving students work time during the fifth observation, Sylvia brought students back to the carpet to allow them time to reflect on their use of time. Table 9 represents Sylvia's use on-going and formative of assessments to inform her instructional planning.

Table 9

Sylvia's ongoing assessment

Theme	Code	Formulated Meaning	Context	Frequency
Approach to grading and assessment	Monitoring student progress	Formative assessments	Anecdotal notes taken while students read aloud during Guided Reading groups. Use of slates to monitor students accuracy in solving math problems.	3 out of 5 observations
		Use of assessments to gauge growth	Use of slates during math lesson to monitor students' learning in math. Comprehension questions to monitor student learning in reading.	3 out of 5 observations
		Class time to reflect.	"Show me with your thumb if you worked hard during that work time…" "What do you want to do better?" (Observation Five, Sylvia).	3 out of 5 observations

Adjustment for student needs. Seven criteria were examined within the category of adjustment for student needs. The evidence of these seven criteria from the observations will provide insight into how Sylvia adjusts instruction to address students' needs. Four of the criteria were observed in at least three of the five observations establishing a significant frequency of the occurrence. The four criteria were as follows:

> The lesson makes appropriate provisions for a range of student needs.
> The teacher proactively planned for differing specific student readiness interest and learning profile needs.
> There is differentiation of content.
> The teacher uses instructional strategies that are appropriate to the lesson goals.

Evidence showed that Sylvia made appropriate provisions for a range of student needs during all five of the observations. During the first observation, Sylvia met with three different reading groups, each with a different book to discuss based on their readiness level in reading; therefore, each group had different discussion questions. The second observation showed Sylvia applying similar approaches to her work with math groups. The first group used to manipulatives to help them identify geometric shapes, the second group used manipulatives to consider how many of one shape would fit into another shape, and the third group learned how to draw three-dimensional geometric shapes.

During third and fourth observations, students participated in a Reader's Theater. The parts were of varied in length and complexity allowing for a wide range of students to participate. The accordion books assigned during the fifth lesson allowed students to select a book at a wide range of reading levels giving them the opportunity find an appropriate fit for them. Table 10 represents Sylvia's efforts to make adjustments for students needs.

Table 10

Sylvia's adjustment for student needs

Theme	Code	Formulated Meaning	Context	Frequency
Addressing student needs	Adjusting instruction	Provisions for range of needs	Varying levels of text during Reader's Theater. Varying levels of text for accordion book assignment.	5 out of 5 observations

The lessons and tasks described above all demonstrate Sylvia's proactive planning for differing student readiness, interest and learning profile needs. This criterion will be examined further during the post-observation interview.

Sylvia's differentiation of content was evident in four of the observations. During her work with small groups during Reader's Workshop in the first observation and during Math Workshop during the second observation, Sylvia provided evidence of differentiation of content. While the learning goal remained the same, the content was changed to suit the students' readiness levels. As mentioned above, the Reader's Theater Scripts rehearsed during lessons three and four provided different content in that the reading complexity varied according to the part that students were assigned.

Differentiation of process was evident during the second and fifth observation and differentiation of product was evident during the second observation. While there was high student engagement it was not clear that students were engaged as a result of a broad range of strategies.

Tasks. Six criteria were examined within the category of ongoing assessment. The evidence of these six criteria from the observations will provide insight into how Sylvia adjusts instruction to address student needs. Five of the criteria were observed in at least three of the five observations establishing a significant frequency of the occurrence. The five criteria were as follows:

> Tasks require high levels of thinking
> Tasks are appealing from a student perspective
> Tasks represent a wise use of student's time and allow each student to work efficiently.
> Tasks are aligned with common learning goals and with one another.
> Tasks provide appropriate challenge and scaffolding in anticipation of individual student needs.

Four of the observations in Sylvia's classroom contained tasks that require a high level of thinking. During the first observation Sylvia asked a small group during Guided Reading to infer what a character from the story was thinking. Similarly during her work with a small group during math in the second observation, Sylvia posed the question "why do you think that" encouraging the student to engage in some meta-cognition. Additionally in the second observation, Sylvia challenged students to create symmetrical designs using a variety of small shapes.

During the fourth observation Sylvia asked students to evaluate the performance of another group of students performing a Reader's Theater and consider strengths and weaknesses in their own performance. Sylvia provided an informational text on sea turtles to the students during the fifth observation and asked them to infer why the sea turtle would bury her eggs in a hole. Table 11 represents Sylvia's efforts to design tasks that support a variety of student needs.

Table 11

Sylvia's tasks

Theme	Code	Formulated Meaning	Context	Frequency
Addressing Student Needs	Tasks	High levels of thinking	"What do you think that person was thinking?" "Why do you think that?" (Observation One, Sylvia).	5 out of 5 observations
		Appealing to Students	Students "vote with their feet" to explore the skill of sharing their opinion in preparation for opinion writing.	5 out of 5 observations
		Wise use of time	Rotations in Math Workshop and Reader's Workshop. "I don't want to waste your time, does anyone need another task?" (Observation Four, Sylvia).	5 out of 5 observations

The degree to which tasks are appealing from a student perspective is based on observation of students' reaction to instruction and students' engagement during the activity. Evidence was observed during all five sessions that Sylvia designed tasks that were appealing from a student perspective. During the first observation, students participated in centers and showed excitement about the announcement of a "hand-talker" assignment related to one of the literacy stations. During math rotations in the second observation, students interacted with an

online math game using the SmartBoard. The game reinforced the geometric concepts discussed during small group instruction. Students who were working in small groups with Sylvia had the opportunity to hold geometric shapes as they discussed attributes and made analogies to things they see in the real world (i.e. a triangular prism is like an ice-cream cone when turned upside down). At the end of the second observation, students engaged in decision making discussions with their groups about the zoo they are creating.

Students were eager and willing to participate in the Reader's Theater rehearsals for the Mother's Day tea during the third and fourth observations. Sylvia announced the return of the accordion book assignment during the fifth observation explaining that her rationale was because of the positive feedback she received about the project.

The tasks designed by Sylvia during all five observations made wise use of students' time and allowed each student to work efficiently. The workshop model used for literacy instruction during the first observation and again for the numeracy instruction during the second observation allowed students to work on tasks that were designed at their readiness level. The group project on zoocenomics observed during the second and fifth sessions allowed groups of students to work at their own pace. As a group finished one task they were given another task so as to allow all groups to continue to engage in meaningful work. Sylvia encouraged students to make good use of their time while rehearsing for the Reader's Theater during the third and fourth observation. Also, students demonstrated knowledge and compliance for, the procedure for self-starting additional rehearsals of the script.

Sylvia's efforts to align all tasks to a common learning goal were evident in each observation. Table 8 addresses the learning goals for each lesson. Tasks during all five observations provided appropriate challenge and scaffolding in anticipation of student needs.

The Reader's Workshop during the first observation and Math Workshop during the second observation provided students with the opportunity to receive instruction designed specifically for their readiness levels. The Reader's Theater observed during the third and fourth observations allowed for students at different reading levels to find a part that they could manage. The accordion books observed in the final observation allowed for students to select a resource that would be appropriate to their reading level.

Sylvia's efforts to create tasks that approximate the thinking and doing of people in the real world were observed during the second and fifth observation. The Zoocenomics unit provided student with the opportunity to assume the thinking of a zoologist and zoo keeper as well as a business entrepreneur.

Groupings and management. Six criteria were examined within the category of groupings and management. The evidence of these six criteria from the observations will provide insight into what Sylvia believes about diversity in the classroom. Three of the six of the criteria were observed in at least three of the five observations establishing a significant frequency of the occurrence. The three criteria were as follows:

> Students work in a variety of groups within a relatively short time span.
> The teacher uses space, time and materials flexibly to address varied learning needs.
> The teacher and student share responsibility for making the classroom work smoothly.

Sylvia used a variety of groupings during each of the five observations. During the first observation students engaged in whole class discussion during the mini-lesson, small groups during Guided Reading sessions and partner work and independent work during the literacy stations. The same process is true for Math Workshop during the second observation. It is important to note that students who were together during Guided Reading were not always

together during Guided Math. During the third and fourth observations students moved from whole group instruction to small groups to rehearse various Reader's Theater scripts.

During each of the observations a majority of students were seated on exercise balls to accommodate the active nature of most second grade students. This serves as an example of Sylvia's use of space, time and materials to address varied learning needs. She allowed students who preferred a normal chair to have one. Another example of Sylvia's use of space, time and materials to address varied learning needs was during times when students were working in small groups (i.e. Reader's Theater, Zoocenomics). Sylvia allowed them to sit anywhere in the classroom that would help them focus.

Sylvia shared the responsibility of making her classroom run smoothly with her students. Evidence of this was observed during all five sessions. Students took responsibility to clean up after station time during the first and second observations, for storing and keeping track of their Reader's Theater scripts during the third and fourth observation, and for managing supplies related to accordion book during the fifth observation. Also, Sylvia had classroom helpers assigned to various tasks and utilizes them to help the classroom run smoothly.

The timing of the observations made observation of some criteria difficult. While students were not confused about how to work as an individual or a group, there were no posted signs with expectations or explicit expectations stated, although Sylvia did remind the students about behaviors that make math games fun during the fourth observation.

Sylvia acted as facilitator or coach several times during the second and fourth observation, however, the frequency of observations prohibited that criterion from being determined as significant.

Artifacts. Upon request, during the initial interview Sylvia provided artifacts that might provide further insight into Sylvia's efforts to differentiate instruction for her students. The artifacts include:

Anecdotal records from Guided Reading for six different students
Rubric for second grade writing
Errands for Goods and Services worksheet
Errand cards template used for class activity
A math worksheet with varying levels of complexity
Weekly lesson plans for the week of April 20
Transitional guided reading plan for the week of April 20

Upon examining the anecdotal records for guided reading, it becomes clear that Sylvia provides specific support based on the needs of the student. Some students have multiple pages of anecdotal notes, and in reviewing the recorded prompts it becomes clear that these students are at an emergent stage of reading based on notes such as "trouble with middle sounds" dated September 2. Other students have few anecdotal records and have notes such as "very fluent and expressive" dated August, 28. The anecdotal records serve as evidence of the academic diversity in Sylvia's classroom and her scaffolding of emergent readers. The Transitional Guided Reading Plan provides further insight into the specific planning that Sylvia does while in preparation for meeting with her guided reading groups.

The remaining artifacts provide no clear insight into how Sylvia differentiates her classroom. Inferences can be made regarding the math worksheets and economics resources, however, from the resources provided it is not clear how they are used for instruction. The weekly lesson plan provided is a template used each week with notes filled in on specific lesson for that week (i.e. Math lesson 11, lesson 12). Specific strategies for differentiation are not noted on the weekly lesson plan.

Within-Case Analysis: Ruth

Ruth, a white female, is in her sixth year of teaching all of which have been at School B. She taught fourth grade her first year of teaching and has taught second grade for the past five years. She has twenty students enrolled in her classroom.

Upon entering her room, an observer would notice student backpacks hanging on the east wall of the classroom. Proceeding along the east wall you would find storage cabinets with a small sink and water fountain. Along the north wall was located a small teacher desk at which the student teacher would sit and a kidney-shaped table used for small group instruction and conferencing during writing. The SmartBoard and small easel were located in the northwest corner of the room. Additional storage space lined the majority of the west wall. A large dry-erase marker board used for instruction, reminders, and daily notes to students covered the south wall. Anchor charts were hung on each wall. A word wall was hung on the cabinets above the sink located in the northeast part of the classroom.

Seven groups of student desks filled the center of the room. Each group was comprised of four student desks. Students were seated in chairs. Inside the desks, students kept school supplies such as text books, pencils, scissors, and crayons, etc. A small rug was located beneath the Smartboard in the northwest corner of the classroom. Students were seated on the rug for whole-group instruction. Halogen ceiling lights were used; however, Ruth turned off the lights frequently and depended on the natural lighting from the windows located in the northwest and northeast part of the room.

Description of observations. A total of five observations were conducted in Ruth's classroom. The first scheduled observation occurred on Tuesday, April 28 for the duration of one hour and 24 minutes. Students were participating in a reading strategies lesson and book

clubs. The remaining observations of Ruth were short notice observations. Ruth had a student teacher, making unannounced observations problematic. Family illness caused some of the short-notice observations to be rescheduled, which is the reason that three of the five observations occurred on the same day of the week.

The second observation occurred on Thursday, April 30, for the duration of one hour and six minutes. The students were participating in Writer's Workshop and Social Studies. The third observation occurred on Friday, May 1, for the duration of one hour and three minutes, and the students were participating in Math Workshop and Social Studies during this observation. The fourth observation occurred on Thursday, May 7, for the duration of 57 minutes. The students participated in a reading strategies lesson and book clubs. The final observation occurred on Thursday, May 14, for the duration of 53 minutes. Students participated in Math Workshop and Writer's Workshop during this final observation. Table 12 shows the time, duration and content for each observation of Ruth's classroom.

Table 12

Observation schedule for the case study of Ruth.

Ruth	Tuesday, April 28*	1 hr. 24 min.	Reading Strategies Lesson and Book Clubs
	Thursday, April 30	1 hr. 6 min.	Writing and Social Studies
	Friday, May 1	1 hr. 3 min.	Math and Social Studies
	Thursday, May 7	57 min.	Reading Strategies Lesson and Book Clubs
	Thursday, May 14	53 min.	Math Workshop and Writers' Workshop

The first observation was a scheduled observation on Tuesday, April 28, for the duration of one hour and 24 minutes. According to the posted schedule students were engaged in a reading strategies lesson and book clubs. This observation was at the beginning of the instructional day. Ruth began by allowing students to pair with a classmate of their choosing.

When in pairs, students were given a prompt and each partner took a turn sharing their answer. The first prompt was to give a classmate a compliment using an adjective. Ruth called on students to report to the class the adjective they used when sharing with their partner.

Students were invited to the carpet where Ruth provided a mini-lesson on main idea. This lesson was a review of a previously discussed topic. Ruth provided a mental model of an umbrella when reviewing the concept of main idea. The umbrella represented the main idea and the raindrops represented the supporting details. Some students quickly remembered the mental model from a previous lesson. After the mini-lesson, students returned to their seat to work independently on reading a short story, identifying the main idea and supporting details and then transferring the main idea and supporting details to a cut out umbrella and rain drops. Ruth requested that students turn in the umbrella and rain drops so she can grade them.

Once a majority of students finished the assigned task, Ruth announced that she would be starting book clubs. Students were placed in separate groups according to reading level. Ruth met with a small group of students on the carpet. She provided a review of consonant blends and reminded students of the strategy of chunking when they struggled with decoding. Each student in the small group had the opportunity to identify consonant blends as Ruth listened for accuracy. While not with Ruth, the students had the opportunity to continue reading a book of their choice or to continue reading the assigned book for their book club meeting.

The second observation was scheduled for Thursday, April 30, for the duration of one hour and 6 min. According to the schedule the students were to be participating in Writer's Workshop and Social Studies. During Writer's Workshop, students completed the end of year writing prompt. This writing prompt is a district-wide common assessment for second grade students. A beginning of year and middle of year writing prompt are used in concert with the

end of year writing prompt to measure students' growth in writing over the course of the year. The district's curriculum department has developed a rubric that is used to score all student responses to the writing prompt.

Ruth began with whole-class instruction on the carpet. She explained that the topic for the end of year writing prompt was "A Special Place You Have Been." Ruth showed students several pictures on the Smartboard of special places they might have been. Students were allowed to turn and talk to a partner about the special place they were thinking about for the topic of their writing prompt. Ruth explained to the students that she was not allowed to help them on this project. She reminded them of the various resources available to them (i.e. dictionary, word wall). Before returning to their seats, students whispered their topic to Ruth. During the writing prompt, Ruth quietly monitored students' progress. As students finished, they were allowed to read quietly until their classmates finished.

The social studies lesson was a continuation of a study of the Caribbean. Students returned to the carpet where Ruth provided them with a copy of an informational text about the Caribbean. Individual students, groups of students, and Ruth took turns reading the text. Ruth asked the students to make predictions and personal connections at various points during the reading. Students were instructed to add the information discussed to their Caribbean brochure. Ruth returned students to their seats with their copy of the informational text for independent work on their brochure.

The third observation was scheduled for Friday, May 1, for the duration of one hour and three minutes. According to the posted schedule, students were to be engaged in math and social studies. During math, students worked on telling time. Ruth used a strategy called StandUp-HandUp-PairUp to allow students to find a partner. Once students found a partner, Ruth

instructed one partner to show a time on their clock and the other partner to write the time on their slate. Ruth instructed all students to show her the time on their clock and the time written on the slate. This check was used as a formative assessment of students' understanding of time. After multiple rounds of StandUp-HandUp-PairUp, the students returned to their seats to complete a worksheet on the same topic. Ruth invited the "red group" to join her at the table if they chose. Her support of the students in the red group was mainly focused on reading words in the directions and supporting their ability to focus on the task at hand.

During the social studies lesson, Ruth returned to the topic of the Caribbean. An informational text was provided and the focus was on the animals of the Caribbean. Students listened to Caribbean music while the teacher discussed the informational text. All students used the same resource for their study. Students were again encouraged to make text-to-text connections and text-to-self connections throughout the discussion. Ruth sent the students back to their seats to add more information to their Caribbean brochure. Early finishers were encouraged to add to their second grade memory book.

The fourth observation was scheduled for Thursday, May 7, for the duration of 57 minutes. According to the posted schedule the students were to be engaged in reading strategies lessons and book clubs. The observation began at the start of the instructional day. One student was selected to lead the class in the class motto. All students participated. Ruth instructed students to find a partner and asked partners to reconnect to content from the learning of the previous day. Students were invited to walk to the carpet where Ruth provided whole-class instruction on opinion writing. The acronym OREO was used to help students remember all the components of opinion writing. Opinion, reason, example, and opinion were the general outline for students to use in their opinion writing pieces. Ruth provided an oral example of what each

of those elements might sound like before inviting the students to participate in an activity called "vote with your feet" to help them identify their own opinions.

Students began on the carpet. Ruth gave students two choices and indicated one side of the room to represent each choice. After she stated the choices, students moved to the side of the room that represented the choice they would make. Students discussed why they would make that choice and Ruth asked a few students to report out what they heard their partner say. After two rounds of vote with your feet, students returned to their seats to work independently on their opinion writing. Ruth invited selected students to the back table with her to support them in finishing the assignment. During the independent writing time, students were given a brain break. Each student was asked to find a partner. One partner would do some actions while the other partner mimicked the actions. After the brain break students returned to their seats to continue writing their opinion piece.

The final observation of Ruth occurred on Thursday, May 14, for the duration of 53 minutes. According to the posted schedule students were to be engaged in Math Workshop. The topic for Math Workshop was two-part word problems. Ruth used a tropical theme for the word problems due to the students' recent study of the Caribbean. The class began with whole group instruction on the carpet. Ruth shared a two-part word problem that she created. The lesson began with a review of the steps to solving a two part word problem. Students provided input on how to solve the problem created by Ruth. Several students made suggestions and some students were invited to write on the Smartboard. A second problem was also shared by Ruth and the students worked as a whole class to solve the problem. Students were given the opportunity to work independently to create their own two-part word problems. Each student was required to

create the problem and show the solution to the problem before illustrating the problem on their worksheets.

Interviews. Two interviews were conducted with Ruth. The initial interview occurred on April 24, 2015, at 12:21 p.m. in a conference room at School A. The interview followed a structured protocol (see Appendix A). The post-observation interview occurred on May 18 at 3:40 in the afternoon in Ruth's classroom. This interview followed a semi-structured interview protocol (see Appendix F) to allow for probing on specific lessons observed. This interview protocol was developed after careful analysis of all five observations of Ruth's classroom. Any repetition of questions from the first interview was intentional in an attempt to measure growth or change of Ruth's perception of differentiation during the course of the study. Specific questions were targeted at areas that were not evident during the five observations.

During the initial interview, Ruth revealed that the only formal training she has received in differentiation was during her graduate program. When asked about specific resources she has used to learn about differentiation she responded:

> Well, the first thing that comes to mind is just the multiple learning styles approach. Kind of going beyond visual, auditory, kinesthetic, musical. Also, what sticks out is having the teacher challenge herself to use different learning styles. And that appeals to me, is high interest to me, because that's how I like to teach. (Ruth Initial Interview, April 2015).

There was no mention of resources by prolific authors in the area of differentiation such as Tomlinson, Wormeli, or Imbeau, nor any of the authors cited in the literature review above. Ruth has also not attended the training made available through the district professional learning department.

Ruth's definition of differentiation reflects her training and the resources she has cited as important to her professional development. Ruth sees differentiation through the lens of multiple

intelligences and seeks to provide a variety of experiences for her students. She defines differentiation as follows:

> Um. I would say that differentiation is doing what works best for the student to meet their learning goal. So, considering the three, or beyond the three learning styles, and then just using your teacher experience and professional knowledge, combined with looking at the multiple learning styles to kind of create a creative approach to meeting that goal. So, I kind of see it as a triangle experience…plus the learning styles and the creativity. (Ruth Initial Interview, April 2015).

Ruth was asked to reflect on her decision making regarding when to differentiate instruction during the initial interview and again during the post-observation interview. The question was framed very broadly during the initial interview and during the post-observation interview, Ruth was asked to narrow her focus to the four weeks during the observation window. In both interviews Ruth mentioned that some decisions to differentiate are planned and some come from "an opportune moment" (Ruth Initial Interview, April, 2015). During the initial interview Ruth mentioned thinking about "students who aren't getting it, how can I think outside the box to think, ok, how can I teach this another way?" but during the post-observation interview she mentioned thinking about if a lesson "will work with my high, medium, and low learners" (Ruth Post-observation Interview, May, 2015). While the difference was subtle, it demonstrates that Ruth is aware of the different readiness levels of her students.

Ruth was asked about her decisions to offer choice during both interviews. In both responses she provided examples which are incongruent with practices promoted in a differentiated classroom. Her offerings of choice are more serendipitous occurrences than they were genuine offers of choice "because I happen to have two colors and [students] can choose" (Post-Observation Interview, May, 2015). She also mentioned limiting or controlling choice during both interviews.

When asked about differentiating by readiness, Ruth cited her work in Reader's Workshop during both interviews. In the initial interview she mentioned a combination of pre-assessment, formative assessment, and anecdotal observation to support the various readiness levels of her students. During the post-observation interview she returned to Reader's Workshop by saying that she can tell that different reading groups are "ready for a different type of discussion versus the cognitive level of my lower-level reading groups" (Ruth, Post-Observation Interview, May 2015). Reader's Workshop provides the structure that supports Ruth's differentiation by readiness.

Ruth's response to what makes differentiation hard distinctly differs from her initial interview to her post-observation interview. During the initial interview her response was focused on the time it takes to differentiate; both time to teach content and time to plan the content. Her response during the post-observation interview focused on students' varying maturity levels and the challenge of maintaining rigor at the end of the school year. Conversely, Ruth's responses to what makes differentiation easy were similar. During both interviews, she cited that differentiation came naturally to her and makes learning fun. During the post-observation interview she added that it improved the students' engagement and that it was a classroom management technique which was necessary at the end of the year. Higher engagement was cited by Ruth in both interviews as something she noticed in her students as a result of her differentiation. She added during the post-observation interview that this will lead to "a higher score, whether it was a formal or an informal assessment" (Ruth Post-observation Interview, May 2015).

Ruth was pleased with her differentiation of instruction during the course of the four week observation. She cited the Caribbean unit as a highlight of her differentiation, noting that

students were able to use various learning modalities as they interacted with the content and the non-fiction text. When asked specifically about the process for identifying the learning goals for the Caribbean unit, Ruth mentioned referring to the grade-level expectations (GLEs) for second grade and determining which writing GLEs needed to be reviewed. The context of the Caribbean was "a personal choice…the weather was getting warmer and [Ruth] wanted to visit the Caribbean" (Ruth, Post-observation Interview, May 2015). In planning for the unit Ruth carefully considered the pairings of students. Pairs were made based on homogenous readiness levels. She also mentioned considering the level of text the students would encounter. "When I gave student specific animals in the Caribbean to research, there were some websites that had more intense text, and so I gave that to my student who had higher reading levels" (Ruth, Post-observation Interview, May 2015). Ruth incorporated student interest through the animals she assigned to students. She explained that she "thought about what students know about which animals" (Ruth Post-observation Interview, May 2015). When asked how students might have reacted if differentiation were not a part of the Caribbean unit, Ruth replied,

> I think they would have acted out more, or just zoned out more during the lesson. So, I don't think they would have been active listeners, I don't think they would have been…have a mastery learning of the content material. And I think that if I had not differentiated, there would be less peer interaction and the students would be more bored and then they would miss out on an opportunity for collaboration. And, that's something (the district) wants us to work on. (Ruth, Post-observation Interview, May 2015).

Ruth indicated that her pre-assessment for the Caribbean unit was not a paper-pencil assessment rather a composite of assessments she had given throughout the year. She identified that differentiation was critical to the success of the Caribbean unit. While her initial response did not give much credence to her efforts to differentiate, upon further probing it became evident that during the planning stages there was much consideration given to differentiation.

When asked about growth mindset, Ruth explained that she was familiar with the concept but not an expert. After providing an explanation of the concept, Ruth affirmed that her teaching philosophy aligns with a growth mindset. She adds, "I'm always encouraging students that they will be able to do better in one area. So, that's just the way that I try to help them think about themselves" (Ruth Post-observation Interview, May 2015). Ruth did admit to believing that not every student in her classroom will master everything, but she also believes that every student will make progress toward the learning goal. When asked how a growth mindset impacts her ability to differentiate, Ruth created a mental model involving GLEs, growth mindset, and differentiation.

> I guess you could say that the growth mindset and the GLE are kind of the what, sort of; I guess the GLE is the what, and then the growth mindset and differentiation are the how. That's how I'm going to teach [the learning goal]. (Ruth Post-observation, May 2015).

Ruth believes that diversity is necessary for her students to be well-rounded, empathetic citizens. Through her response, it was evident that she was thinking about ethnic diversity as evidenced by her desire to have a "mixture of colors, which really isn't present at (School B) very much." When asked specifically asked about how academic diversity enhances her classroom, Ruth simply stated that it does.

According to Ruth, the attitudes and characteristics of a teacher who differentiates instruction are very similar. The teacher should be "willing and flexible, eager and passionate, have a drive to succeed, not set in their ways and have a warm personality toward students and colleagues." Her description of the beliefs of a teacher who differentiates was much more elaborate.

> Um, well…[Pause]…that's a big question. I guess you could just say that number one, every child can succeed. And then just by their disability or background, cause I know that every student in here, even my student at a preschool level…he can learn and he can succeed. And then the belief, too, that I am not the best and the belief that I always need

> to be learning…I think that just, that humbleness…I mean, I'm not trying to toot my own horn…just, that humbleness will keep me learning. And then, just a belief, too, that students are always changing and growing, so I have to be changing and growing. That's not always easy, but…we didn't really have technology so much when I was in school, and times have changed…so I have to learn with the students. (Ruth Post-observation, May 2015).

Ruth's view of the beliefs of a teacher who differentiates instruction further corroborates her views that a growth mindset is essential to the implementation of differentiated instruction.

Ruth indicated that she does not have a grading philosophy but considers how many grades she has already recorded and also uses both worksheets and projects. Her decisions are based on the GLE that is being covered and the ways she decides to assess it. She only assesses independent work and uses multiple assessments for each GLE.

As Ruth described her experiences in differentiation as a student she cited multiple times in high school when teachers would allow her to experience content in various ways through hands-on experiments in science or using visuals and graphics on the board. Ruth acknowledged that these experiences during her education have supported her willingness and efforts to differentiate for her students.

As a final question, Ruth was asked to share encouragement she would give to a new teacher about putting forth the effort to differentiate instruction. She would tell them "to make learning come alive…it's part of your responsibility, I think students…expect high engagement."

Learning environment. Seven criteria were examined within the category of learning environment. The observations related to these seven criteria will provide insight into Ruth's implicit beliefs about diversity within the classroom. Six of the criteria were observed in at least

three of the five observations, establishing a significant frequency of the occurrence. The six criteria were as follows:

The teacher and students respect one another.
The teacher shows interest in students as individuals.
There is active participation by a broad range of students.
Students seem comfortable with one another.
The teacher creates collaborative learning experiences.
There are routines and rituals in place that help students feel they belong and are valued.

The seventh criteria addressing an emphasis on student growth toward important goals versus on student competition was only observed in one of the five observations.

Evidence of Ruth's respect for her students and the students' respect for her was observed during all five observations. During the first observation, Ruth asked students to compliment another student by using adjectives reviewed the previous day. She also asked students to solve a problem by asking them to "be a leader." Following the partner activity about main idea described above students became upset while transitioning to the next activity. Ruth publicly requested that students apologize to each other. One student complied and Ruth publicly praised the student for "owning his behavior."

During the second observation, a student admitted to accidentally disconnecting a cord to the projector. Ruth thanked the student for his honesty and asked the class to give him a "whoosh," which is a class cheer that occurs frequently. Later in the lesson, a student who was filing papers in the student mailboxes showed a classmate the score of another student. Ruth requested that the student apologize and the student complied. While transitioning to the carpet a group of students were making noise. Ruth requested that the students return to their seats and "try again" and the students complied.

The third observation also provided some examples of respect among Ruth and her students. All students gave full attention to a classmate sharing about her recent trip to Colorado

and students were allowed to ask their classmate questions about the trip. Ruth shared a joke with the students at the end of the observation and the students all laughed. During the fourth observation, Ruth invited a student to lead the class in a review of the class motto. During the fifth observation, Ruth asked the students to give an "excellent cheer" and a "whoosh" to their classmates.

Ruth gave evidence of the interest she shows to her students as individuals. During the first observation Ruth encouraged students to solve a problem by being a leader and thanked an individual student for owning his own behavior. Ruth was also observed walking around checking on individual students during independent work on their main idea umbrella assignment. During the third observation Ruth invited a student to read a book she created about a recent family vacation. Ruth stood beside the student holding the book while the student read the information. Again, Ruth was observed checking on individual students during independent work on the end-of-year writing prompt.

During the fourth observation, Ruth invited students to the back table to work with her during independent work. Ruth provided support for students as they try to focus on the writing prompt. During the fifth observation, Ruth took time to read each students two-part math problem on the Caribbean.

Active participation from a broad range of students was evident in all five observations of Ruth's classroom. During the first observation all students were participating in partner work to complete a review of how to identify the main idea in a piece of writing, and all students were participating in the independent task of finishing the umbrella worksheet to represent main idea and supporting details. During the second observation all student were participating in the

independent task of writing their story for the end of year writing prompt, and a broad range of students participated in helping to clean up the classroom.

A math review game engaged all students in partner work during the third observation as well as the opportunity to ask a classmate questions after she shared about a family vacation to Colorado. During the fourth observation, multiple students shared ideas about their opinion writing during whole-class discussion and all students participated in a brain break. During the fifth observation multiple students were willing to answer questions about two-part word problems during a math mini-lesson and all students participated in a brain break called freeze dance. Brain breaks during observation four and observation five are used as a result of sustained concentration of the students.

Students' comfort with each other was evident in all five observations. During the first observation there were multiple times when students willingly participated in self-selected groups. Only one out of ten groups had to be separated during the station rotation for the main idea activity. Students gave compliments to classmates during the morning reconnect on adjectives and shared school supplies during independent work. During the second observation students were observed working together to clean up materials after the independent writing time. During the lesson three students gave full attention to a student sharing information about family vacation and multiple students asked questions of the student.

During the fourth observation students were again observed self-selecting partners for multiple activities. The first instance was for a morning reconnect and the second instance was for a brain break in which students had to mirror their partners' actions. During the fifth observation, students were given multiple opportunities to give their classmates a "cheer" and all students participated.

Ruth's efforts to create a collaborative learning environment were evident during all five observations. During the first observation, Ruth asked students to work together to settle a dispute. She also asked students to work in partners for a review of identifying the main idea and supporting details. Students were observed sharing supplies and Ruth encouraged students who finished the umbrella and raindrop assignment to help their classmates cut out the umbrella and raindrops.

During the third observation students were asked to partner with a classmate to review and reconnect to the learning from the previous day, and during the fourth observation students were asked to partner with a classmate to share ideas about the lesson. Collaborative learning experiences were not observed during the second and fifth observations.

Routines and rituals were evident in all five observations of Ruth's classroom. Students recite a class motto which is led by a student with the support of the teacher. The class motto was evident in the first and fourth observation. Also during the first observation students were observed gathering supplies for partner work without teacher prompting. Student knew where to find supplies. During the second observation, Ruth led the students in several chants using a call and response format. Students immediately stopped their activity at the sound of the chant. Ruth also directed students back to seats when they did not comply with expected routine for coming to the carpet.

During the third observations students are using the strategy "Showdown" without needing direction. Students write something on their hand-held marker board and show the teacher at the prompt "showdown". During the fourth and fifth observations, Ruth states "This is a no talking time. A what?" and students immediately reply "A no talking time."

The emphasis on student growth toward important goals versus on student competition was not evident during any of the observations in Ruth's classroom. Given the nature of this criterion, the researcher would have had to make inferences about Ruth's intentions. This criterion was addressed during the post-observation interview. Table 13 shows a representation of the learning environment in Ruth's classroom.

Table 13

Ruth's learning environment.

Theme	Code	Formulated Meaning	Context	Frequency
Implicit beliefs about diversity	Learning Environment	Teacher and student respect	"Look at your partner. What is one adjective you could use to compliment them?" (Ruth, Observation One, April 2015)	5 out of 5 observations
		Teacher's personal interest in students	"[Student] you are looking awesome, I'm going to give you a leadership ticket." (Ruth Observation Four, May 2015).	5 out of 5 observations
		Student Engagement	Multiple students willing to provide answers during whole-class discussion.	5 out of 5 observations
		Student comfort	Students self-selecting partners for learning activities.	5 out of 5 observations
		Collaborative Environment	"If you are an early finisher, you can help friends cut out." (Ruth Observation One, May 2015).	3 out of 5 observations
		Routines and Rituals	Call and response "This is a no talking time. A what?" "A no talking time." (Ruth Observation Four, May 2015)	5 out of 5 observations

Learning goals. Five criteria were examined within the category of learning goals. The evidence of these five criteria from the observations will provide insight into how Ruth identifies learning goals and essential understandings. Four of the criteria were observed in at least three of the five observations establishing a significant frequency of the occurrence. The four criteria were as follows:

> There is clarity about what students should know, understand, and be able to do.
> Students explore knowledge (e.g. facts, terms) and skills in context (e.g. of ideas, of real-world problems.
> The teacher connects learning goals to students' interests and experiences.
> All students are working toward a common learning goal.

The fifth criteria which addresses evidence of students' opportunities to examine big ideas, essential questions, concepts and/or principles was evident in one of the five lessons observed.

Evidence of clarity about what students should know, understand, and be able to do was noted in all five observations. During the first observation Ruth created a visual model using an umbrella to establish the learning goal of identifying the main idea. This visual model was presented at the beginning of a whole-group mini lesson which precedes small group instruction. During small group instruction Ruth established that her small group of students would be working on identifying consonant blends. During the second observation Ruth began the whole-class time with the announcement that they would be applying what they know about writing as they wrote about their favorite place.

Two lessons were observed during the third observation. The focus of the first lesson was for students to be able to tell time to the nearest five minutes. The focus of the second lesson was for students to be able to identify non-fiction information about the Caribbean.

During the fourth lesson students were told they would be using what they know about opinion writing to write a book recommendation for their classmates, and during the fifth observation students were told they would be creating two-part mathematical word problems.

Ruth's effort to provide students with opportunities to explore knowledge and skills in context is evident in all five observations. During the first observation Ruth evokes the idea of "good reader" when discussing main idea. Students are reminded that "good readers" look for the main idea, thereby providing a real-world context for the topic and discussion of main idea. During the second observation, Ruth instructs the students to use what they know about writing to share a real-world personal experience about a place they have been.

During the third observation, students are engaged in research using non-fiction and during the fourth observation Ruth requests that students use their skill in opinion writing to make book recommendations for their classmates. During the fifth lesson, Ruth instructs students to use what they know about math word problems to create and solve their own two-part word problem.

Ruth's efforts to connect learning goals to students' interests and experiences were evident in all five observations. During the first observation, Ruth reminded the students of what good readers do and that good readers listen for the main idea. She reminded the students that they are good readers. During the second observation, Ruth asked students to write about a special place they have been. No parameters were set restricting the type or nature of the place. Students were allowed to select any place that was of interest to them.

During the third observation, Ruth encouraged students to make text-to-self connections about the non-fiction text they were reading. The topic of the text is the Caribbean, but Ruth encourages the students to think about ways in which they identified with the text. The book

recommendation activity during the fourth observation provided students with the opportunity to connect opinion writing to their personal experience of reading fiction. Ruth used the tropic island theme for the word problems during the fifth lesson because of high student interest in the topic and her personal interest in the Caribbean.

All students were working toward the same learning goal during all five observations. Ruth's learning goals are discussed in Table 13 above. Ruth's efforts to allow students to examine big ideas, essential questions, concepts and/or principles were evident in only one observation. This criterion was addressed during the post-observation interview. Table 14 shows a representation of the clarity of what students should know, understand, and be able to do during the observations in Ruth's classroom.

Table 14

Ruth's learning goals

Theme	Code	Formulated Meaning	Context	Frequency
Identifying learning goals and essential understandings	Communication to students	Clarity	"Blends are something we are going to work on." (Ruth Observation One, April 2015)	5 out of 5 observations
		Exploring knowledge and skills	"You are going to write an opinion about your favorite book" (Ruth Observation Four, May 2015)	5 out of 5 observations
		Connections to students' interest	"You're going to write an opinion about your favorite book."	5 out of 5 observations

Ongoing Assessment. Six criteria were examined within the category of ongoing assessment. The evidence of these five criteria from the observations will provide insight into how Ruth approaches grading and assessment. Three of the criteria were observed in at least three of the five observations, establishing a significant frequency of the occurrence. The three criteria were as follows:

> On-going/formative assessment of student readiness, interest, and learning profile has informed the teacher's instructional planning.
> Multiple assessments (including self-assessment) and/or multiple forms of assessment are used during the lesson.
> The teacher uses assessment to gauge what students have learned.

Evidence of on-going, formative assessment of student readiness was observed during the first observation. Ruth used a worksheet from the partner activity on the main idea as a formative assessment as well as the individual assessment of the umbrella and raindrop cut outs. During the small group instruction, Ruth asks students to say blends as she points to them. This is an individual task that allows Ruth to hear each student say each consonant blend. During lesson three Ruth is able to use student clock and slates as a formative assessment of students' ability to tell time. Each student places a time on the clock or writes the time on his or her slate. Ruth is able to see each slate and clock to check students' accuracy. During the fifth observation, Ruth calls each student to the back table to individually check his or her two-part math word problem. Ruth checks for all components of the problem to be present and accuracy in the student's calculation. No evidence of formative assessments was observed during the second or fourth observation.

Ruth used multiple assessments and multiple forms of assessments during three out of the five observations. During the first observation, Ruth gauged where students were regarding their ability to identify main idea and supporting details using the sheet that students completed as

partners as well as the umbrella and raindrops on which students individually filled in their main idea. Students in her small group were given an oral assessment of their ability to identify consonant blends. During the second observation students were asked to conduct a self-assessment on their writing. During the fifth observation, Ruth used oral assessments of selected students and assessed the two-part word problem of each student. Multiple forms of assessment were not evident in the third or fourth observation.

Ruth used assessments to gauge what students learned during three of the five observations. During the first observation the students each wrote the main idea of a reading passage on an umbrella and the supporting details were written on raindrops. Students turned these in to Ruth and she used them as evidence that students understood how to identify main idea and supporting details. The second observation included the end-of-year writing prompt. This is a common assessment used across the district for all second grade students. The results of this writing prompt were used to inform Ruth of students' growth and deficits in writing. During the fifth observation, Ruth used the two-word math word problem as an indicator in students' proficiency in creating and solving word problems. Ruth's efforts to use assessments to gauge students' growth during the third and fourth observation were not evident.

Ruth's use of pre-assessment of student readiness, interest, and learning profile was not evident in any of the observations, but this is not to say that Ruth did not use this information to inform her decisions. Ruth's use of assessments to help students understand their achievement was evident during the first observation. The opportunity to spend class time on inquiry and reflection was evident during the second observation. Table 15 represents Ruth's efforts to use ongoing, formative assessments to inform instruction.

Table 15

Ruth's ongoing assessment

Theme	Code	Formulated Meaning	Context	Frequency
Approach to grading and assessment	Monitoring student progress	Formative assessments	Students speaking consonant blends as Ruth listens Ruth checks individual students two-part math word problem.	3 out of 5 observations
		Multiple Assessments	Oral and paper-pencil assessments used to assess two-part word problems	3 out of 5 observations
		Use of assessments to gauge growth	"Your sheet with both of your names on it will be turned in to be graded." (Ruth Observation One, April 2015) End-of-year writing prompt	3 out of 5 observations

Adjustment for student needs. Seven criteria were examined within the category of adjustment for student needs. The evidence of these seven criteria from the observations provided insight into how Ruth adjusts instruction to address students' needs. Three of the criteria were observed in at least three of the five observations establishing a significant frequency of the occurrence. The five criteria were as follows:

> The lesson makes appropriate provisions for a range of student needs.
> The teacher uses instructional strategies that are appropriate to the lesson goals.

The teacher uses a range of instructional strategies to support student engagement.

Evidence was observed in three of the five observations that Ruth made provisions for a wide range of student needs. During the first observation, while in guided reading time, Ruth was working with a small group of students on identifying consonant blends while other students were reading an assignment from *Sign of the Beaver* in preparation for a book club. During lesson three, Ruth used a multi-sensory approach to her instruction on the Caribbean. Students with musical intelligence benefited from the music and students high in visual intelligence benefited from the graphics provided during the mini-lesson. During the fifth lesson Ruth makes provisions during independent seat work for students struggling on their two-part word problem. Ruth's efforts to make provisions for a range of student needs were not evident during the second and fourth observation.

Evidence of the use of instructional strategies that were appropriate to the lesson goals along with Ruth's use of a range of instructional strategies to support student engagement was evident in three out of five observations. As mentioned previously during the first observation, Ruth provided different books to three different groups according to their readiness level in reading. During whole-group instruction she provided visual aids, asked questions, and provided a mentor text to support students in meeting the learning goal. During the third observation Ruth used music, visuals, and a mentor text again to support students in meeting the learning goals. During the fourth observation, Ruth provided examples of opinion writing and reviewed the steps to writing an opinion piece. Students were asked to be the scribe during parts of the lesson and students were given an opportunity to ask and answer questions.

Ruth's planning for differing readiness levels was evident during the third observation. Ruth supported students in the "red group" by reading instructions to the students on a math

worksheet. Ruth's efforts to differentiate content were evident in the first observation. Students were working in homogenous readiness groups on various reading strategies. Ruth was working with students on identifying consonant blends while other students were reading a more advanced text in preparation for a book club.

Regarding the differentiation of product, there is no evidence of Ruth's intentional planning during the observations. During the third observation, students had choice of what to write on their Caribbean brochure. All students used the same text as a resource. Similarly, during the fifth observation, students were given the opportunity to write any word problem they chose and they had freedom in the complexity of their word problem. Without seeing the product of the students, there is no evidence of the differentiation of product. Furthermore, these choices in product may or may not be a result of Ruth's intentional planning. The post-observation interview allowed for further exploration of Ruth's planning. Table 16 represents Ruth's efforts to make provisions for a range of student needs.

Table 16

Ruth's adjustment for student needs

Theme	Code	Formulated Meaning	Context	Frequency
Addressing student needs	Adjusting instruction	Provisions for range of needs	One group working on consonant blends while another group works on assignment related to *Sign of the Beaver*.	3 out of 5 observations
		Intentional use of strategies	Use of graphics, music and informational text to support the same learning goal	3 out of 5 observations

Tasks. Six criteria were examined within the category of ongoing assessment. The evidence of these six criteria from the observations provided insight into how Ruth adjusts instruction to address student needs. Four of the criteria were observed in at least three of the five observations establishing a significant frequency of the occurrence. The four criteria were as follows:

Tasks require high levels of thinking.
Tasks are appealing from a student perspective.
Tasks represent a wise use of student's time and allow each student to work efficiently.
Tasks are aligned with common learning goals and with one another.

Tasks which approximate the thinking and "doing" of people who do similar work in the real world, and tasks which provide appropriate challenge and scaffolding in anticipation of individual student needs were evident in two of the five observations.

Ruth provided tasks that require higher level thinking in four of five observations. During the first observation, Ruth asked her students to infer why she might be holding an umbrella. The students responded with various answers. She also asked students to evaluate how they might be safe during thunderstorms prior to reading an informational text about the topic. During the second observation, Ruth asked students to evaluate a picture on the Smartboard based on what they knew about the Caribbean. This was followed by Ruth showing pictures and asking students to predict what they would learn next about the Caribbean.
During the third observation, Ruth again led the students in a discussion of the Caribbean and she asked students to imagine being one of the fish they are studying. She asks students to decide which fish they would like to be. During the fifth observation Ruth asked students to evaluate and create two-part word problems with a Caribbean theme.

Evidence that Ruth designed tasks that are appealing from a student perspective was observed in four observations. During the first observation, Ruth allowed students to review and

reconnect to the skill of identifying main ideas and supporting details through using the mental model of an umbrella. Students were given time to transfer their understanding to an umbrella and raindrop template as a means for demonstrating what they know. During the third observation, students are allowed time to add what they gleaned from the informational text to a brochure which was used for an authentic audience.

During the fourth observation on opinion writing, the students were allowed to "vote with their feet" to explore the skill of articulating their opinion. Ruth gave two options and indicated one side of the room to represent each option. Students walked to the side of the room that represented their choice. During the fifth observation, Ruth gave students the opportunity to create a math problem of their own instead of solving one from the textbook.

Ruth's efforts to make a wise use of students' time and allow students to work efficiently was evident in four observations. During the first observation, Ruth used a rotation system to allow all students the opportunity to practice identifying the main idea. Each student was able to make it through eight stations in approximately 15 minutes. During the second observation the mini-lesson lasted 10 minutes. Ruth used student partners to allow each student to share his or her idea about writing.

Ruth provided an anchor activity for those who were finished early with their Caribbean brochure during the fourth observation. During the fourth observation, Ruth used student partners to allow students to reconnect to the learning from the day before.

Ruth's efforts to align all tasks to a common learning goal were evident in all five observations. All students were working toward identifying the main idea and supporting details during the first observation. The second observation was focused on the skill of descriptive writing about their favorite place. During the beginning of the third observation, students were

focused on telling time, and in the later part of the observation, students were focused on learning about the Caribbean.

Ruth's focus for the fourth observation was on opinion writing and the focus of the fifth observation was on creating and solving two-part word problems. All students were working toward the same learning goal during all five observations.

Ruth's efforts to approximate the thinking and doing of people who do similar work in the real world was evident in the third and fifth observation. Tasks that provide appropriate challenge and scaffolding in anticipation of individual student needs was evident in the first and third observation. Table 17 represents Ruth's efforts in designing tasks which require high levels of thinking.

Table 17

Ruth's tasks

Theme	Code	Formulated Meaning	Context	Frequency
Addressing Student Needs	Tasks	High levels of thinking	"Why do you think I have this umbrella?" (Ruth Observation One, April 2015)	4 out of 5 observations
		Appealing to Students	Students "vote with their feet" to explore the skill of sharing their opinion in preparation for opinion writing.	4 out of 5 observations
		Wise use of time	Students move through several rotations to review concept of main idea. Anchor activity for students finished with brochure project	4 out of 5 observations

Groupings and management. Six criteria were examined within the category of groupings and management. The evidence of these six criteria from the observations will provided insight into Ruth's beliefs about diversity in the classroom. Four of the six criteria were observed in at least three of the five observations, establishing a significant frequency of the occurrence. The six criteria were as follows:

> Students work in a variety of groups within a relatively short time span.
> The teacher uses space, time and materials flexibly to address varied learning needs.
> The teacher and students share responsibility for making the classroom work smoothly.
> The teacher acts as a coach or facilitator of learning for individuals and the group.

The guidelines for how students should work individually and as a group, the way in which students know how to get and give needed help appropriately, and the degree to which Ruth shares responsibility for making the classroom work smoothly was not evident in three or more of the observations.

Ruth used a variety of groupings during the first observation. Students were paired for a reconnect activity at the beginning of the observation. Students selected a different partner for the station work related to the main idea and supporting details. Ruth allowed students to work independently on their umbrella worksheet and at the end of the observation she had students in homogenous small groups for reading instruction based on readiness. During the second observation, Ruth used partner work, independent work, small group instruction and whole group instruction to support students in making progress toward the math goal. Whole group instruction and independent work were used during the social studies lesson.

During the fourth observation, Ruth began with whole group and then allowed students to group according to interest during the "vote with your feet" activity where student were allowed to discuss topics with like-minded classmates. Later in the lesson students were working

independently. During the fifth observation, Ruth used a combination of whole group, partner, and independent work to support students in meeting the learning goal of writing and solving a two-part math problem.

Ruth's efforts to support students to use spaces, time, and materials flexibly to address varied learning needs were observed in four of the five observations. During the first, third, fourth and fifth observations students were given flexibility in seating during independent work. Ruth used a timer during the first observation to support students in managing their time and to limit the amount of time spent on a single task.

Ruth was observed acting as facilitator or coach of learning for individuals and groups during four of the observations. During the first, fourth and fifth observations, Ruth used conferencing to support individual students during independent work time. Ruth asked students questions about their work that supported them in meeting the learning goal. During the second observation, Ruth assumed the role of facilitator during the whole class discussion on the Caribbean.

The degree to which students know how to get and give help appropriately as needed was evident in the second and fourth observations. This criterion may be difficult for an observer to identify at this point in the year. Students' familiarity with classroom procedures and routines might make the need for help less obvious. Ruth's efforts to share responsibility in making the classroom work smoothly is also difficult to observe during the final weeks of the school year. While there was evidence of students helping with classroom tasks such as sorting mail and cleaning up supplies, these things were not evident in more than two observations.

The clear guidelines for how students should work individually and as a group were not explicitly stated in more than two observations, nor were they posted in the classroom. It might

be inferred that guidelines and expectations have been internalized at this point in the school year.

Artifacts. During the initial interview a request was made for artifacts that might provide further insight into Ruth's efforts to differentiate instruction for her students. Upon returning for the first scheduled observation, Ruth provided a file folder of artifacts that she believed support her in differentiation. The artifacts include:

A "happy gram"
Anecdotal notes on differentiation
A screen capture of an online resource for the Caribbean
A lesson plan for the Oregon Trail Reader's Theater
A worksheet on adjectives
A template for the game "roll it, make it, expand it"
A list of sight words
Two templates for Guided Reading lesson plans
A script for first week phone calls to all parents
A template for a behavioral management punch card
A multiplication worksheet
Examples of three different literature response forms
Lesson plans for the week of April 27 – May 1

Upon examining the documents provided by Ruth, it became clear what she values in terms of differentiation and brings in to clearer focus the planning and thinking involved in her efforts to differentiate instruction. Perhaps the strongest evidence of her efforts to differentiate by readiness is seen in her examples of literature response forms. These forms were used in a lesson that was not observed. Students had read the story *Charlotte's Web*. Each group was given a question about the content of chapters four through six to which they provided a response. One group was asked to identify who was going to save Wilbur. This was a knowledge level question as students had already received this information from the text. Another group was asked if they believe other animals talk to each other and how they communicate. The final group was asked what they would do to save Wilbur. While each group

read the same text, Ruth planned for different readiness levels by providing different prompts for the students to respond to. Similarly, in math, some students were provided with opportunities to practice their multiplication tables while other students were allowed to continue working on their addition and subtraction, as evidenced by the worksheet template provided.

The screen capture of the website for animal research during the Caribbean unit shows Ruth's planning to honor student interest. Students were able to make choices based on their interest in the animals of the Caribbean. The "happy gram" and script for phone calls home during the first week of school provide evidence of the personal interest Ruth shows in her students. Ruth writes messages on the happy gram in the form of "I noticed" statements. Upon examining the script it is clear that Ruth intends to communicate specific information about each child during the phone call with parents.

The list of sight words provides evidence of Ruth's efforts to scaffold for students. The sight words listed are from a Kindergarten sight word list. These words are reviewed during small group instruction during Guided Reading. The Guided Reading lesson plan templates provide evidence that while the structure of the small group instruction might look similar, the actual content of the instruction will vary based on the readiness of the group.

Ruth added a note to the lesson plan for the Oregon Trail Reader's Theater stating that the purpose was to "build fluency, expression, teamwork and independence." While fluency and expression are hallmarks of a good reader and teamwork and independence are necessary for a healthy class, this artifact does not necessarily display Ruth's efforts to differentiate. The adjective worksheet is an example of a choice provided to students during their reading rotations. It is unclear from the artifact if this worksheet was designed for students at a specific readiness level or if the worksheet was used by each student. If the former is true, then it is an example of

differentiation. If the latter is true, it is an example of a worksheet that will support some students but not all. Similarly, the Roll it! Make it! Expand it! worksheet is designed for math groups; however, it is not clear if all students use the same worksheet or if there are varying levels of complexity.

Ruth included a "punch card" as an example of a behavior management tool used in her class. This artifact does not represent her efforts to differentiate. Ruth wrote a note on the template that states that she gives one hole-punch "at the end of the day if the student made great choices." After 20 punches the student gets a prize. However convenient tangible rewards might be, it is not an indicator of differentiated instruction.

Within-Case Analysis: Mary

Mary is a white female who has been teaching for eleven years. Her first three years were at a private school in southwest Missouri. After a ten year hiatus from teaching, she returned to School A as a first grade teacher where she has remained for the past eight years. Her first year back to the classroom was a job-share where she worked part time, and the past seven years she has worked full time. She has 24 students enrolled in her classroom.

You enter Mary's classroom through a door located in the northwest corner of the room. Upon entering you will see student backpacks lining the north wall as well as storage cabinets hanging above the backpacks. A file cabinet and more storage space take up the remaining portion of the north wall. Along the east wall you will find a bulletin board that is flanked by two windows looking out to a circle drive used for loading and unloading school buses. The south wall was covered by marker board space and a SmartBoard. On the west wall, you will find more cabinet space and counter space for student computers.

A kidney-shaped table is located in the northeast corner of the room. Mary conducts small group instruction at this table and uses it to provide additional support for students during independent work. A small round table is located in the southeast corner of the room. This table is used for students during center time and the student teacher used the table to work with groups during Guided Reading.

Students are seated in blue plastic chairs at rectangular tables. Two rectangular tables are pushed together, allowing eight students to sit in a group. There are four sets of rectangular tables in the center of the room. A carpet is located directly in front of the SmartBoard. Students sit on this carpet for direct instruction during mini-lessons and for the morning meeting that occurs each day.

Description of observations. A total of five observations of Mary were conducted. The first observation was scheduled for Thursday, April 30, and lasted for the duration of one hour and 27 minutes. Students were engaged in Reader's Workshop and Guided Reading groups. The remaining observations were short-notice. Mary had a student teacher, which made unannounced observations problematic. Some short-notice observations were rescheduled due to a personal illness and short hospitalization. A trip to her daughter's graduation in a neighboring state also limited Mary's availability for observations.

The second observation occurred on Monday, May 4, for the duration of one hour and 27 minutes. The students were engaged in Writer's Workshop, Math Workshop, and content. In the district in this study the term "content" refers to the subjects of science, social studies, and health. On Mary's schedule, this generic term is used to represent a rotation of the three aforementioned subjects. During the observations a science unit was the focus of study during content time.

The third observation occurred on Tuesday, May 5, for the duration of 50 minutes. The students were engaged in Reader's Workshop and Word Study. The fourth observation occurred on Tuesday, May 12, for the duration of one hour and 40 minutes. Students participated in Writer's Workshop, Math Workshop and content. The final observation occurred on Thursday, May 14, for the duration of 55 minutes. The students were engaged in Reader's Workshop. Table 18 shows the day, date, duration and content area of all five observations of Mary.

Table 18

Observation schedule for the case study of Mary

Mary	Thursday, April 30*	1 hr. 27 min.	Reader's Workshop and Guided Reading
	Monday, May 4	1 hr. 27 min.	Writer's Workshop, Math Workshop and content
	Tuesday, May 5	50 min.	Reader's Workshop and word study
	Tuesday, May 12	1 hr. 40 min.	Writer's Workshop, Math Workshop and content
	Thursday, May 14	55 min.	Reader's Workshop

The first observation of Mary was scheduled for Thursday, April 30, for the duration of one hour and 27 minutes. According to the posted schedule, the students were to be engaged in Reader's Workshop and Guided Reading. The observation period began with students seated on the carpet sharing how they were feeling about the day. Students participated in a greeting exercise in which they each greeted a classmate. Mary encouraged them to make eye contact and smile as they were greeting each other. During the mini-lesson, Mary reviewed the steps to re-telling a story. She reminded the students to use proper names of characters and settings and to use transition words such as "next" to enhance their re-telling of the story. She used a story recently read by the class to support students' application of the discussion.

Students were then allowed to choose a center. A limited amount of students were allowed at some centers. Technology, read-to-self, read-to-someone, and book making were among the centers that students could choose. Three rotations were observed. Mary met with a small homogenous group of students during each rotation. Between rotations students would return to the carpet where Mary would announce the next group and students not meeting with her could select their center for the following rotation.

The focus of the meeting with Mary's first small group of students began with spelling sight words and then sorting words according to vowel sounds. Mary also introduced a book to the students. Mary listened to students as they read the book aloud. The second reading group also began with spelling; however, the words were more difficult. Mary asked the students comprehension questions about the book they read in preparation for the meeting. The book was different than the book for the first group. She ended the group by asking students to read aloud so she could listen to them. The third group also began by spelling words more difficult than the first two groups. Mary revisited predictions students made about the assigned reading. Many of the predictions were confirmed. Mary asked students to make inferences based on the reading they had been doing.

The second observation was scheduled for Monday, May 4, for the duration of one hour and 27 minutes. According to the posted schedule, students were to be engaged in Math Workshop, Writer's Workshop and Content. The lesson began with whole group instruction. Mary explained that students would be writing a letter to their student teacher. Parts of the letter were reviewed and students were allowed to brainstorm with a partner various topics they might want to include in their letter to the student teacher. Mary called on students to share some ideas with the whole class. Select students were invited back to the kidney shaped table for additional

support in finishing their letter. As students finished their letter they were encouraged to illustrate the letter in the space provided on the paper. Once a majority of students finished their letter, Mary transitioned the class to Math Workshop.

Students began at their seats. Mary asked all students to take out their slate. She instructed them to draw or write various things on their slates and used the prompt "A, B, C show me." Students revealed their slate, and Mary checked for accuracy in the students' response. After the mini lesson students were divided into three groups. Mary met with one group, another group made composite drawings using a template of small geometric shapes, and the third group used the SmartBoard to solve addition and subtraction problems.

Mary gave the first group an object and asked them to measure the object. Students worked together to put the objects in order of length from shortest to longest. The next task was for students to identify various shapes as Mary held them in the air. The second group was invited to select their own shape and worked together to put the shape in order of length from shortest to longest. Mary gave the second group a basket of shapes and asked them to sort the shapes by color, then by size, and finally by shape. The third group did not work with measurement. They received the same basket of shapes and Mary instructed them to sort the shapes in any way they wished. Students reported out to their classmates the ways in which they sorted the shapes. The lesson ended with the whole group and students reporting to the whole class one thing they learned in Math Workshop.

The third observation was scheduled for Tuesday, May 5, for the duration of 50 minutes. According to the posted schedule, the students were to be engaged in Reader's Workshop and word study. The observed lesson began with whole group instruction where the teacher was reading an informational text. Students made text-to-self connections about a time when they

dozed off, and they have opportunities to turn and talk to a partner about questions posed by Mary. At the end of the lesson, students were allowed to select centers until the center was "closed," meaning the maximum number of students allowed in the center had already chosen the center for that round. Students could choose between technology, read-to-self, read-to-someone, and book making. Two rounds were observed, and Mary met with a small group of students during both rounds.

The first group to meet with Mary consisted of five students. Mary asked students to spell various sight words on a slate as she checked for accuracy. Students were asked to make predictions about what might happen in the book Mary was about to distribute. She allowed students to "whisper read" as she listened in and made anecdotal notes. The second group was asked to spell words on slates as Mary checked for accuracy. Mary led a discussion of a book students were in the process of reading. Comprehension questions and questions designed to invite student inferences were posed, and students were given an opportunity to respond. Mary listened to each student read a portion of the text as the other group members whisper read.

The fourth observation occurred on Tuesday, May 12, for the duration of one hour and 40 minutes. According to the posted schedule students were to be engaged in Writer's Workshop, Math Workshop and content. The observed lesson began with whole group instruction on the carpet. Mary asked students to review what they know about writing poems. Action words and descriptive language were reviewed. Mary evoked the memory and feeling of movement while the students were at recess. Students were given independent time to write a poem.

During Math Workshop students reviewed the concept of equal. Mary met with two groups while other students were participating in centers. A math assessment was given to the entire class in lieu of the third rotation. Mary used content time to review the concept of push

and pull. Students were invited to find something in the room they could push and pull. A ball was also used to help students visualize the concept of pushing and pulling.

The final observation occurred on Thursday, May 14, for the duration of 55 minutes. According to the posted schedule, the students were to be engaged in Reader's Workshop. The observed lesson began with students greeting each other. Mary encouraged students to greet each other with a smile and by making eye contact. The teacher reviewed a book that was introduced by a substitute teacher the day before. Students practiced their skills of retelling the story. Mary asked questions to probe for specificity. A variety of students responded to her questions. Due to the length of the mini-lesson, only one group was observed. The group consisted of two students. Mary introduced the students to an informational text about plants. She asked the students to make predictions about what the book might be about. Mary listened to both students read while she took anecdotal notes.

Interviews. Two interviews were conducted with Mary. The initial interview occurred on April 28, 2015, at 10:55 a.m. in a conference room at School A. The interview followed a structured protocol (see Appendix A). The post-observation interview occurred on May 19, 2015, at 1:39 in the afternoon in Mary's classroom. This interview followed a semi-structured interview protocol (see Appendix H) to allow for probing on specific lessons observed. This interview protocol was developed after careful analysis of all five observations of Mary's classroom. Any repetition of questions from the first interview was intentional in an attempt to measure growth or change of Mary's perception of differentiation during the course of the study. Specific questions were targeted at areas that were not evident during the five observations.

The only formal training Mary has received in differentiated instruction is through a workshop that her district provides. One training opportunity occurred approximately five years

ago. Another training that occurred last fall was designed specifically for differentiation in the area of guided reading. When asked about resources that have supported her implementation of differentiation, Mary cited resources by Linda Dorn and Debbie Diller. She has depended on a lot of resources on Math and Reader's Workshop to support her implementation of differentiated instruction.

Mary defines differentiation as:

> …meeting a student where they are and where their instructional level is. So, meeting them and tailoring my instruction and their activities to their level and moving them forward to the next level is really kind of how I do it. There are times that I pull in some of the multiple intelligences, but not as much in first grade. So, it's more so grouping them or meeting them where their ability level is and moving them to the next level. (Initial Interview Mary, April 2015).

After reviewing Mary's definition it becomes clear that her emphasis in differentiation is based on student's readiness level rather than on their interest or learning profile. This is also confirmed by Mary's response to being asked when she decides to differentiate instruction during the initial interview and post-observation interview. She stated that "there are certain times of the day" that she uses differentiation, mainly during her literacy block and other times that she knows "most kids aren't all going to be on the same level and the same readiness…" (Initial Interview Mary, April 2015). Mary shared that she believes it is necessary to differentiate because "unless you differentiate in the core subjects, the kids don't get what they need." She recognized that gifted students, on-grade level students, and struggling students all benefit from differentiation and summarized her thinking by stating that "it's the best way to meet individual students' needs and move them forward" (Initial Interview Mary, April 2015).

Mary cited planning as a reason that differentiated instruction is difficult during the initial and post-observation interviews. "As opposed to planning one lesson…you have to plan for three" (Initial Interview Mary, April 2015). During the post-observation interview she added

that finishing the curriculum further complicated the challenge of planning differentiated lessons. She mentioned thinking through, "what are some areas that some kids still need to work on and what can I challenge the high kids with now?" (Initial Interview Mary, April 2015). While Mary recognizes that planning is more time consuming when differentiating instruction, she is willing to invest the time. During both interviews, she mentioned the benefit to students as a reason that differentiation is easy. Knowing that it's best for kids and keeping students more engaged were cited as reasons that differentiation was easy. Her motivation to meet her students' needs makes her effort to differentiate seem worth it.

Mary was asked during both interviews about specific things she has noticed in her students as a result of her differentiation. In the initial interview she stated that she has focused on her math instruction. She implemented a Math Workshop model which allows her to meet with small groups to focus instruction on specific learning needs. This was cited in more specific terms during the post-observation interview as students in one group were "struggling knowing how to write their numbers after 100, so [Mary] was able to pull that small group and work with them." As a result of the small group instruction, "all of [the students] made improvements and a majority of them were able to master writing their numbers above 100" (Post-observation Interview, May 2015). This is one example cited by Mary of what she noticed in her students as a result of her differentiation.

Mary's explanation of when she decides to offer choice was different from the initial interview to the post-observation interview. In the initial interview Mary stated that she offers choice "based on their need and their ability level" (Initial Interview Mary, April 2015). She went on to explain how her mathematically gifted students really enjoy choice and that she tries to "find their interest level and then what would be the best fit to keep them interested and

engaged, but still learning" (Initial Interview Mary, April 2015). In the post-observation interview the focus of her decisions to offer choice related more to management as she explained "I think it just helps with engagement, with behavior" (Post-observation Mary, May 2015). Math was again cited as an opportunity where students have choice, but the example included all students rather than a focus on her advanced students.

Mary mentioned that she was somewhat familiar with the idea of a growth mindset, having read excerpts about the topic from some blogs. After an explanation to further define it, Mary affirmed that a growth mindset aligns with her philosophy of education and that it is essential to the implementation of differentiated instruction.

> "That's why I believe so strongly in differentiated instruction…pulling those kids and working with them where they are…so that they feel successful. I just hate when I hear kids say, 'I'm not good at it.' Or, 'I can't do this.' That just breaks my heart because I'm like, 'Yes you can! We can do this!' So, I never want them to feel overwhelmed that something is beyond their grasp, so I think with differentiated instruction, I am able to give them the support they need on their level so that they don't get that fixed mindset too early…or maybe I can break the fixed mindset and say, 'Look at your growth!'" (Post-observation Interview Mary, May 2015).

Mary's response reveals that she feels strongly about encouraging students to focus on their personal growth toward the learning goals and that she believes that differentiation is a vital part of helping students toward that mindset.

Mary believes that every student can meet the instructional goal she sets for them but it might not mean that all students reach the goals set by the "higher-ups of the world…that deem that this is what a proficient first grader is…" (Post-observation Interview Mary, May 2015). She explained that some students might need a little more time to meet all the while she might not see the students reach all the first grade goals, she is confident they will someday. Homogeneous readiness groups helped Mary to support students' focus on personal growth rather than competition between their classmates. She stated that "grouping them takes away

some of that competition feeling" (Post-observation Interview, May 2015) by allowing them to work with classmates that are all focused on developing the same skills related to the learning goals.

When asked about ways she determined the learning goals taught during the observation window, Mary stated that she used their end-of-the-year math test to determine what skills needed to be reviewed. She confirmed that this summative assessment turned into a formative assessment that allowed her to design math lessons that would support her students' success in second grade. Mary did not mention how she identified the learning goals for other content areas. Pre-assessments included several informal assessments such as the use of slates or other independent work. She did not provide evidence that she uses pre-assessments before each unit of study.

Mary mentioned big ideas and essential understandings related to math instruction such as shapes or geometry. She did not mention big ideas, concepts or essential understandings related to other content areas. When asked about opportunities for her students to reflect or engage in inquiry, Mary shared that they would be engaging in reflection the following day. "I have pulled some of their beginning of the year writing samples and I'm going to hand that to them and then let them pull out a piece from the folder to compare the two" (Post-observation Interview Mary, May 2015). This will allow students to reflect on how they have grown as a writer.

Differentiation of products is a personal goal for Mary. As she reflected over the year, she recognized differentiating products as an opportunity for growth.

Academic diversity is valuable to Mary because students are able to hear the way their classmates think. Struggling learners are able to listen to the explanations of their classmates

during whole class instruction. Advanced learners are able to benefit from the explanations from struggling learners in that they have a better understanding of why things work. Mary did recognize that her struggling learners can take more of her time.

Mary described the attitudes of a teacher who differentiates as "flexible, organized, think on your feet." Characteristics included, "creative, resourceful, open minded, collaborative and positive mindset" (Post-observation Interview Mary, May 2015). According to Mary, the belief that every kid can learn is important in a differentiated classroom.

When asked about her grading and assessment philosophy, Mary communicated that she is focused on whether the student has shown growth rather than how they compare to the norm. She does not feel the liberty to implement her philosophy to the extent that she would like but she does "try to be realistic in [her] grading with what their abilities are, and with what they are capable of doing independently at the time" (Post-observation Interview Mary, May 2015).

Mary shared times as a professional where trainings were differentiated to meet her specific needs, but did not mention instances from her formal education experiences. When asked how her education impacted her willingness to differentiate, she stated that the lack of differentiation in her educational experiences and watching how it affected her daughters provides motivation to make sure her students receive the support and challenge that is appropriate for them. If given the chance, Mary would advise a new or novice teacher that differentiation is worth the effort because of the engagement they see in students in their classroom. "I know it is worth it to improve student engagement, along with achievement. It's worth it to put in the extra time because of the results you see in the students" (Post-observation Interview Mary, May 2015).

Learning environment. Seven criteria were examined within the category of learning environment. The observations related to these seven criteria will provide insight into Mary's implicit beliefs about diversity within the classroom. Six of the criteria were observed in at least three of the five observations, establishing a significant frequency of the occurrence. The six criteria were as follows:

The teacher and students respect one another.
The teacher shows interest in students as individuals.
There is active participation by a broad range of students.
Students seem comfortable with one another.
The teacher creates collaborative learning experiences.
There are routines and rituals in place that help students feel they belong and are valued.

The degree to which Mary emphasizes student growth toward important goals versus student competition was not observed during any lesson and will be addressed during the post observation interview. Mary's respect for her students and her students' respect for each other was evident in all five observations. During the first observation, students were observed greeting each other with a smile. While students were seated in a circle, one student would stand and greet a classmate. The classmate would return the greeting and then stand and greet another classmate. This pattern continued until all students had been greeted.

During the second observation when a student was speaking, Mary prompted everyone to listen to the student and turn to look at him while he was speaking. This practice occurred for multiple students during the course of the second observation. Again during the third observation, Mary prompted the students to look at the person speaking.

Mary was observed giving verbal praise to students during small group instruction and students are observed sharing freely and willingly during station rotations. The fifth observation began with another morning greeting similar to the first observation. Mary noted that many of the students were smiling during the greeting.

Mary showed evidence of taking interest in students as individuals during all five observations. During the whole class circle time in the first observation, Mary was observed asking students question about how they were feeling that day. Students were given the opportunity to share about why they were feeling a certain way. The example described above regarding Mary's prompting for students to look at their classmate also provides evidence for her personal interest in her students. This was repeated during the third observation.

During the fourth observation a student became upset because he did not have a partner. Students had already begun centers and Mary had started to work with a math group. After prompting her group to work on a task, Mary approached the student and helped him find a group to work with. Once the student was settled in a group, Mary returned to her small group instruction. During the fifth observation, Mary praised individual students for the way they greeted their classmates.

Active participation from a broad range of students was evident during all five observations. Mary's procedure for allowing each student to greet one another allowed all students to participate during the first observation. Additionally, her mini-lesson provided several opportunities for students to offer answers. A broad range of students were actively engaged during station rotations and during her small group Guided Reading sessions.

During the second observation, Mary was observed once again calling on a variety of students during whole class instruction. She also allowed student to talk to a partner and each student willingly shared ideas with their classmate. In whole group instruction during the third observation, several students were observed offering examples of the definition of the word *plenty*, and during station time all students were engaged in a variety of activities.

Partner discussion was used again during the fourth observation while students discussed descriptive words in poems and all students were observed as they engaged in math games. During the fifth observation, students willingly shared responses while on the carpet during whole class instruction and students were observed in small group instruction willingly offering ideas.

Students seemed comfortable with each other during all five observations in Mary's classroom. The morning greeting during the first observation gave evidence of students' willingness to communicate, and during station rotations, students willingly self-selected partners to work with. Many students selected different classmates to work with during each rotation indicating that students feel comfortable with a wide range of their classmates. During the mini-lesson in the second observation, students willingly partnered with their classmates to discuss their answer to questions asked by Mary. During the small group math rotations, students were observed explaining different ways of sorting geometric shapes. Each student freely shared his or her idea and Mary affirmed each idea. Similarly during the third observation, students were given the opportunity to engage in small group instruction. There was a free exchange of ideas and sometimes differing opinions about what happened in the assigned reading. The group accepted all ideas.

As described above, a student became upset during the fourth observation because he could not find a group. Mary asked for groups to volunteer to welcome the student into their already established group. Three different groups volunteered and the student was able to choose the group that he felt most comfortable with. The students demonstrated a willingness and comfort in welcoming their classmates into their small group during center time. Small group instruction and station rotations provided another opportunity for students to demonstrate

their comfort with one another during the fifth observation. No arguments were observed and a free exchange of ideas was present during the Reader's Workshop rotations.

Mary created a collaborative learning environment during all five observations. In fact, the majority of the observation time, students were engaged in small group instruction or learning centers with other classmates. Literacy centers observed during the first, third, and fifth observations included book making, technology, read-to-self, and read-to-others. Book making and read-to-others allowed for students to collaborate with classmates.

The math centers observed in the second and fourth observations allowed students to engage in a wider variety of center choices. Students were able to self-select a task from a shelf located in the center of the room. All activities were related to numeracy and involved partner work. Some tasks also required students to work independently.

Routines and rituals were evident during all five observations in Mary's classroom. The morning greeting observed in the first and fifth observation provided evidence that students knew what was expected. Students moved through the greetings with little prompting from Mary during both observations. Every student was included in the exercise. Additionally, during the first observation, students took turns speaking during small group instruction.

During the second observation, students knew which classmate to turn to when Mary prompted them to turn to a partner and talk. All students had a partner without Mary prompting them. Later during the whole group mini-lesson in math, Mary prompted the students with the phrase "A, B, C, show me" and all students immediately revealed what they wrote on their slates. Students immediately transitioned to the carpet at the sound of a chime during the third observation. The movement required no verbal prompting from Mary.

Mary instructed everyone to “take out their office” during the fourth observation. All students immediately opened a manila folder that they had personalized. The purpose of the office was to prevent students from looking at the work of their classmates. Mary prompted the students to “thumb walk” to the carpet during the fifth observation. This is a simple strategy where student interlock their fingers and rotated their thumbs while they walk. The purpose is to help students meet the expectation of keep their hands to themselves during transitions. All students complied without prompting or explanation of the procedure.

The seventh criterion addressing Mary’s efforts to emphasize student growth toward important learning goals versus student competition was not evident during any of the observations. This criterion will be addressed during the post-observation interview. Table 19 represents Mary’s efforts to encourage mutual respect between her and her students.

Table 19

Mary's learning environment

Theme	Code	Formulated Meaning	Context	Frequency
Implicit beliefs about diversity	Learning Environment	Teacher and student respect	"Let's listen to [student]. Eyes on [student]" (Observation Two Mary, April 2015).	5 out of 5 observations
		Teacher's personal interest in students	"I noticed that (student) was smiling at his classmates" (Observation Four Mary, May 2015).	4 out of 5 observations
		Student Engagement		5 out of 5 observations
		Student comfort	Student communication and collaboration during small group instruction.	5 out of 5 observations
		Collaborative Environment	Collaboration during Math workshop and Reader's Workshop.	5 out of 5 observations
		Routines and Rituals	Morning greeting referred to as the "backpack greeting"	5 out of 5 observations

Learning goals. Five criteria were examined within the category of learning goals. The evidence of these five criteria from the observations will provide insight into how Ruth identifies learning goals and essential understandings. Four of the criteria were observed in at least three

of the five observations, establishing a significant frequency of the occurrence. The four criteria were as follows:

> There is clarity about what students should know, understand, and be able to do.
> Students explore knowledge (e.g. facts, terms) and skills in context (e.g. of ideas, of real-world problems.)
> The teacher connects learning goals to students' interests and experiences.
> All students are working toward a common learning goal.

The fifth criteria, which addresses evidence of students' opportunities to examine big ideas, essential questions, concepts and/or principles, was evident in one of the five lessons observed.

Mary provided clarity about what students should know, understand and be able to do in all five observations. The learning goal for the first lesson was for students to be able to accurately retell a story. Mary also established a learning focus for each of the three small groups during Guided Reading (i.e. "We are going to work on long A sound"). The second observation was focused on improving the students' skills in writing a friendly letter. During the second half of the lesson, Mary focused on the students' skills in accurate measurement. During the third observation, Mary established a purpose for reading during each session of small group instruction. At the beginning of the fourth observation, Mary stated that students would be learning about writing poems using descriptive words and action words. Later during the fourth observation the focus during math instruction centered on the concept of equal. The fifth observation begins with a focus on placing words in alphabetical order. Mary then returns to a focus on re-telling a story.

Mary provided evidence that she supported students in their exploration of knowledge and skills in context during four of the observations. As Mary was meeting with small groups for Guided Reading during the first observation, she was observed asking students questions

which challenged them to relate to the characters in the story and place themselves in the same situations. She facilitated discussions with students about what they would do in similar situations. During the second observation the students were applying what they learned in writing a friendly letter to their student teacher who would be leaving them the following week.

Prior to assigning the poem writing during the third observation, Mary evoked the experience of playing on the playground. Students had just returned from recess, so this exercise allowed them to access recent experiences that would support their efforts to include movement words in their poem. In the fifth observation, students were encouraged to identify with the character in the book through questions posed by Mary. Her questions allowed students to put the practice of re-telling the story in the context of their personal real-world situations.

Mary's effort to connect learning goals to students' interests and experiences was evident during all five observations. During the first observation, Mary asked questions of each of her small groups during Guided Reading that allowed them to connect their learning to personal experiences. For instance during the third group of students, Mary challenged the students to consider if the main character was being clever or mean to her friends. She also challenged students consider how they might have felt if the main character had acted that way toward them. In the second observation, it was evident that students were very fond of their student teacher and were eager to apply their letter writing skills to the friendly letter to their student teacher. Mary identified a meaningful, personal interest for students to practice letter writing.

Text-to-self connections were encouraged by Mary during the large group and small group instruction during the third observation. Students were asked to think of a time when they dozed off as the character in the story did. During small group instruction, Mary asked students if they thought they could hop down the hallway as the main character in the story did. During

the fourth observation, Mary used familiar objects to illustrate force and motion in the science lesson. Students were again encouraged to recall their experiences on the playground during recess. In the fifth observation, students were encouraged to make additional text-to-self connections when asked if they have ever had to wear clothes that were passed down from someone else.

All students were working toward the same learning goal during all five observations. Mary's learning goals are discussed in Table 19 above. Mary's efforts to allow students to examine big ideas, essential questions, concepts and/or principles were evident in only one observation. This criterion was addressed during the post-observation interview. Table 20 represents Mary's efforts to provide clarity about what students should know understand and be able to do.

Table 20

Mary's learning goals

Theme	Code	Formulated Meaning	Context	Frequency
Identifying learning goals and essential understandings	Communication to students	Clarity	"Today we are going to practice our re-telling of this story" (Observation One Mary, April 2015).	5 out of 5 observations
		Exploring knowledge and skills	"We are going to write a letter to [student teacher]" (Observation Two Mary, May 2015).	4 out of 5 observations
		Connections to students' interest	"Think about recess. How were you moving? How did if feel?" (Observation Four Mary, May 2015).	5 out of 5 observations

Ongoing Assessment. Six criteria were examined within the category of ongoing assessment. The evidence of these six criteria from the observations provided insight into how Mary approaches grading and assessment. Three of the criteria were observed in at least three of the five observations, establishing a significant frequency of the occurrence. The three criteria were as follows:

> On-going/formative assessment of student readiness, interest, and learning profile has informed the teacher's instructional planning.
> Multiple assessments (including self-assessment) and/or multiple forms of assessment are used during the lesson.
> The teacher uses assessment to gauge what students have learned.

The degree to which Mary uses pre-assessment of student readiness, interest, and learning profile to gauge students' point of entry into the unit or lesson was observed in two of the five observations, and students' opportunity to spend significant class time on inquiry and reflection was observed during one of the five observations.

Evidence of Mary's use of formative assessments was observed during the first three observations. During small group instruction, Mary was taking anecdotal notes as students were reading. Specifically during the first observation, Mary was monitoring students' ability to read blends and their ability to spell sight words and high frequency words during all three Guided Reading rotations. Additionally, in the second observation, students are asked to use slates to solve math problems during whole class instruction. Mary checked each slate at the prompt, "A, B, C, show-me" and all students showed their answer, allowing Mary to informally check students' mastery of the math concept of equal.

Mary used multiple assessments during four of the observations. Oral assessment and written assessment were used to monitor students' progress in literacy during small group instruction in the first observation. Paper-pencil and performance tasks were used during math

instruction to assess students' progress toward the learning goal related to measurement. During independent work, students had a worksheet to complete independently. During small group instruction, students were observed measuring various objects.

The use of assessments in the third observation was similar to that of the first observation. Students were asked to write on their slates in order for Mary to monitor their progress in literacy, and Mary made anecdotal notes as students read aloud. Mary's assessment of students' ability to alphabetize during the fifth observation included a performance task and a written task.

Mary used assessments to gauge what students had learned during all five observations. The small group instruction during the first, third, and fifth observations included comprehension questions designed to monitor students' progress in comprehending what they were reading. During the second observation, Mary's use of assessment in students' ability to measure during small group instruction gave her insight into how students were progressing toward the skill of accurately measuring the length of various objects. The fourth lesson (the activity in which students identified an object that could be pushed or pulled) allowed Mary to monitor her students' progress toward the science objective.

Mary's use of pre-assessment was observed in the third and fourth observations. The degree to which Mary uses assessments to help students understand their achievement and progress was not evident during any of the observations. Class time spent on inquiry and reflection was evident in the fourth observation. Table 21 represents Mary's efforts to use ongoing, formative assessments to inform her teaching.

Table 21

Mary's ongoing assessments

Theme	Code	Formulated Meaning	Context	Frequency
Approach to grading and assessment	Monitoring student progress	Formative assessments	Mary taking anecdotal notes as students read; monitoring spelling words during Guided Reading.	3 out of 5 observations
		Multiple Assessments	Performance tasks and written tasks related to alphabetizing.	4 out of 5 observations

Adjustment for student needs. Seven criteria were examined within the category of adjustment for student needs. The evidence of these seven criteria from the observations provided insight into how Mary adjusts instruction to address students' needs. Six of the criteria were observed in at least three of the five observations, establishing a significant frequency of the occurrence. The six criteria were as follows:

> The lesson makes appropriate provisions for a range of student needs.
> The teacher proactively planned for differing specific student readiness, interest, and/or learning profile needs.
> There is differentiation of content.
> There is differentiation of process
> The teacher uses instructional strategies that are appropriate to the lesson goals.
> The teacher uses a range of instructional strategies to support student engagement.

Evidence of Mary's effort to differentiate the product students were allowed to submit was not observed during any of the observations.

The lessons and activities described above for all five observations made appropriate provisions for a range of student needs. Specific examples of Mary's provisions for student needs occurred primarily during small group instruction. During the first and third observations,

the words Mary asked students to spell varied from one group to the next based on students' readiness. Likewise, the discussion question Mary asked each group reflected her planning for varied student needs. Conversely, students participating in station rotations interacted with the same materials regardless of need. Stations such as book making would potentially provide students with the option to write more or less in their book, but this was not clearly evident during either observation.

Mary provided additional support to students during the letter writing exercise in the second observation and the poem writing exercise in the fourth observation. Students were invited back to her table where she supported students in identifying the number of words in each sentence and in organizing their ideas. Later, in the second observation during math rotations, Mary varied the expectations of students regarding ways in which they would sort their shapes. No provision for a range of student needs was evident during the fifth observation.

Mary's efforts to proactively plan for differing student readiness, interest, and learning profile needs were evident in all five observations. During observations one, two, three, and four, Mary provided evidence of planning for different readiness levels through her work in small group rotations. This happened through Mary's differentiation of content and process in small group instruction. While the activities in Guided Reading and Guided Math were all related to the same learning goal, there were varying levels of complexity observed. As an example of her differentiation of process, Mary instructed one group how to sort their shapes while another group was instructed to sort their shapes in any way they wished and then explain the method they used. Mary differentiated content through the books students were reading and discussing during Guided Reading rotations.

The station rotation materials included paper-pencil tasks, manipulatives, and tasks that would require movement. Students had opportunities to select tasks that might cater to a variety of learning profiles. During the fifth observation Mary supported students' various learning modalities through allowing students to practice alphabetizing through kinesthetic and verbal modalities.

Mary's use of instructional strategies that are appropriate to the lesson goals and her use of a range of strategies were evident in all five lessons. During the first observation, students were allowed to use slates and markers, talk with partners and work independently to meet the literacy goal of re-telling a story. During the second observation, Mary used whole-class instruction, partner discussion, and kinesthetic symbols to support students in letter writing.

During the third observation, Mary used small group instruction with the use of slates and group discussion to support students in literacy goals. Mary used visual imagery and partner discussions to support students writing their poem during the fourth observation. To help students better understand alphabetizing, Mary used movement by allowing students position themselves in alphabetical order; she also used paper-pencil tasks to support students in growth. Table 22 represents Mary's efforts to make appropriate provisions for a range of students' needs.

Table 22

Mary's adjustment for student needs

Theme	Code	Formulated Meaning	Context	Frequency
Addressing student needs	Adjusting instruction	Provisions for range of needs	Provides scaffolding for students in writing letter and poem.	3 out of 5 observations
		Intentional use of strategies	Varied content in Guided Reading rotations.	5 out of 5 observations.
		Intentional use of strategies	Use of kinesthetic symbols for letter writing.	3 out of 5 observations.

Tasks. Six criteria were examined within the category of ongoing assessment. The evidence of these six criteria from the observations provided insight into how Mary adjusts instruction to address student needs. Five of the criteria were observed in at least three of the five observations, establishing a significant frequency of the occurrence. The five criteria were as follows:

> Tasks require high levels of thinking.
> Tasks are appealing from a student perspective.
> Tasks represent a wise use of students' time and allow each student to work efficiently.
> Tasks are aligned with common learning goals and with one another.
> Tasks provide appropriate challenge and scaffolding in anticipation of individual student needs.

Tasks that approximate the thinking and doing of people who do similar work in the real world were observed during the second and fourth observations. Tasks that require high levels of thinking at a first grade level were evident in all five observations. Mary asked one of her reading groups to infer why certain characters in the story were being mean. She asked students

to consider if they were being mean or just clever. During small group math instruction in the second observation Mary asked students to place objects on a picture using positional words (i.e. beside, above, beneath).

In the third observation, Mary was observed asking another group of students to infer what might happen next in the story. Students were allowed to predict what might happen in the section of the story they were about to read. In the science lesson during the fourth observation, students were asked to evaluate which object would weigh more and to predict which object would require more force to move. During the fifth observation Mary asked her students to compare themselves to plants.

Stations for literacy and math seem appealing from a student perspective as evidenced by the students' willingness to participate in the tasks. Literacy stations included book making, technology, read-to-self and read-to-someone. Math centers were more numerous. Some rotations included technology; some included math games involving cards or other manipulatives. Whole group instruction during math in the second observation, science during the fourth observation, and literacy during the fifth observation all involved movement and broad participation from the students.

Likewise, the Reader's Workshop and Math Workshop provided a wise use of students' time. Mary engaged students in tasks designed for their readiness level during small group instruction and students were engaged in a variety of literacy and numeracy tasks in partners or as individuals.

The tasks in Mary's observation were all aligned to common goals. During the first observation, her focus was to improve students' skills in re-telling a story. The second observation focused on writing a letter during the literacy block and on sorting shapes during the

numeracy block. During the third observation, students were focused on literacy skills appropriate to their reading group. In the fourth observation students were focused on re-telling the story during the literacy block and focused on forces and motion during the numeracy block. The fifth lesson was focused on alphabetizing and literacy goals appropriate for each group.

Mary's efforts to design tasks that approximate the thinking and doing of people who do similar work in the real world were observed during the second and fourth lesson. Table 23 represents Mary's efforts to create tasks which require high levels of thinking.

Table 23

Mary's Tasks

Theme	Code	Formulated Meaning	Context	Frequency
Addressing Student Needs	Tasks	High levels of thinking	"Which item weighs more? Which will be harder to move?" (Observation Five Mary, May 201).	5 out of 5 observations
		Appealing to students; wise use of time	Students given a variety of engaging literacy and numeracy tasks during station rotations.	4 out of 5 observations

Groupings and management. Six criteria were examined within the category of groupings and management. The evidence of these six criteria from the observations provided insight into Ruth's beliefs about diversity in the classroom. Three of the six of the criteria were observed in at least three of the five observations, establishing a significant frequency of the occurrence. The six criteria were as follows:

Students work in a variety of groups within a relatively short time span.

The teacher uses space, time, and materials flexibly to address varied learning needs.
The teacher and student share responsibility for making the classroom work smoothly.

Students were observed working in a variety of groups during a relatively short time span during all five observations. With the combination of whole group instruction, independent work, and partner work during station rotations, students were in a variety of grouping throughout each observation. Additionally, students were not necessarily in the same groups during reading and math. Students might be in the middle group during reading instruction but be place in the advanced group during math instruction.

Mary used her space and materials flexibly to support the diverse needs of learners in her classroom. Students were allowed to sit in a variety of places during the station rotation time. As students were able to self-select their stations, Mary provided flexibility in what materials students accessed to help themselves improve in literacy and numeracy goals.

Students shared responsibility with Mary for the classroom working smoothly when they took responsibility to clean up materials from station rotation time. Mary had to do very little prompting for students to clean up materials due to the clear guidelines and expectations for how students should work individually and as a group. During the fourth observation, Mary communicated to the class that they were not meeting the expectations for station time and the students corrected the behavior.

Mary's role as facilitator and coach of learning for individuals and the group was evident during the second and fourth observations. Evidence that students know how to get and give help appropriately as needed was noticed during the first and fifth observation.

Artifacts. Artifacts that support Mary's use of differentiated instruction were requested during the initial interview. Mary committed to copying artifacts she felt supported her. The

artifacts were provided to the researcher at the end of the post-observation interview. The artifacts included the following:

An emergent Guided Reading plan dated October 27
An emergent Guided Reading plan dated February 26
An early Guided Reading plan for a reading group dated March 19
A transitional Guided Reading plan dated March 26
A transitional Guided Reading plan dated April 28
A copy of weekly lesson plans for guided math (no dates provided)
A math worksheet on which students are asked to write a word problem
A math activity page on which students are required to find objects and compare lengths
A math activity page related to telling time
A copy of a math page from curriculum designed to reteach time telling concept
A copy of a math page from curriculum designed to provide enrichment for advanced students
An enrichment page created by Mary related to shapes
A remediation page created by Mary related to shapes
A template for a math game created by Mary

Upon reviewing the two emergent Guided Reading plans, it becomes clear that both plans are related to the same student. The plan from October is focused on visual scanning and the plan dated in February is focused on stretching out sounds. This would indicate growth in the student's reading ability. It would also indicate that she is below grade-level and provides evidence that Mary is designing instruction for this student at her readiness level.

The early guided reading plan dated March 19 reflects Mary's plans for another group of students. However, since there is a broad range of dates, one must presume that Mary is simultaneously using the emergent and early guided reading plans based on the readiness level of the students. Both plan templates (emergent and early) provide the strategy focus. Mary's focus for the students using the early guided reading plan is for students to use decoding strategies, which is a skill that is more advanced than what is found on the emergent Guided Reading plan.

It is not evident what group of students Mary had in mind when she filled out the transitional Guided Reading plan. However, the skills represented on the plans are at a much

higher level than that of the emergent or early Guided Reading plans. One might infer that all three templates are used throughout the year and students can progress from early to emergent to transitional as their readiness changes throughout the school year. Without examples from the same time period it will be difficult to confirm.

Upon reviewing the two copies of weekly lesson plans for guided math, there is evidence that Mary has intentionally planned different instruction for students at varied readiness levels to move them all toward the same learning goal. The evidence for this is based on the space for "low, medium, and high" for each day of the week. However, there are limited details about what Mary planned to do with each group and no dates are written on the lesson plans.

The reteach and enrich page from the math curriculum provides evidence of Mary's differentiation for student readiness. Upon examining the documents it is evident that both pages address the same learning goal. The reteach page allows students to practice basic skills in telling time. The enrich page allows students to consider activities that would be appropriate at different times of the day. It is not clear from the documents which students, if any, used the reteach or enrichment pages. Nor is it clear the process Mary used to determine which page, if any, would be appropriate for specific students.

While the remaining artifacts represent activities that could be assumed to be engaging to first-grade students, it is unclear how these documents support Mary in differentiating instruction. Each of the remaining artifacts are all related to math concepts. No artifacts were provided in the area of writing, science or social studies.

Cross-case Analysis:

Coding was used for the cross-case analysis. A frequency of two out of three participants was expected to establish significance. The observations were collated across cases

according to each category. A total of fifteen observations were conducted. A frequency of 10 out of 15 was required for each criterion to be considered significant. Analysis will be made across all three cases by focusing on comparisons between the first grade teacher (Mary) and the two second grade teachers (Sylvia and Ruth), and between the participants at School A (Mary and Sylvia), and the participant at School B (Ruth).

Initial interview. An interview with each participant was conducted prior to any observation in her classroom. A structured protocol (Appendix F) was used for the purpose of gathering some personal information about the participant and to gain insight into her general understanding of differentiated instruction. The interviews occurred at the participant's school.

Mary and Ruth received training in differentiated instruction through graduate programs. Ruth attended a graduate program from a public university in Missouri, and Mary is currently enrolled in an online graduate program in a neighboring state. Both participants mentioned taking a course in differentiation as a part of their study. All participants mentioned in-service training and professional development offered through the school district in which they teach.

A wide variety of resources were mentioned by the participants. Resources related to Kagan Cooperative Learning (Initial Interview Sylvia, April 2015), Multiple Intelligences (Initial Interview Ruth, April 2015) and books by Linda Dorn (Initial Interview, Mary 2015) were all mentioned as helpful to the participants. Each participant cited resources and training that was helpful in their understanding of differentiation; however, there were no themes that formed from the information provided by the participants.

Each participant was asked to define differentiated instruction to provide insight into their point-of-view related to differentiating instruction. All three participants mentioned an emphasis on student growth in their definition of differentiated instruction. Ruth's definition deviated

from Sylvia and Mary in that Ruth emphasized, "looking at their multiple learning styles." (Initial Interview Ruth, April 2015). Mary and Sylvia, both from School, A agreed that differentiated instruction involves meeting the child where they are and moving them forward. Table 24 addresses the participants' definitions.

Table 24

Definitions of differentiation

Theme	Code	Formulated Meaning	Context	Frequency
Definitions	Student Focus	Meeting students where they are	"meeting each child where they are and growing them forward." (Initial Interview Sylvia April 2015).	2 out of 3 participants

Two of the three participants mentioned the use of pre-assessment as a means to decide when to differentiate instruction. Sylvia was the only participant to give examples of how she uses pre-assessments in each content area to determine what content she needs to cover with which students. Sylvia mentioned using some formal and informal assessments to determine when to differentiate: "[Pre-assessments] don't necessarily have to be a worksheet, just some type of assessment." (Initial Interview Sylvia, April 2015).

Mary began her response by thinking about "certain times of the day when (she) knows that all of the kids are not going to be on the same level." She identified reading, writing, and math as definite times of the day when she felt differentiation was necessary. She mentioned the use of pre-assessments, observations and anecdotal records at the end of her response; however, she limited it to the first six weeks of school "when (she) is really trying to figure out where they

are" (Mary Initial Interview, April 2015). No specific examples were provided. Mary did not mention differentiation during science or social studies.

Ruth responded to the question by explaining that her decision to differentiate happens at various times during the planning and teaching process. At times she makes the decision during the planning stage before the lesson takes place, at times during the lesson when she realizes a student is stuck, and then "sometimes just out of an opportune moment" (Ruth Initial Interview, April 2015). Ruth did not provide any specific examples of behaviors she looks for to determine if a student is stuck. She also did not mention any specific criteria she considers during the planning stages of a lesson other than "how can I teach this in a non-traditional way?" (Ruth Initial Interview, April 2015). Table 25 represents the participants' methods for determining when to differentiate instruction.

Table 25

Methods to determine when to differentiate

Theme	Code	Formulated Meaning	Context	Frequency
When to differentiate	Determine what students know	Use of pre-assessment	"Pretests and pre-assessments, so to speak. Doesn't necessarily have to be a worksheet, just some type of assessment." (Sylvia Initial Interview, April 2015)	2 out of 3 participants

The participants' efforts to provide choice to students vary widely. The responses were distinctly different. Sylvia mentioned providing student choice in the context of literacy stations

during Reader's Workshop and math stations during Math Workshop. Sylvia does not assign students to stations; rather, she allowed the students to choose any station they would like to work in. Mary decides to offer choice based on students' proficiency in a particular area. She mentioned her advanced math students and how she will give her advanced students a "project to include the concepts that [they] are working on" (Initial Interview Mary, April 2015). Mary did not provide specifics about what choices would be available within the project or the frequency of projects offered to her advanced math students. Ruth stated that she will think about choice before the lesson and during and she added that she likes to control the choice. No specifics about how students experience choice or ways she determines to offer choice were provided by Ruth.

All participants agree that differentiation is necessary because students are different. The reality in first and second grade classrooms at School A and School B is that students enter the school year at different levels in various subject areas and they have different learning preferences. Sylvia's response highlighted that differentiation allows students to recognize that they might be strong in one area and weak in another area. Mary emphasized the wide range of ability in first grade and that "one lesson doesn't hit all of them" (Initial Interview Mary, April 2015). Ruth pointed out that students have varying learning styles and preferences. Table 26 represents the participants' beliefs for the need to differentiate instruction.

Table 26

Need to differentiate instruction

Theme	Code	Formulated Meaning	Context	Frequency
Differentiation is necessary	Diversity	Students are diverse academically and through their learning preferences.	"One lesson just doesn't hit all of them" (Mary Initial Interview, April 2015)	3 out of 3 participants

All participants agreed that differentiating instruction can be challenging. Ruth and Mary cited the time it takes planning lessons as being the most challenging factor in differentiating instruction. Ruth added that her limited time to teach a lesson also makes differentiation a challenge. Mary explained that sometimes it is difficult to know if the planning will be challenging enough for her students. Sylvia's response focused on motivating students to engage in the work. She shared about one student in particular who does not like to be challenged. Sylvia planned differentiated activities for her, but found it difficult to motivate the student to engage in the curriculum that is appropriate for her readiness level. She also mentioned a lack of technology available to the students as being a challenge when differentiating. Table 27 represents participants' reasons for believing that differentiation is challenging.

Table 27

Challenges in differentiating

Theme	Code	Formulated Meaning	Context	Frequency
Differentiation is difficult	Time	Differentiation takes more time to plan.	"The planning of [differentiation]…spending that much time planning." (Mary Initial Interview, April 2015).	3 out of 3 participants

Each participant was also able to identify reasons that differentiation is easy. All three participants mentioned seeing how students respond to the differentiation. Ruth simply stated that students want it and that makes it easy for her to feel motivated to differentiate. Mary stated "knowing that it's best for the kids" (Mary Initial Interview, April 2015) and Sylvia stated, "just seeing the kids grow" (Sylvia Initial Interview, April 2015). Mary and Sylvia also mentioned the benefit to students in their response to what makes differentiation easy. They both added that technology and access to resources and ideas make it easier to plan. Mary mentioned Pinterest and Teachers Pay Teachers specifically as resources that make her planning easier. Sylvia mentioned searching for lesson ideas but did not mention any specific websites that support her. Table 28 represents participants' reasons that differentiation is easy.

Table 28

Differentiation is easy

Theme	Code	Formulated Meaning	Context	Frequency
Differentiation is easy	Student growth	Differentiation supports student growth.	"just seeing the kids grow" (Sylvia Initial Interview, April 2015)	3 out of 3 participants

All participants were able to describe what they have noticed in their students as a result of their differentiation. No specific evidence was cited as a result of participants' differentiation. They all agreed that students were more excited about being at school and that all students were more engaged and making progress.

Mary's response focused on students' participation in math since that has been her focus this year. She also mentioned that students reported sharing their learning with parents outside of school hours. She felt this was a reflection of her efforts to differentiate. Sylvia added that

she has observed evidence that students want to be at school as a result of her differentiation. Table 29 presents the participants' observations of students as a result of their efforts to differentiate.

Table 29

Students' behavior as a result of differentiation

Theme	Code	Formulated Meaning	Context	Frequency
Differentiation impacts students	Engagement	Students are more engaged and motivated as a result of differentiation	"everybody is making progress and everybody wants to be here" (Sylvia Initial Interview, April 2015)	3 out of 3 participants

Learning environment. Seven criteria were examined within the category of learning environment. The observations related to these seven criteria provided insight into the participants' implicit beliefs about diversity within the classroom. Six of the criteria were observed in at least ten of the fifteen observations establishing a significant frequency of the occurrence. The six criteria were as follows:

The teacher and students respect one another.
The teacher shows interest in students as individuals.
There is active participation by a broad range of students.
Students seem comfortable with one another.
The teacher creates collaborative learning experiences.
There are routines and rituals in place that help students feel they belong and are valued.

Evidence for the participants' respect for their students and their students' respect for the participants was observed during fourteen of the fifteen observations. Details of each participant's actions are described above in the within case analyses.

While all three participants provided evidence of respect for their students and students showed respect for their teachers, there was some variance in the ways in which the respect manifested itself. Upon review of Table 29, it becomes clear that all three participants have distinct personalities and communication styles. These personality traits manifest themselves when interacting with their students. Mary's focus in first grade was on ensuring that all students were included in activities. She was intentional about encouraging students to look at the speaker when speaking and including everyone in the morning meeting. Sylvia and Ruth showed respect to students through an emphasis on leadership and self-direction. A comparison of School A and School B revealed no significant difference between the behaviors of participants at either site.

Evidence for the participants' efforts to show interest in students as individuals was observed during thirteen of the fifteen observations. Details of each participant's actions are described above in the within case analyses.

Comparison between first grade and second grade further affirms an emphasis on responsibility and leadership in second grade and a focus on inclusion in first grade. Sylvia and Ruth communicated an interest in developing leadership skills and responsibility in their students as they showed personal interest in them. Mary communicated a desire for all students to belong and praised individual students for showing warmth toward their classmates.

No significant differences were observable across School A and School B. Each participant's individual communication style was evident in the way in which they communicated interest in students as individuals. This provides evidence for the individuality of the participants involved in the study.

Evidence for the participants' efforts to encourage participation from a broad range of students was observed during fifteen observations. Details of each participant's actions are described above in the within case analysis.

Both participants at School A were observed using a workshop model to encourage a broad range of students to participate. Sylvia referred to them as centers and Mary referred to them as stations, however, the function and purpose was the same across both classrooms in the School A. It is not clear if stations are a building-wide expectation for School A or if this was just a coincidence or a product of their differentiation.

Ruth was the only participant observed using brain breaks. She used the brain breaks during multiple observations at times when students had been engaged in independent, academic tasks for an extended period of time. Again, it is not clear if this was a building expectation or a product of her willingness to differentiate.

All participants were observed calling on a wide variety of students during whole-group instruction. Evidence for the participants' efforts to support comfort of students with one another was observed during fourteen of the fifteen observations. Details of each participant's actions are described above in the within case analyses.

Sylvia and Ruth demonstrate an intention and desire to build self-directedness in their students through allowing them to self-start during Reader's Theater rehearsal and self-select partners for various class activities. Students in both second grade classrooms were observed successfully communicating with classmates to encourage collaboration and support for their classmates.

In Mary's first grade classroom, students demonstrated that they were comfortable with each other through their participation in small group stations during literacy and math

instruction. The students' willingness to be inclusive further supports Mary's efforts to build an inclusive environment for her first graders. No distinct differences were observed between School A and School B.

Evidence for the participants' efforts to create collaborative learning experiences was observed during thirteen of the fifteen observations. Details of each participant's actions are described above in the within case analyses.

The workshop model for Math and Reading provided many opportunities for the first and second grade students at School A to collaborate. Reader's Workshop and Math Workshop were evident during multiple observations in Mary's classroom and Sylvia's classroom. While Mary and Sylvia were meeting with small groups of students, the remaining students were engaged in activities, many of which required them to work collaboratively.

Ruth's efforts to create collaborative learning experiences happened outside the context of a workshop model. During multiple observations, students were asked to find a partner to complete a variety of tasks and students were encouraged to support classmates as they complete independent tasks.

Evidence for the participants' efforts to establish routines and rituals was observed during fifteen observations. Details of each participant's actions are described above in the within case analyses.

All three participants established the use of a sound to signal students to transition. Mary and Ruth used a chime that, when struck on the table, would produce a high-pitched sound. At the sound students would immediately look at the teacher or begin their transition to the next activity. Sylvia used a bell for the same purpose.

No clear distinctions between grade levels or between schools were observed. The routines and rituals in place were specific to the needs of the students in the class and the preferences of the teacher.

The degree to which the participants emphasized student growth toward important goals versus student competition was not evident in any of the observations. Each participant addressed this criterion during their post-observation interview. Analysis of this criterion will be provided in the post-observation interview section below. Table 30 represents a comparison of the participants' efforts to show respect for their students and their students' respect for the participants.

Table 30

Comparison of participants learning environment

Mary – First Grade, School A	Sylvia – Second Grade, School A	Ruth – Second Grade, School B
Comparison of teacher and student respect for one another		
"Let's listen to [student]. Eyes on [student]" (Observation Two Mary, May 2015).	"I'm going to let you self-monitor" (Observation Two Sylvia, April 2015).	"Look at your partner. What is one adjective you could use to compliment them?" (Observation One Ruth, April 2015)
Comparison of teachers' efforts to show interest in students as individuals		
Support for student who can't find a group. "How can we fix this?" (Observation Four Mary, May 2015).	"So you're going to pick a book that is more challenging? Good idea" (Observation Four, May 2015).	"[Student] you are looking awesome; I'm going to give you a leadership ticket" (Observation Four Ruth, May 2015).
Active participation from a broad range of students		
All students engaged during station time in Reader's Workshop and Math Workshop	All students engaged in learning centers during Reader's Workshop and Math Workshop	Multiple students willing to provide answers during whole-class discussion
Comfort of students with classmates		
Student communication and collaboration during small group rotations	Students willingly taking turn during a math review game	Students sharing supplies during independent activities
Collaborative learning experiences		
Collaboration during Math Workshop and Reader's Workshop.	Collaborative learning environments in Math Workshop and Reader's Workshop	"If you are an early finisher, you can help friends cut out" (Observation One Ruth, April 2015).

Learning goals. Five criteria were examined within the category of learning goals. The evidence of these five criteria from the observations will provide insight into how Sylvia identifies learning goals and essential understandings. Four of the five of the criteria were observed in at least ten of the fifteen observations, establishing a significant frequency of the occurrence. The criteria were as follows:

> There is clarity about what students should know, understand, and be able to do.
> Students explore knowledge (e.g. facts, terms) and skills in context (e.g. of ideas, of real-world problems).
> The teacher connects learning goals to students' interests and experiences.
> All students are working toward a common learning goal.

The degree to which students examine big ideas, essential questions, concepts, and principles was evident during three observations in Sylvia's classroom, one observation in Mary's classroom and one observation in Ruth's classroom. These instances are discussed in the within case analyses above.

Evidence for the participants' efforts to provide clarity about what students should know, understand, and be able to do was evident during fifteen observations. Likewise, all students were working toward the same goal during all observations. Details of each participant's actions are described above in the within case analyses.

Across all three cases, participants provided clarity about what students should know, understand, and be able to do. During observations where multiple content areas were covered, the participant stated the learning goal for each content area. This occurred at the beginning of instruction during all fifteen observations. While students were engaged in varied small group instruction, the learning goal remained the same throughout the course of the lesson.

The learning goals were stated using language and vocabulary that first and second grade students could understand. Posted learning goals were not observed in any of the classrooms.

No clear differences emerge when comparing between School A and School B, nor are there clear differences when comparing first grade to second grade.

Evidence for the participants' efforts to allow students to explore knowledge and skills in context was evident during thirteen of the fifteen observations. Details of each participant's actions are described above in the within case analyses.

Sylvia was observed using the language of people in the field to help her students find real-world context for their learning. The quote in Table 30 is one example of Ruth's use of vocabulary that would mimic the vocabulary of practitioners outside the classroom. Mary and Ruth both used opportunities in writing to allow students to apply what they have learned to authentic audiences. All of the examples in Table 30 happen in the context of literacy instruction. However, Sylvia and Ruth both provided opportunities during the thematic units they taught in social studies. Sylvia's Zoocenomics unit and Ruth's Caribbean unit provided students the opportunity for real-world context.

Evidence for the participants' efforts to connect learning to students' interests and personal experiences was evident during thirteen of the fifteen observations. Details of each participant's actions are described above in the within case analyses.

All three participants connected learning to students' personal experiences and interests through literacy. Mary achieved this through a discussion of the vocabulary word *dozed* and Sylvia and Ruth achieved this through writing. Sylvia's assignment of an accordion book was based on student interest, and Ruth's writing assignment was based on students' personal experience as was another assignment on writing their favorite book.

Mary and Sylvia also connected learning to personal experiences through social studies and science. Mary's lesson on force and motion allowed students to connect to their recent

experience at recess, and Sylvia built upon students' recent trip to the zoo during her Zoocenomics unit. Table 31 provides a comparison of the participants' efforts to provide clarity about what students should know, understand, and be able to do.

Table 31

Comparison of participants' learning goals

Mary – First Grade, School A	Sylvia – Second Grade, School A	Ruth – Second Grade, School B
Clearly stated goals		
"Today we are going to write a poem" (Observation Four Mary, May 2015).	"I want you to be thinking about what they do well and what they could do better and what you could do better" (Observation Four Sylvia, May 2015).	"We are going to review two-part word problems with a tropical island theme" (Observation Five Ruth, May 2015).
Students explore knowledge and skills in context		
"We are going to write a letter to [student teacher]" (Observation Two Mary, May 2015).	"This would be called a rehearsal" (Observation Three Sylvia, May 2015). Comment made in reference to students' practice for the Reader's Theater.	"You are going to write an opinion about your favorite book" (Observation Four Ruth, May 2015).
Connection of learning to students' personal experiences		
"When is a time you might have dozed off?" (Observation Three Mary, May 2015).	Zoocenomics unit based on students' recent trip to local zoo.	"We are going to think about special places we have been" (Observation Two Ruth, May 2015).

Ongoing Assessment. Six criteria were examined within the category of ongoing assessment. The evidence of these six criteria from the observations provided insight into how the participants approached grading and assessment. Three of the criteria were observed in at

least ten of the fifteen observations, establishing a significant frequency of the occurrence. The three criteria were as follows:

> On-going/formative assessment of student readiness, interest, and learning profile has informed the teacher's instructional planning.
> Multiple assessments (including self-assessment) and/or multiple forms of assessment are used during the lesson.
> The teacher uses assessment to gauge what students have learned.

Ruth's use of pre-assessments was not evident during any of the observations. Pre-assessments were evident in two observations of Mary and two observations of Sylvia. The frequency did not warrant attention during the within case analysis; however, the topic of pre-assessments was addressed during each post-observation interview and will be addressed in the cross-case analysis of the post-observation interviews.

The participants' use of assessment to help students understand their achievement and progress was evident during one of Ruth's observations. Class time spent on inquiry and reflection was evident during one observation in Ruth's classroom, one observation in Mary's classroom, and three observations in Sylvia's classroom. While this criterion was discussed in the observation section of Sylvia's within case analysis, it will be addressed during the post-observation section of the cross-case analysis.

Evidence for the participants' efforts to use ongoing and formative assessments of students' readiness, interest, and learning profile was evident during eleven of the fifteen observations. Details of each participant's actions are described above in the within case analyses.

All three participants provided multiple examples of using ongoing assessment to monitor student progress and inform their instruction. Each participant conducted ongoing assessment in the context of small group instruction. Participants at School A took anecdotal

notes during guided reading while the participant at School B used oral assessments to monitor student progress.

Both classrooms at School A used small dry-erase boards, referred to as slates. The participant at School B was the only participant observed conducting ongoing assessment on an individual basis.

Participants' efforts to use multiple assessments and multiple forms of assessment were evident during eleven of the fifteen observations. Details of each participant's actions are described above in the within case analyses.

All three participants were observed using verbal and written assessments related to literacy goals. Multiple assessments were not observed during math, science, or social studies lessons. Mary was the only participant observed using a performance task as an assessment. Lesson lengths ranged from 20 minutes to as long as two hours (i.e. literacy block).

The participants' efforts to use assessments to gauge what students had learned was evident during eleven of the fifteen observations. Details of each participant's actions are described above in the within case analyses.

Due to the variety of learning goals covered during the observations, the assessments used to gauge what students had learned varied as well. All three participants designed assessments appropriate to the learning goals of the lessons presented to the students. All assessment tasks listed in Table 32 are related to literacy with the exception of one example from Sylvia. Mary provided the only example of a performance task as an assessment and the observation of Ruth's classroom provided an example of a district common assessment. Table 32 provides a comparison of participants' use of on-going and formative assessment of students' readiness.

Table 32

Comparison of participants' use of ongoing assessment

Mary – First Grade, School A	Sylvia – Second Grade, School A	Ruth – Second Grade, School B
Ongoing Assessment		
Mary taking anecdotal notes as students read; monitoring spelling words during Guided Reading. Use of slates to check students' accuracy in Math problems	Anecdotal notes taken while students read aloud during Guided Reading groups Use of slates to monitor students' accuracy in solving math problems	Students speaking consonant blends as Ruth listens Ruth checks individual students' two-part math word problem.
Multiple assessments		
Performance tasks and written tasks related to alphabetizing Oral tasks and written tasks related to literacy goals	Anecdotal notes while students read and comprehension questions during Reader's Workshop	Oral and paper-pencil assessments used to assess two-part word problems
Assessments to gauge what students have learned		
Performance tasks and written tasks related to alphabetizing. Oral tasks and written tasks related to literacy goals	Use of slates during math lesson to monitor students' learning in math Comprehension questions to monitor student learning in reading.	"Your sheet with both of your names on it will be turned in to be graded" (Observation One Ruth, April 2015). End-of-year writing prompt

Adjustment for student needs. Seven criteria were examined within the category of adjustment for student needs. The evidence of these seven criteria from the observations provided insight into how the participants approached grading and assessment. Four of the criteria were observed in at least ten of the fifteen observations, establishing a significant frequency of the occurrence. The four criteria were:

> The lessons and tasks make appropriate provisions for a range of student needs.
> The teacher proactively planned for differing specific student readiness, interest and learning profile.
> There is differentiation of content.
> The teacher uses instructional strategies that are appropriate to the lesson goals.

Differentiation of process was evident in three of Ruth's observations, two of Sylvia's observations, and three of Mary's observations. The frequency of this occurrence did not meet the requirements for a cross-case analysis. Differentiation of product was evident in two of Ruth's observations and one of Sylvia's observations. Mary did not provide any evidence of differentiation of product. This criterion did not meet the frequency requirements to be discussed in the cross-case analysis. Ruth provided evidence of the use of a range of instructional strategies to support student engagement and understanding, Sylvia provided evidence in two of her observations, and Mary provided evidence in three of her observations. This frequency did not meet the requirements to be discussed in the cross-case analysis.

Evidence of the participants' efforts to make appropriate provisions for a range of student needs was evident during eleven of the fifteen observations. Details of each participant's actions are described above in the within case analyses.

Each participant provided examples during literacy instruction. The teachers at School A also provide examples during Math Workshop. There is no clear distinction between grade levels or school sites in the manner in which teachers make provisions for a range of student needs. All examples listed in Table 33 are teacher directed. No evidence was provided of teachers' provisions for a range of student needs in the independent tasks students engage in during center or station time.

The participants' efforts to differentiate content was evident during twelve of the fifteen observations. Details of each participant's actions are described above in the within case analyses.

All participants provided differentiated content during Guided Reading, and Mary was observed differentiating content during Guided Math. While students were all working toward

the same learning goal in math and literacy, they were working with content at an appropriate level for their readiness. For instance, Guided Reading lessons provided evidence that students were all working on the skill of re-telling a story, but her three different groups were reading different texts appropriate for their reading level. Similarly, Sylvia's and Ruth's students had varying levels of text as they worked toward the goals of fluency and comprehension. The differentiation of content observed occurred within the context of a workshop model.

All three participants use instructional strategies that are appropriate to the lesson goal. As a result of the proactive planning referenced above, teachers are able to identify strategies that engaged students in the lesson. Table 33 provides a comparison of the participants' efforts to plan for and make appropriate provisions for a range of student needs.

Table 33

Comparison of participants' adjustment for student needs

Mary – First Grade, School A	Sylvia – Second Grade, School A	Ruth – Second Grade, School B
Appropriate provisions for a range of student needs.		
Provides scaffolding for students in writing letter and poem Varied tasks related to sorting during small group math instruction	Varying levels of text during Reader's Theater Varying levels of text for accordion book assignment	One group working on consonant blends while another group works on assignment related to *Sign of the Beaver*
Differentiation of content		
Differentiation of content in Guided Reading and Guided Math groups	Reader's Theater Scripts Differentiation of content during Guided Reading small group instruction	Differentiation of content in Guided Reading small group instruction
Instructional strategies appropriate to the goal		
Use of visual imagery and partner discussions to support students writing their poem using action words	Students observe other students' performance of Reader's Theater to compare and contrast their performance	Use of graphics, music, and informational text to support the same learning goal in the Caribbean unit

Tasks. Six criteria were examined within the category of ongoing assessment. The evidence of these six criteria from the observations provided insight into how the participants

adjusted instruction to address student needs. Five of the criteria were observed in at least ten of the fifteen observations, establishing a significant frequency of the occurrence. The five criteria are as follows:

> Tasks require high levels of thinking.
> Tasks are appealing from a student perspective.
> Tasks represent a wise use of student's time and allow each student to work efficiently.
> Tasks are aligned with common learning goals and with one another.
> Tasks provide appropriate challenge and scaffolding in anticipation of individual student needs.

Tasks that approximate the thinking and doing of people who do similar work in the real world were evident in two of Ruth's observations, three of Sylvia's observations, and two of Mary's observations. The frequency of these observations did not meet the criteria to be analyzed in the cross-case analysis.

The participants' efforts to provide tasks that require high levels of thinking were evident during twelve of the fifteen observations. Details of each participant's actions are described above in the within case analyses.

Tasks that require higher-level thinking surfaced through questions that are posed by the teacher. All participants provided questions that asked students to engage in making inferences and in meta-cognition. Participants asked their students questions across all content areas in each classroom. The tasks that required high levels of thinking were all directed by the teachers during the observations. No evidence of student-directed independent tasks that require high levels of thinking was observed.

The participants' efforts to provide tasks that are appealing from a student's perspective were evident during thirteen of the fifteen observations. Details of each participant's actions are described above in the within case analyses.

Students in Mary's classroom have access to math games that support students' progress toward the learning goal. Each station includes manipulatives such as cards, dominoes, or dice. Students were observed working in partners to play the games in the learning stations. Sylvia's students also engaged in tasks during center time that were appealing to them. One example from Sylvia's classroom included her use of small geometric shapes to challenge students to create symmetrical designs. During the second observation, students were observed gathered around the shapes and working in small self-selected groups.

Ruth's examples of tasks that are appealing from a student perspective came from whole class instruction. One example from Ruth's classroom was the exercise in which students were allowed to vote with their feet. Students considered their preference between two options and walked to a specified part of the room according to their preference. They were given the opportunity to share their thinking with a classmate.

The participants' efforts to provide appropriate challenge and scaffolding in anticipation of individual student needs was evident during ten of the fifteen observations. Details of each participant's actions are described above in the within case analyses.

All three participants used the workshop model to manage providing the appropriate level of scaffolding and challenge to students with a variety of readiness levels. The groups in Mary's class ranged in size from four to seven. Students worked on literacy skills such as decoding strategies and comprehension strategies. Sylvia and Ruth also conducted small group instruction to support a range of student readiness. Students focused on comprehension strategies as well as skills to make appropriate inferences. However, observations provided no evidence of teacher's efforts to vary the tasks in the stations to support a range of readiness levels while students are

working independently or in small groups. Table 34 provides a comparison of tasks that require high levels of thinking among all three participants.

Table 34

Comparison of participants' tasks

Mary – First Grade, School A	Sylvia – Second Grade, School A	Ruth – Second Grade, School B
Tasks require higher-level thinking		
"Which item weighs more? Which will be harder to move?" (Observation Four Mary, May 2015)	"What do you think that person was thinking?" (Observation One Sylvia, April 2015).	"Why do you think I have this umbrella?" (Observation One Ruth, April 2015).
Tasks are appealing from a student perspective		
Students given a variety of engaging literacy and numeracy tasks during station rotations.	Students work in small groups to use small geometric shapes to make symmetrical designs.	Students "vote with their feet" to explore the skill of sharing their opinion in preparation for opinion writing.
Appropriate challenge and scaffolding.		
Small group instruction focused on literacy skills appropriate to students' readiness levels.	Reader's Workshop during the first observation and Math Workshop during the second observation provided students with the opportunity to receive instruction designed specifically for their readiness levels.	Students working on book club assignment during the second observation

Groupings and management. Six criteria were examined within the category of groupings and management. The evidence of these six criteria from the observations provided insight into the participants' beliefs about diversity in the classroom. Three of the six criteria were observed in at least ten of the fifteen observations, establishing a significant frequency of the occurrence. The three criteria were:

> Students work in a variety of groups within a relatively short time span.
> The teacher uses space, time, and materials flexibly to address varied learning needs.

There are clear guidelines and expectations for how students should work individually and as a group.

The participants' efforts to place students in a variety of groups within a relatively short time span was evident during fourteen of the fifteen observations. Details of each participant's actions are described above in the within case analyses.

Each participant used flexible grouping. Students were in a variety of groups during the teachers' use of the workshop model. Participants used whole class instruction for mini-lessons, which lasted less than twenty minutes. Each participant was observed using small group instruction at least one time to focus on specific literacy or numeracy skills that provided necessary scaffolding and challenge for the small group of students.

During station rotations, students worked independently or in partners. There was no evidence that any participant was intentional about pairing students during station time. In all three classrooms, students self-selected tasks and chose their partners. It did not appear that partners were selected based on student readiness or learning profile. Students were allowed to work with their partner unless they began to cause a disruption.

Flexible use of space was observed during station rotations and center time. Participants allowed students to sit in a variety of areas in the classroom. Sylvia and Mary had a classroom library area where they welcomed students to sit while engaged in read-to-self or read-to-someone stations. Ruth allowed for flexible seating during independent work time; however, most of her students remained in chairs at a table or desk. Flexible use of time was observed in the participants' frequency of meeting with certain small groups. Mary and Sylvia were observed meeting with struggling students during multiple observations compared to advanced groups during only one observation.

Each participant provided evidence that students know the expectations of working in a group and independently. While participants never explicitly stated behavioral expectations, evidence of this was provided by the absence of consequences. A few instances in each classroom provided evidence that a consequence for non-compliance had been established by virtue of the fact that students did not argue nor act surprised when they were told of a consequence. In Mary's classroom, students were observed being sent back to their seat during station rotation. In Sylvia's classroom students were asked to get regular chairs instead of continuing to use their exercise balls during small group collaboration in the Zoocenomis unit. In Ruth's classroom, students were asked to "clip down" on their clip chart, indicating that they had made a choice which was not acceptable during independent work. Table 35 presents a comparison of participants' efforts to use groupings and management to support student needs.

Table 35

Participants' use of groupings and management to support student needs

Mary – First Grade, School A	Sylvia – Second Grade, School A	Ruth – Second Grade, School B
Participants' use of groupings and management to support student needs		
Whole class, partner work, small group instruction, and independent work during Reader's Workshop and Math Workshop Flexible seating during station rotations; varied time and frequency with small group instruction Students know expectations of partner work and independent work. Consequences observed when student do not comply	Whole class, partner work, small group instruction, and independent work during Reader's Workshop Flexible seating during center time, and Reader's Theater rehearsals; varied time and frequency with small group instruction Students know expectations of partner work and independent work. Students redirected when off task	Whole class, partner work, and independent work to support students in identifying main idea and supporting details Flexible use of space while students are participating in Reader's Workshop Students know expectations of partner work and independent work.

The participants' efforts to place students in a variety of groups within a relatively short time span was evident during fourteen of the fifteen observations. Details of each participant's actions are described above in the within case analyses.

Post-observation interview. Post-observation interviews were conducted with each participant after the conclusion of the five observations in that participant's classroom. A semi-structured interview protocol was used to conduct the post-observation interviews (Appendix F, Appendix G, and Appendix H.) Questions that were asked of all participants were analyzed and discussed below. Some questions were crafted to gain further insight into the participants' planning of specific lessons observed during the observations. Those questions were discussed during the within case analysis of each participant.

The interview began by asking participants to reflect on their implementation of differentiation during the observation window. Mary and Ruth indicated that they were pleased with their implementation stating that it "was pretty natural to what I do" (Post-observation Interview Ruth, May 2015) and "it was pretty much what I do all year long" (Post-observation Interview Mary, May 2015). Sylvia communicated that her differentiation wasn't as strong as it had been early in the school year due to the fact that "the schedule is hardly ever regular at this time of year" (Post-observation Interview Sylvia, May 2015) making the planning of differentiated lessons more difficult.

Each participant was able to identify a highlight of their differentiation during the observation window. Sylvia mentioned the Zoocenomics unit and some of her math stations for the geometry unit. She had evidence that students were eager to engage in the math centers because of the amount of manipulative pieces and pattern blocks. Ruth mentioned her Caribbean unit as it integrated multiple content areas and provided opportunities for a variety of learning

styles to be engaged. Mary mentioned her use of the workshop model as a highlight of her differentiation during the observation window. She was satisfied with the fact that she was able to support all of the students and with the time she had to meet with students for small group instruction.

Two themes emerged as participants thought about challenges to differentiating during the observation window. All participants agreed that the end of the year made it more difficult to differentiate instruction. The observations were conducted during the final four weeks of school. Sylvia and Mary, both from School A, agreed that student and teacher focus made differentiation difficult during the final weeks of school. Mary stated that "because of the time of year, their minds are thinking 'end of the year'" (Post-observation Interview Mary, May 2015). Ruth agreed, mentioning, "focus, not just the kids…but even as a teacher there is just something about the last day" (Post-observation Interview Ruth, May 2015).

Another related challenge differentiating during the observation window was related to curriculum. As Mary and Ruth began to finish curriculum, they found it increasingly difficult to find resources that would provide rigor for their advanced students. Ruth mentioned specifically the "loss of challenge for rigorous material" (Post-observation Interview Ruth, May 2015). Table 36 provides information regarding the participants' perceived challenges to differentiating instruction during the observation window.

Table 36

Challenges to differentiating during the observation window

Theme	Code	Formulated Meaning	Context	Frequency
Challenges to differentiating	Timing	End of the school year creates specific challenges to differentiating instruction.	"just a loss of challenge for rigorous material" (Post-observation Interview Ruth, May 2015)	3 out of 3 participants

The two participants teaching second grade shared that the groundwork they laid during the beginning of the year in classroom management made their implementation of differentiated instruction at the end of the year much easier. Sylvia and Ruth believed their students knew what was expected of them when they were working individually or in a group. Mary's response was focused on student engagement. Mary shared that the fact that differentiation "keeps [students] more engaged" (Post-observation Interview Mary, May 2015) made it easy for her to implement differentiation. Table 37 represents the participants' reasons that differentiation was easy during the observation window.

Table 37

Reasons for differentiating

Theme	Code	Formulated Meaning	Context	Frequency
Differentiation is easy.	Routines and procedures	Students are aware of and understand the routines and procedures of the classroom.	"They know what they can and can't do" (Sylvia Post-observation Interview, May 2015). "classroom management techniques I did at the beginning of the year" (Post-observation Interview Ruth, May 2015).	2 out of 3 participants

Ruth and Sylvia mentioned higher engagement of their students in the lessons during the observation window as a result of their efforts to differentiate. Ruth did not provide any specific examples. Sylvia mentioned the Zoocenomics unit and hearing from parents that their child insist on being at school "because I'm in the group with my Zoocenomics" (Post-observation Interview Sylvia, May 2015). Sylvia believed this level of engagement and commitment was a result of her efforts to differentiate during the unit.

Mary provided examples of student growth during the observation window as a result of her differentiation. One example from literacy and one example from math highlighted how her struggling learners benefitted from differentiation. In literacy she noticed her struggling readers becoming more fluent when reading high-frequency words and in math she noticed her struggling learners becoming more proficient in writing numbers over 100. These observations

occurred within small group instruction. Table 38 provides explanations of participants' observations of the effect of their differentiation on students.

Table 38

Impact of differentiation on students

Theme	Code	Formulated Meaning	Context	Frequency
Differentiation has an impact	Student engagement	Students were more engaged and committed as a result of differentiation.	"Well, they've been engaged and eager to come to school" (Post-observation Interview Sylvia, May 2015).	2 out of 3 participants

All three participants made decisions about when to differentiate during the observation window based on student readiness. Ruth mentioned considering "what will work for my high, medium and low learners" (Post-observation Interview Ruth, May 2015), Mary stated that it is "just based on their need" and clarified that "it probably was more for the struggling kids in the last few weeks than it was for even challenging high kids" (Post-observation Interview Mary, 2015). Sylvia mentioned differentiating in all content areas and stated that "it's not a question of when, it's a question of how" she will differentiate (Post-observation Interview Sylvia, May 2-15). Her decisions are based on student readiness.

When asked how they decided when to offer choice, each participant mentioned station time or center time after the students had received small group instruction during a mini-lesson. Students had choice in which centers to participate; however, there was no indication from any participants that particular centers were designed with the students in mind. While each participant mentioned providing centers that would support different types of learners, they did

not mention specific examples. Table 39 represents participants' decision making regarding differentiation during the observation window.

Table 39

Decisions regarding when to differentiate instruction

Theme	Code	Formulated Meaning	Context	Frequency
Decision making regarding when to differentiate	Student need	The decision to differentiate is based on students' needs.	"what will work for my high, medium, and low learners" (Post-observation Interview Ruth, May 2015).	3 out of 3 participants

Growth mindset was seen by all participants as an important part of the way they teach and an integral part of a differentiated classroom. Mary stated "with differentiated instruction, I am able to give [the students] the support they need on their level so that they don't get that fixed mindset" (Post-observation Interview Mary, May 2015). Mary added that she believes that struggling students simply have not had the time they need to learn certain things, but she believes that they will learn it eventually.

Ruth stated that "whenever [she] approaches a lesson, [she] thinks that everyone is going to learn this and [she is] going to find a way for them to learn it" (Post-observation Interview Ruth, May 2015). Ruth's picture a triangle with the district's grade level expectations, differentiation and growth mindset all interacting to support students. She explained "the [grade level expectations] serve as the what and then the growth mindset and differentiation are the how. That's how I'm going to teach it" (Post-observation Interview Ruth, May 2015).

Sylvia provided a specific example to illustrate how she incorporates a growth mindset into her teaching philosophy. The student had a fixed mindset in the area of math and because

she supported the student in finding success, the student now has more confidence in math as evidenced by the student's willingness to volunteer answers during whole-class instruction during math.

Table 40 presents the participants' thoughts regarding the integration of growth mindset and differentiation.

Table 40

The integration of growth mindset and differentiation

Theme	Code	Formulated Meaning	Context	Frequency
Relationship between growth mindset and differentiation	Growth mindset supports differentiation	Teachers are better prepared to support a growth mindset through the use of differentiated instruction.	"I think that everyone is going to learn this and I am going to find a way for them to learn it" (Post-observation Interview Ruth, May 2015).	3 out of 3 participants

When asked about their process for identifying learning goals at the end of the year, the participants' answers varied. Sylvia begins with the Common Core State Standards and then looks at the school district's expectations and considers which standards overlap. Her goal in mapping the standards is to see "how much overlap can I create and then how much can I tweak it so that it's fun?" (Post-observation Interview Sylvia, May 2015).

Mary's process was based more on the performance of her students. She considered how student had performed, specifically in math, and decided to address some areas where her students were not proficient. Her knowledge of second grade curriculum also contributed to her decisions regarding where to focus her instruction to ensure students were prepared.

Ruth had a difficult time articulating her process for identifying the learning goal she addressed. She mentioned re-teaching a lesson on main idea and supporting details because she felt the students were not proficient in that area.

All participants agreed that academic diversity was valuable because it is important for students to learn to work with people who think differently than they think. Sylvia pointed out that "[students are] going to work with people who are brighter than they are and people who are less bright than they are…" (Post-observation interview Sylvia, May 2015). Ruth mentioned valuing that diversity teaches her students "humility and friendship building skills" (Post-observation interview Ruth, May 2015). Mary stated that her students benefit from listening to the thinking of their classmates. She believes that struggling learners can benefit from an explanation of an advanced student. Likewise, the advanced student can benefit from the more detailed, concrete explanation of the struggling learners. Table 41 provides a presentation of participants' perception of the benefits and liabilities of academic diversity in their classroom.

Table 41

Benefits of academic diversity

Theme	Code	Formulated Meaning	Context	Frequency
Academic diversity is a benefit	Different points of view	Students benefit from hearing different points of view.	"they're going to work with people who are brighter than they are and people who are less bright…they need to learn to interact with those people" (Post-observation Sylvia, May 2015).	3 out of 3 participants

All participants were asked to name attitudes, characteristics, and beliefs of teachers who differentiate instruction. Each participant agreed that flexibility is an important characteristic for teachers to have when implementing differentiated instruction. They all added that a teacher who differentiates should have a belief that all students can learn and grow.

When asked about their approach to assessment and grading, the participants indicated that they have various ways of assessing students, but all methods involve looking for evidence that students have mastered the standards rather than comparing each student with the performance of their peers. Sylvia emphasized the use of pre-assessments and that she avoids grading students' practice on skills. Ruth indicated that her assessments can be formal and informal, but she only grades independent work from her students. Mary did not give specific examples of grading practices but communicated that she does not feel the liberty to fully implement her grading philosophy. Table 42 represents the grading philosophy and practices of the participants in the study.

Table 42

Grading practices and philosophy

Theme	Code	Formulated Meaning	Context	Frequency
Grading in a differentiated classroom	Mastery grading	Teachers look for evidence that students have mastered a skill.	"so I guess you would say that I'm more of a mastery learning grader…" (Post-observation Interview Sylvia, May 2015).	3 out of 3 participants

No participants could identify specific times during their education when they benefited from differentiation. Ruth stated that she remembered teachers in high school and college providing multiple ways for her to learn things and Mary mentioned being placed in reading groups with other advanced learners. Sylvia does not have any clear memories of her educational experiences from elementary, high school, or college. She did cite some learning opportunities provided by her district where she had choice in her learning.

Mary and Sylvia stated that their willingness to differentiate has been profoundly impacted by what they have observed in their children. Sylvia's adult children were "highly intelligent, but not gifted" (Post-observation Interview Sylvia, May 2015). Sylvia mentioned one of her daughters being told that since she already knew this she could go read" (Post-observation Interview Sylvia, May 2015). Sylvia's observation of how that impacted her daughter continues to provide motivation to differentiate so that her students will not have the same experience.

Mary shared a similar observation as her daughters have moved through high school and college. Mary shared that "both of [her] daughters struggled in school" (Post-observation Interview Mary, May 2015) and they would not ask questions during whole group instruction. Mary uses those experiences to motivate her to differentiate. Table 43 represents the participants' reflection on personal experiences that have impacted their willingness to differentiate instruction.

Table 43

Personal experiences

Theme	Code	Formulated Meaning	Context	Frequency
Personal experiences impact differentiation	Impact on biological children	Teachers are motivated to differentiate because of what they have experienced.	"it took me several years of watching worksheet teaching…to them before I really started to evolve" (Post-observation Interview Sylvia May 2015).	2 out of 3 participants

Artifacts. A total of 45 artifacts were collected across all three cases. Each within-case analysis includes a detailed list. The type of artifacts submitted from each participant varied widely. To facilitate cross-case analysis, the artifacts were organized by content area (i.e. Reading, Math, Science, and Social Studies), lesson planning or management. Table 57 displays the nature of the artifacts submitted by the participants. It does not indicate the degree to which each artifact represents differentiation. This will be addressed in the discussion below.

Table 44

Nature of artifacts submitted

	Mary – 1st Grade School A	Sylvia – 2nd Grade School A	Ruth – 2nd Grade School B
Classroom Management	0	0	Happy Gram, Punch Card, Phone template
Social Studies	0	Worksheet for group activity on Goods and Services; Task cards related to activity page	Screen shot of webquest for Caribbean unit.
Math	"Reteach" and "Extend" worksheet from curriculum related to telling time; worksheet and activity page related to shapes; template for station games; cut and paste activity page for telling time; two activity pages related to measurement	Two activity pages related to measuring	Multiplication practice sheet; template for activity page used during centers
Literacy	Transitional Guided Reading plans; emergent Guided Reading plans; early Guided Reading plans.	Multiple examples of anecdotal notes from Guided Reading showing various levels of readiness; copy of the second grade animal writing rubric.	Multiple examples of literature response forms with different questions for each group; copy of Kindergarten sight word list used with struggling second grade students; copy of adjective worksheet
Lesson Planning	Weekly lesson plan; two transitional Guided Reading plans; emergent Guided Reading plan; two early Guided Reading plans; two weekly plans for Guided Math	Transitional Guided Reading plan; weekly lesson plans	Weekly lesson plan; Guided Reading lesson plan template (personalized); lesson plan for Reader's Theater on the Oregon Trail

Ruth is the only participant who submitted artifacts related to managing student behavior. The "happy gram" might support Ruth's efforts to show interest in her students as individuals.

However, Ruth did not use the "happy gram" during the five observations. The timing of the study was at the end of the year so the "first week phone call script" would not be observed during the window of the study. No evidence was provided of the punch cards used. It might be that the punch cards are a private behavior management system designed to be observable only by the student and teacher. Even still there were no conversations or references made regarding the punch card. Artifacts related to classroom management submitted by Ruth require many inferences to be considered a tool for differentiation.

No artifacts were submitted related to science instruction. Only the second grade teachers submitted resources for social studies instruction. The screenshot of Ruth's webquest is an example of her effort to provide informational text on a variety of student interests. From the screenshot it was not possible to check the resources and the resources were not listed on the document. Students were not observed using the resources, so it was not possible to independently verify the nature of each link. Sylvia's resources related to goods and services provide no clear evidence of differentiation. Even though social studies instruction was observed during multiple observations, students did not use either of the documents submitted by Sylvia, and the documents were not referenced during any of the observations. The artifact submitted by Ruth implies differentiation by interest.

Each participant submitted artifacts related to math instruction. A majority of Mary's artifacts relate to Math. The "reteach" page and "enrich" page related to telling time provide examples of resources found in the district curriculum. The artifacts are copies of the pages. Students have not completed either page so there is no evidence that the resources were used during instruction. No evidence of a reteach or enrich page was observed while in Mary's classroom. The remaining math artifacts (Table 44) provide no evidence of differentiation. The

artifacts are copies of worksheets or templates for games students can play during math stations. There is no indication of which students would benefit from these resources nor is there any indication that the artifacts address varying readiness levels, interests, or learning preferences.

Similarly, the two math resources submitted by Sylvia provide no evidence of differentiation. Based on the copyright located at the bottom of the pages, it appears to be a copy from a website. No learning goal is attached to the resource. One can infer that the purpose is to support students in the skill of measuring. Each page has four word problems related to measurement. It is not clear that the artifacts account for varying readiness levels, interests, or learning profiles.

Ruth's artifacts related to math have the potential to support students' varied learning needs. A timed multiplication fact practice sheet was submitted. A note was written on the artifact stating that Ruth used the fact practice sheet to allow students to practice addition, subtraction, multiplication, or division and students can move up or down a level as needed. It is not clear how this information is used in lesson planning or if the exercise has supported any students in improving their computation skills. Ruth also provided a template for a game students play during math groups. The directions at the top of the page state that students are to roll three dice and write down each number and then write the expanded notation equation. This game was not observed during any of the observations in Ruth's classroom. It is unclear how this activity is differentiated for readiness. While it might be engaging to students and support their progress toward goals related to computation, it is not clear how the activity supports differentiation in her classroom. None of the artifacts related to math were observed in any of the classrooms. Artifacts from the second grade classrooms did not clearly support differentiation. The only artifacts that clearly supported differentiation from Mary's classroom

were the "reteach" and "enrich" page. The use of these pages was not observed during any of the observations in Mary's classroom.

The artifacts related to literacy provided by all three participants provided the strongest evidence of differentiation. Ruth provided three examples of literature response forms that were completed by three different groups of students. All three forms were related to the story *Charlotte's Web*. The questions on the forms are varied according to student readiness. Ruth also provided a copy of a list of sight words used for Kindergarten students. A note was written on the page by Ruth stating that she uses the words as practice for struggling students. This was not evident during any of the observations.

Sylvia provided multiple copies of a transitional Guided Reading plan, which outlines varying goals related to literacy. For instance, the plan specified that one group would focus on a decoding strategy in which they covered part of the word while sounding out the other part of the word and another group would focus on rereading the text to think about what would make sense. No date was included on the lesson plan. One might assume that these lesson plans were for the same week, but the implementation of the plans was not observed. Multiple pages of anecdotal notes were submitted as artifacts. The notes addressed specific literacy needs of students at various readiness levels. Dates were included on the notes. This provided evidence for students' growth throughout the year. Students who required more support and scaffolding have more notes. Upon reviewing the notes, it became clear that the nature of the support varied among students based on their need. Sylvia also provided her weekly lesson plans that provided no evidence of differentiation. A topic or activity was listed for each content area on each day of the week. No details were provided on the lesson plan.

Similarly, Mary provided emergent Guided Reading plans, transitional Guided Reading plans and early Guided Reading plans for her first grade students. Dates are provided for each lesson plan and show a range of learning goals. Student names are also included on the plans, which provides evidence of students' progress from an emergent Guided Reading plan to an early Guided Reading plan. These lesson plans were observed during Guided Reading instruction. Mary also provided copies of her Guided Math lesson plans. These lesson plans are less detailed and only provide the names of activities. There is little evidence of planning for varying needs of her students other than the fact that a space is provided to write activities for "low," "medium," and "high" students.

Ruth provided two templates for Guided Reading lesson plans. The templates are not completed. There is no evidence of Ruth's efforts to plan for varying needs of her students based on the templates. A checklist of literacy skills is located on one template. It appears that the checklist is the same for each reading group but that Ruth is able to select an area of focus based on what they students need. The lesson plan for the Reader's Theater related to the Oregon Trail provides no evidence of differentiation. Ruth's weekly lesson plan does not outline or detail strategies and plans for differentiation. Topics or activities are listed for each subject on each day of the week.

Upon reviewing the artifacts, one can see that there are many examples where differentiation is not evident. Literacy is the only subject area in which all three participants provided clear evidence of differentiation in their planning. These were plans made for small group instruction during Guided Reading. The execution of these plans was evident during observations in all three classrooms.

Summary

While no participant provided flawless examples of differentiation, there was evidence of differentiation found within each case study. The information gathered from the interviews of each participant provided insight into their thinking. The observations and review of artifacts allowed for confirmation of what the participants claimed as their practice and approach to differentiation. A discussion of the results of the observations, interviews and artifacts will be detailed in the following chapter.

Chapter 5

Discussion

Introduction

The discussion of the results will begin with a discussion of the extent to which each case implemented differentiated instruction during the five observations and how those observations support or conflict with the information they provided during the initial interview and post-observation interview. Artifacts will also be discussed regarding how they provide further insight to the participants' approaches to differentiation. This is followed by a discussion of the cross-case analysis. Patterns of similarities and differences across all three cases are discussed.

The chapter concludes by addressing each of the research questions from the study. Evidence from the analysis will be used to draw conclusions that will provide answers to each of the research questions. Limitations and implications for further research will also be discussed.

Discussion of Sylvia's Case Study

The majority of Sylvia's differentiation addressed her students' readiness. During her interviews, Sylvia stated that she believes all students can learn if they are provided with the appropriate support. This belief is made evident during multiple observations. Her use of Reader's Workshop and Math Workshop provide the framework for her to differentiate instruction as small, homogenous readiness groups rotate through to meet with her. Multiple observations provided evidence that Sylvia provides differentiated content. These observations were supported by artifacts such as copies of the anecdotal notes regarding individual students and the transitional guided reading plan (see artifacts in Appendix I). A review of Sylvia's anecdotal notes indicates that she is intentional about identifying the individual strengths and weaknesses in her students regarding their progress in literacy.

During math workshop, Sylvia provided further evidence of her efforts to differentiate by readiness. She provided different tasks related to three-dimensional shapes, allowing her students to make progress toward the learning goal with varying levels of abstraction ranging from the use of wooden shapes for students who struggle compared to the act of drawing three dimensional shapes for her advanced learners. However, no artifacts were submitted to support Sylvia's planning for differentiated lessons during Math Workshop.

It is important to note that all lessons using the workshop model began with a whole class mini-lesson. It was not clear how the learning goal for this whole class instruction was identified. One might infer from Sylvia's comments during the interviews that her mini-lessons are based on the district's grade-level expectations and the Common Core State Standards.

Reader's Workshop and Math Workshop were cited as opportunities for students to have choice. Sylvia did not assign the students specific centers during Reader's Workshop or Math Workshop. During Reader's Workshop she had a chart that displayed the options students would have to choose from for that day. Students rotated through various centers throughout the week. Information about the content of specific centers was not provided in the collection of artifacts. During Math Workshop, students were allowed to choose any center they wanted. Sylvia mentioned that it was her belief that students were able to make good decisions about which centers would be a best fit for them. Multiple observations of Reader's Workshop and Math Workshop provided little evidence that students were able to make appropriate decisions for tasks. All students were engaged in tasks, but there was no evidence that the task was challenging for them or providing the right amount of scaffolding. In fact, during an observation Sylvia was observed redirecting advanced students to select a more challenging book for an assignment.

While the workshop model provided a structure for Sylvia to differentiate instruction while selected students were meeting with her, there was little evidence of her designing centers based on student readiness, interest or learning profile. Students did have choices but it was not apparent how Sylvia determined which choices to provide to the students.

From the observation and interview data it appeared that Sylvia provided a safe learning environment for her students. Her efforts to show respect to students by trusting them to self-monitor their progress on certain tasks and allowing them to choose their own seating when possible supported a healthy safe environment. This confirmed her claim to believe that all students can learn and that diversity is important for her classroom. Her belief in the power of a growth mindset was made evident in the review of her artifacts. The anecdotal notes Sylvia used for her struggling learners revealed her commitment to supporting students as they make progress toward their learning goals.

Sylvia has demonstrated an understanding of a philosophy that supports differentiated instruction but had difficulty articulating it. She values diversity within her classroom, and she believes all students can reach the learning goals she established. Sylvia was not able to cite any formal training in differentiated instruction, nor was she able to identify any authors on the subject of differentiated instruction. While her belief system aligns with the principles of differentiated instruction, her practice was sometimes inconsistent. For instance, while she was very clear about her process for identifying learning goals, there was no evidence for how she helped students to understand the learning goals. Additionally, limited evidence was found for helping students to consider their learning within a broader concept or essential question. These two examples highlight how Sylvia might build upon her teaching philosophy to further support her students.

Sylvia's students thrive in her classroom and some elements of differentiation were noted during the interview, the observations and the artifacts. However, the absence of differentiation was also observed during the interview, the observations and the artifacts.

Discussion of Mary's Case Study

Mary's efforts to differentiate instruction also focused on readiness. She was observed using the workshop model to provide instruction that was appropriate for students' readiness. Mary used the workshop model for math and literacy; however, during the interviews Mary revealed that Math Workshop had been a focus for her during that school year. Many of Mary's responses and examples during interviews were focused on math and a majority of her artifacts were related to math workshop. While Mary differentiates her instruction for students as she meets with them during small group time during Reader's Workshop and Math Workshop, there is no evidence that the activities during station rotations are differentiated. Students are allowed to choose any station they would like to participate in during the center time. There was no evidence that Mary intentionally designed activities to meet individual learner needs. Students received differentiated instruction with Mary during their small group time, but every student had access to the same materials during the station rotations. Students were observed selecting books to read. There was no evidence of how Mary ensured that students selected a book that was at an appropriate reading level. This observation was confirmed by the interview as Mary's example of providing students with choice was simply that she allowed them to choose their station rotation. She did not describe any process for determining how choices were based on student readiness, interest or learning profile.

Mary expressed concern for her mathematically gifted students during her interview. The observations gave little evidence that she intentionally plans activities or stations to challenge

these students. Advanced students participated in the same rotations as the average and struggling students. The review of artifacts did provide evidence that advanced students could receive some enrichment. The math enrichment page from the district-adopted curriculum was the only evidence of Mary's efforts to challenge her academically gifted students outside of her small group instruction. Students were not observed using the enrichment page nor did Mary discuss how she determined which of her students should receive this work. It is possible that Mary used pre-assessments and formative assessments to determine if students needed differentiation but it was not evident in the observations or mentioned during her interviews.

According to her interview, Mary used informal assessments as a basis for many of her assessments. This practice is understandable as she is teaching first grade students who have limited reading and writing skills. However, this method of assessment is subjective. Mary was observed using anecdotal notes during Reader's Workshop to document students' progress. However, Mary's notes were not submitted as an artifact so it was not possible to review the content of the notes. Mary did provide evidence that a student made progress in reading over time. A review of the guided reading lesson plans reveal that one of Mary's students began the year with an emergent guided reading lesson plan and ended the year with a transitional guided reading plan. This demonstrates growth in the students' reading ability. Mary was observed meeting with this student for small group instruction during multiple observations.

The classroom environment in Mary's classroom was positive, safe and healthy. During the interview, Mary claimed to believe in the importance of diversity and the belief that all students could make progress toward the learning goals. This belief was supported by multiple observations. Her interactions with students were positive. She was observed encouraging individual students for making good choices and encouraging students for their academic

progress. Her statement that she believes all students will eventually meet the learning goals was supported by attention to struggling learners during multiple observations. Mary provided additional time and support to students who struggled in writing, reading and math.

The intentional use of flexible grouping was not evident during the observations, nor was it addressed during either interview. It was not clear how often her groups change for Reading or Math groups. There was also no evidence of Mary's efforts to help students understand their learning in the context of broad concepts, essential questions or understandings. Mary did state the intended goal for each lesson; however, it was in the form of an agenda rather than an actual learning goal. Mary's focus was on the activity the students would complete instead of the learning they would do.

Mary provided evidence of differentiation primarily during Reader's Workshop and Math Workshop. There were other content areas where differentiation was not evident such as social studies and science. It is important to note that Reader's Workshop and Math Workshop comprise a majority of the instruction time in Mary's classroom. While there are gaps in her implementation of differentiation, it is clear from her observation and her interview that Mary values each of her students. Her belief in the value of diversity and her commitment to helping every student learn was evident throughout the review of artifacts and her throughout her observations. Mary mentioned receiving formal training in differentiation from a workshop several years ago. She did not indicate any on-going training or support for differentiating instruction.

Discussion of Ruth's Case Study

Ruth's efforts to differentiate were focused on students learning interest and profile. She mentioned multiple intelligences as an important resource that supported her in implementing

differentiation and she provided artifacts that indicated her planning for student interest in the Caribbean unit. While Ruth mentioned considering what will work for students at different readiness levels during her planning, there was little evidence of the differentiation of content product or process to support student readiness. Her definition of differentiated instruction emphasized supporting the students' learning styles.

Ruth used the workshop model for literacy instruction. She provided scaffolding and challenge for students at various readiness levels. Ruth's implementation of Reader's Workshop was evident in one of the observations and only one small group was observed. The researcher did not have the opportunity to compare her instruction of two different small group rotations. Thus, an assumption must be made that the small group instruction varied according to readiness. Evidence was observed of varied tasks during Reader's workshop while students were not with Ruth. Students were engaged in literacy tasks that were related to their assigned book. The books were assigned according to students' readiness levels in reading. Ironically, Ruth did not mention this as a function of her differentiation during either interview, nor did she provide any artifacts related to her differentiation of readiness during Reader's Workshop. This serves as an indicator that she does not fully recognize the importance of differentiating by readiness, even though it is a part of her practice.

Choice was offered to students in Ruth's classroom. However, the choices students were offered did not reflect differentiated instruction. During the interview Ruth revealed that she likes to limit students choice and the examples she provided did not indicate any intentionality in her planning, nor did it clearly impact the students ability to meet the learning goal. Choice was offered when students were selecting the color of marker they would like to use. While this can benefit the classroom environment, it is not an indicator of differentiating instruction.

No evidence of the use of flexible grouping was observed. Ruth did provide students with multiple opportunities to work with a variety of students within a short amount of time. However, students were selecting their own partners. There was little evidence during the observations, interview or review or artifacts that Ruth intentionally designed groups based on students' interest, readiness or learning profile. The one exception to this was during the Caribbean unit. Ruth intentionally assigned groups to research animals based on student interest. The screen shot of the webquest that Ruth submitted as an artifact confirmed her efforts. However, students were not observed working in groups on the animal research during the Caribbean unit.

Ruth values diversity and believes that every child can learn. This belief was confirmed through the observations and review of artifacts. Ruth was observed affirming students for effort and good choices and she was also observed holding students accountable for poor choices. The review of her artifacts revealed that she was intentional about documenting students' good choices using the "happy gram" and she affirmed students' good choices using the "punch card". Ruth communicated that she has a growth mindset and displayed that through her willingness to re-teach lessons when she felt that students had not mastered the content. This was observed during the lesson on main idea and supporting details.

While Ruth clearly stated the agenda for each lesson, there was no evidence of Ruth's efforts to identify the learning goal, essential understandings or overall concept they were working toward. During the post-observation interview, Ruth revealed that she does not often consider the essential understandings. She mentioned that her students were working toward becoming more independent readers and writers. While these are valuable life skills, they do not

constitute an essential understanding or broad concept. No attempt to help students understand how their learning fits within a broader context was observed.

Ruth mentioned that she had a graduate level course on differentiating instruction during her graduate program for teacher certification. She did not mention any formalized ongoing support in differentiation during the six years since she graduated. While there are elements of differentiation evident in the observations, interviews and artifacts there are also gaps in Ruth's implementation of differentiation. Ironically, the evidence she cited as differentiated instruction, were not her strongest examples of her efforts to differentiate. It appears that Ruth interprets differentiated instruction as simply teaching things in creative and unique ways. Creativity can support a teacher's efforts to differentiate, but creativity in and of itself is not differentiation. Fortunately, Ruth's beliefs about diversity and growth mindset and her use of the workshop model in literacy instruction have set the stage for greater implementation of differentiated instruction.

Discussion of Cross-case Analysis

Definite trends emerge upon review of all three cases. All three participants had limited formal training in differentiating instruction and no ongoing training or support in the implementation of what they have learned about differentiating instruction. The training received by Ruth and Mary occurred more than five years ago and Sylvia cited no formal training in the area of differentiated instruction. While Sylvia mentioned that she has participated in some book studies she was not able to reference the titles of the books or how long it had been since she received the training. It is important to note that all three participants attended a training provided by the district in differentiating instruction during Reader's Workshop in August 2014. Mary was the only participant who mentioned the training as a

support of her formal training in differentiated instruction. It appeared that the lack of formal training has created some gaps in the participants' understanding of differentiation.

All three participants provided evidence of limited implementation of differentiated instruction. The intentional use of flexible grouping was not evident in any of the observations across all three cases, nor was it evident upon review of the artifacts or during the interviews. The use of ongoing formative assessments was limited to content areas where a workshop model was used. Differentiation of product was not evident in any of the case studies and differentiation of process was primarily limited to Reader's Workshop and Math workshop. While students had freedom to make choices within a project (i.e Sylvia's Zoocenomics unit, Ruth's Caribbean Unit) there was no evidence on any participants designing multiple products that would honor students' interest or learning profile or support their readiness level.

However, all three participants created an environment where students were comfortable and believed they were an important member of the classroom. Students in all three classrooms were comfortable with the routines and procedures and while expectations were not posted, there was evidence that students understood how to behave within groups and during independent work. During the interviews, participants communicated that they were intentional about establishing routines and procedures early in the school year and this was supported by the review of artifacts and evidence from observations, as students were willing to comply with their teacher's expectations.

All three participants used the workshop model to provide a framework for differentiating instruction by readiness. The most consistent evidence of differentiation from all three participants happened within the context of Reader's Workshop. Participants from School A have also implemented Math Workshop. All three participants provided differentiation as they

met with small groups based on readiness. Artifacts, interview responses and observations provided evidence of participants intentional planning for varied student readiness levels for guided reading and guided math lessons. Furthermore, evidence was provided in the interview and artifacts that students at a variety of entry points made progress toward instructional goals throughout the year. Specifically in the area of reading, Sylvia and Mary provided evidence that their students started the year at various reading levels and each student experienced growth in the area of reading.

During the interview all three participants expressed belief that students had the ability to make progress toward all the learning goals in their classroom. Through observations the participants made it clear that they are willing to provide the scaffolding and challenge needed to support the varied readiness levels in their classroom. All three participants were observed meeting with struggling students to provide direct instruction in small groups to address learning gaps. A majority of participants were observed meeting with advanced students to challenge or extend their thinking. The artifacts also provide evidence of the participants' planning of guided reading lessons to support a variety of readiness levels.

Discussion of Research Questions

The present study was designed to address the following question: What does differentiated instruction look like in an elementary classroom? In this multi-case qualitative study, at first glance differentiated instruction in an elementary classroom looks like good teaching. Students were engaged in tasks. Teachers had the respect of their students and demonstrated respect to their students. Teachers communicated a growth mindset, believing that all students could make progress toward the learning goal. They communicated this belief through their interactions with students, their planning of lessons and the way they spoke about

their students during interviews. Participants all valued the characteristics of flexibility, creativity and a willingness to learn new things. They all exhibited behaviors of teachers who are willing to provide scaffolding for students who struggle and challenge for those who are more advanced than their peers. However, upon examination of the sub-questions we begin to see more clearly the complexity of implementing differentiated instruction.

What effect does the teacher's mindset have on differentiation? The participants' mindset did have an effect on their willingness to differentiate instruction. All three participants agreed that a growth mindset was essential to the successful implementation of differentiation. They demonstrated this during observations through supporting struggling students to meet the learning goal through small group instruction. However, a growth mindset would also compel them to provide differentiated tasks during all content areas and during station rotations found in Reader's and Math Workshop. A growth mindset would also compel them to provide differentiated products to allow students multiple avenues to demonstrating their understanding. There seems to be incongruence between their beliefs and their practice in some areas.

How does the teacher identify learning goals and essential understandings? Based on this study the participants identified the learning goals through a combination of addressing the Common Core State Standards (CCSS), Grade-Level Expectations (GLE) established by their district and the use of formative assessments. The study was conducted at the end of the school year; consequently, participants had already addressed a majority of the required CCSS and GLE. A majority of the lessons observed were a result of evidence that students still had not mastered the content or it was a final standard that needed to be addressed.

Unfortunately, the participants were not able to identify any essential understanding they were attempting to address through their lessons. While participants were clear about the

learning goal it was for the most part taught as an isolated skill. The participants did not clearly communicate the learning goals to their students. During the interview it was easy for the participants to articulate how they decided on the learning goal, but there was no evidence of them communicating that clearly to their students during the observations. Most of their attempts and efforts toward communicating the learning goal was actually simply highlighting the agenda for the lesson or giving students a list of activities. While students benefitted from the participants' intentional planning for their lessons, students would have been even more supported if they were afforded the opportunity to connect their learning to larger concepts, ideas and essential questions.

How does the teacher determine where students are in relation to the learning goal? All three participants showed evidence of the use of pre-assessment and formative assessments to monitor where students are in relation to the learning goal through the observations and responses to interview questions. All participants mentioned using a variety of formal and informal assessments to monitor students' progress and this was confirmed during the observations of the lessons.

Participants did not provide evidence of using pre-assessments and formative assessments across all content areas. Sylvia mentioned using pre-assessments during science and social studies but then acknowledged that she did not pre-assess students for the economics unit that was observed. Mary and Sylvia did not mention the use of any pre-assessments in science or social studies. It is important to note that literacy and numeracy are the only content areas with a district-wide common assessment in the district where the research occurred. The strongest evidence for the use of assessment to inform instruction occurred in content areas where students would be assessed using a district-wide common assessment.

How does the teacher approach grading and assessment? All participants in this study would prefer to approach grading and assessment through the lens of mastery or criterion referenced grading. Interestingly, a majority of the participants feel as though they are not allowed to approach grading in the way they would prefer. Through a combination of the participants perception of their administrator's expectation and what they are required to put on the grade card each quarter, participants communicated that they do not feel they are able to fully implement a grading practice that would best support a growth mindset and differentiation.

Few assessments were observed. Of the assessments that were observed a majority were end-of-year common assessments required by the district's curriculum department. It might be that without this requirement, more authentic assessments would have been made available to the students. However, in areas where no common assessments were given, the participants did not provide any evidence of mastery grading or criterion referenced assessments. There was also no evidence of differentiation of products. Again, this might be the product of an understood expectation from the administrator in both buildings.

How does the teacher adjust instruction to address students' needs? A majority of participants in this study adjusted instruction to address students' needs through small group instruction as described above in the discussion of each case study. Sylvia and Mary provided evidence through observations, interviews and artifacts that they adjust literacy instruction to support a wide range of students' needs. Ruth provided evidence through observation of her efforts to support a wide range of students' needs in literacy. Additionally Sylvia and Ruth provided evidence through her artifacts, interviews and observations that they adjusted instruction.

There was little evidence of a systematic way in which participants adjusted instruction to address students' needs with the exception Reader's Workshop or Math Workshop. There was also little evidence of any fluidity in the participants grouping of students. It was unclear from the interviews, observations and artifacts how frequently the groupings of students change in reading and math. It might be that groups change frequently. If so, this would help to ensure that students remain with a group of students at a similar readiness level and that the instruction provided to them has an appropriate amount of scaffolding and challenge. This would also provide opportunity for students to work more often in groups related to their interests and learning preference.

What are the teacher's implicit beliefs about diversity within the classroom? All three participants communicated that they value academic diversity in their classroom. During the interviews, participants noted that diversity allows students to develop empathy and friendship building skills. They also noted that diversity would prepare them to work with a variety of people when they leave school.

Their comments were confirmed through observations in their classroom. Participants were observed providing multiple opportunities for students to work with a variety of classmates across all content areas. The students selected many of the partnerships so it might be inferred that students were engaging with students that are similar or like-minded. However, there was evidence of the teacher selecting some groupings (i.e. Sylvia's groups for Zoocenomics and Ruth's groups for Caribbean) and those groups were designed to support students who do not always think alike.

Conclusion

As we consider the complexities of a differentiated classroom it becomes clear that no single case provided a flawless example of what differentiation will look like in an elementary classroom. However, there was evidence of the philosophy of differentiation in all three cases and there was evidence of differentiation by readiness during specific content areas in all three cases. The teachers in this study provided evidence of the implementation of differentiated instruction. All three participants also agreed that a teacher who differentiates instruction has characteristics such as flexibility and creativity, the attitude of a learner and the belief that every child can make progress toward the learning goal.

Perhaps there are areas where they could have done more to meet the diverse needs of the students in their classrooms. However, this is what makes differentiation so complex. Instead of being a list of strategies to implement, differentiation is a philosophical approach to teaching where the implementation lies along a continuum. Far too often we wonder if teachers differentiate instruction. Instead we need to consider the degree to which teachers are differentiating instruction. Many teachers have implemented elements of differentiated instruction but have not reached full implementation. Ironically the teachers in this study seemed to have low consciousness of some of the ways they were implementing differentiation and some of the examples they provided for differentiation were not actually differentiated. This illustrates the difficulty teachers can have in accurately self-evaluating their implementation of an instructional philosophy, even one we believe in.

Another trend that emerged from this study did not directly answer any of the research questions but has an impact on the participants' implementation of differentiation. There was no evidence of on-going support for any of the participants as they work to fully implement

differentiated instruction. Ongoing teacher support is crucial to supporting teachers in their ongoing professional development (DuFour and Eaker, 1998; Guskey, 2014; Guskey, 2002; Hudson, 2013). While all three participants have the philosophical belief that differentiation is necessary and while all three participants have made efforts to implement differentiation in their classroom, it will be difficult for their philosophy of differentiation to be fully realized without the support and even accountability. Mary even mentioned that she would love to have an instructional coach to support her as she tries to continue to implement differentiated instruction.

Differentiated instruction is a complex philosophy of teaching that can be implemented by teachers with common beliefs, attitudes and characteristics. It is best implemented in the context of a network of ongoing support and accountability.

The results of the present study are similar to the work of many of the studies used in the literature review. Watts-Taffe et al. (2012) found that students' academic needs might differ from one content area to another. This was confirmed in the present study through the observations and interviews with Sylvia and Mary. Some students who were in the advanced group in reading were observed in the average in math.

The present study builds upon the work of Archambault et al. (1993) and Westberg and Daoust (2003), by providing more in-depth insight into the practices of teachers who are working toward full implementation of differentiated instruction. The triangulation of data created by conducting observations and interviews, and through reviewing artifacts gave greater clarity into a smaller sample of teachers. Instead of relying on self-reporting data from the teachers as was the case in the two studies mentioned above, the present study added components to verify and explore specific components of the participants' implementation of differentiation. The study conducted by Westber, Archambault, Dobyns and Slavin (1993) included a component of

observation; however their study focused on advanced learners, whereas the present study was focused on how differentiation impacts all learners.

The study conducted by Wertheim and Leyser (2002) regarding the impact of teacher efficacy on the implementation of differentiated instruction was confirmed by the present study. All three participants demonstrated a high sense of efficacy through the observations and communicated the belief that they could make a difference in the interviews.

Limitations

While the results of the study will have no impact on the researcher's employment, the researcher is an employee of the district in which the research was conducted. The researcher has served as a professional learning specialist and has presented training on differentiated instruction for the school district. However, the researcher was not personally acquainted with any of the participants prior to the study, nor did he present differentiated instruction to any of the participants in the study.

Another significant limitation to the study is the homogeneity of the participant pool. All three participants were white females. Years of experience ranged from six years to fourteen years. Additionally, the sample size was very small. Given that there was one researcher and the intensity of qualitative research analysis the sample size was limited to four. Three participants agreed to participate. This will make generalizability very limited.

Because of the interpretive nature of qualitative research, the researcher may introduce his bias into the analysis of the study. Debriefing interviews were conducted throughout the course of the study whereby a colleague not related to the research will ask the researcher questions about the thought process of the researcher while conducting the study. Two debriefing interviews were conducted, the first was on Friday, May 1 during the window of observations

and the second was Wednesday, May 20 while the researcher was in the midst of analysis. The transcriptions of these interviews are located in Appendix I.

The limited time frame of observation was another limitation. All observations occurred during the final quarter of the school year. Participants acknowledged the challenges of maintaining their schedules and routines. Observations over the course of the entire school year might have provided a more complete picture of the participants' implementation of differentiation.

Implications of the Study

Based on the results of this study it is recommended that teachers receive on-going sustained support for the implementation of differentiated instruction. This support should come through a combination of job-embedded coaching and through the use of professional learning communities where teachers are allowed to provide support and accountability for their peers. Through on-going support of teachers' efforts to implement differentiation we will see students receive all of the benefits of differentiation.

Additionally, it would behoove teachers to consider the degree to which their implicit beliefs align with the philosophy of differentiating instruction. The results of this study provide clear trends among a small sample regarding the attitudes, beliefs and characteristics. While it may not serve as an exhaustive list, it can provide valuable insight into the philosophy that will set the stage for the implementation of differentiation.

Implications for Teacher Practice

This study demonstrated the complexity of implementing differentiated instruction. Three veteran teachers were studied and while they are on their way toward full implementation of differentiation, there were gaps observed in all three cases. It is important to note that the

participants did not have access to on-going support or a professional learning community as they worked toward implementation of differentiated instruction. The present study illustrates the importance of teachers finding a support system as they work toward meeting the diverse needs of their learners.

It would behoove teachers to thoughtfully consider the attitudes, beliefs and characteristics exhibited during observations of the participants in this study and again through their responses to interview questions. The participants in the present study provided a model of the philosophical approach toward differentiated instruction. A teacher will benefit from reflecting on the degree to which they have adopted attitudes, beliefs and characteristics similar to those of participants of this study. A reflection of this nature will expose implicit beliefs that if discovered, might allow a teacher to more fully implement differentiated instruction.

Recommendations for Further Study

The study has provided answers to the research questions listed above, but has also generated additional questions that deserve research. Given that the participants came from relatively affluent schools it would be worth replicating this study in schools of poverty and schools of affluence to study any variance of a teacher's approach to the implementation of differentiation. A wider range of grade levels might also provide an interesting comparison of how teachers implement differentiation in middle school and high school. Adding a component of participants' self-reflection into the design of this study might also provide greater insight into the thinking and implicit beliefs of the participants in the study. This addition would allow the researcher to better understand assumptions and misconceptions the participants might have regarding the implementation of differentiated instruction.

Summary

Students deserve to be the focal point of American public schools. America is a land with great diversity. Consequently, there will be great diversity within American public schools. The challenge of all teachers is to support each student in growing and moving forward. Each student deserves a full year of growth regardless of where they start. Differentiating instruction provides the opportunity for a single teacher to meet the needs of students who enter a classroom with varied readiness levels, interests, and learning profiles. Some might consider this a super-human feat. To a teacher who believes in the power of differentiation it is the only way to teach.

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Appendix A

Differentiated Instruction Observation Look-Fors
Drawn from observation tools created by Tomlinson & Hockett (2007), Tomlinson & McTighe (2008), and Hockett (2010)

Background: *This is a tool for gathering evidence of certain sights and sounds that are hallmarks of responsive classroom environments. Neither differentiation nor good teaching in general is a "checklist", and no classroom, teacher, or lesson manifests all of these look-fors during a single observation.*

	☐	The teacher and students respect one another.
	☐	The teacher shows interest in students as individuals.
	☐	There is active participation by a broad range of students.
	☐	Students seem comfortable with one another.
	☐	The teacher creates collaborative learning experiences.
	☐	There is an emphasis on student *growth* toward important goals versus on *student completion.*
	☐	There are routines and rituals in place that help students feel they belong and are valued.
	Comments:	

	☐	There is clarity about what students should know, understand, and be able to do.
	☐	Students examine big ideas, essential questions, concepts and/or principles.
	☐	Students explore knowledge (e.g. facts, terms) and skills in context (e.g. of ideas, of real-world situations.
	☐	The teacher connects learning goals to students' interests and experiences.
	☐	All students are working toward common learning goals.
	Comments:	

	☐	The teacher has used pre-assessment of student readiness, interest, and learning profile to gauge student's points of entry into the unit or lesson.
	☐	On-going/formative assessment of student readiness, interest, and learning profile has informed the teacher's instructional planning.
	☐	Multiple assessments (including self assessments) and/or multiple forms of assessment are used during the lesson.
	☐	The teacher uses assessment to gauge what students have learned.
	☐	The teacher uses assessment to help students understand their achievement and progress.
	☐	Significant class time is spent on inquiry and reflection.

	Comments:

	☐	The lesson/ tasks make appropriate provisions for a range of student needs.
	☐	The teacher proactively planned for differing specific student readiness, interest, and/or learning profile needs.
	☐	There is <u>differentiation of content</u> *(how students access essential knowledge, understanding and skill.)*
	☐	There is <u>differentiation of process</u> *(*how students *make sense of* essential knowledge, understanding and skill).
	☐	There is <u>differentiation of product/performance</u> (how students demonstrate what they have come to know, understand, and be able to do).
	☐	The teacher uses instructional strategies that are appropriate to the lesson goals
	☐	The teacher uses a range of instructional strategies to support student engagement and understanding.
	Comments:	

	☐	Tasks require high levels of thinking.
	☐	Tasks are appealing from a student perspective.
	☐	Tasks represent a wise use of students' time and allow each student to work efficiently.
	☐	Tasks approximate the thinking and/or "doing" of people who do similar work in the real world.
	☐	Tasks are aligned with common learning goals, and with one another.
	☐	Tasks provide appropriate challenge and/or scaffolding in anticipation of individual student needs.
	Comments:	

	☐	Students work in a variety of groups within a relatively short time span.
	☐	Students know how to get and give help appropriately as needed.
	☐	The teacher uses space, time, and materials flexibly to address varied learning needs.
	☐	The teacher and students share responsibility for making the classroom work.
	☐	The teacher acts as a coach or facilitator of learning for individuals and the group.
	☐	There are clear guidelines/expectations for how students should work individually and as a group.
	Comments:	

Appendix B

February 10, 2015

Dear _____,

Congratulations! Your principal has identified you as a teacher who effectively implements differentiated instruction. I am contacting you to invite you to participate in a study conducted through the University of Arkansas-Fayetteville. This study will be conducted is in partial fulfillment of my Ph.D. in Curriculum and Instruction with emphasis in gifted education.

The study will address the following question: What does differentiated instruction look like in an elementary classroom?

Participation in the study will be a pre-observation interview, two observations and a post-observation interview. It will also involve allowing me to review some of your lesson plans, assignments, and assessments. Interviews will be scheduled at your convenience and should last no longer than 30 minutes. The observations will be video-tapped using an iPad. Video will only be viewed by you and myself. The first observation will be scheduled at your convenience. The second observation will be unannounced. I will be happy to make copies of your lesson plans, assignments and assessments. In total, your participation in this study will require no more than one hour of your time outside the normal school day.

Analysis will involve coding your responses to determine within case themes as well as cross-case themes. You will be given a psuedonym in an effort to protect your identity. No student work will be required nor will they be the focus of the video observations.

Demographic data of the sample of participants and the results of the analysis will be published in my dissertation. No information that would connect a participant with their responses will be included in the reporting.

Thank you for considering my request. Please e-mail _____ if you are willing to participate.

Sincerely,

Curtis J. Cunningham
Ph.D. Candidate, University of Arkansas
Professional Learning Specialist, Springfield Public Schools

February 10, 2015

Dear Principal,

Congratulations on leading one of the highest performing elementary schools in the Springfield Public Schools district. I am contacting you to request permission to conduct a study through the University of Arkansas-Fayetteville. This study is in partial fulfillment of my Ph.D. in Curriculum and Instruction with an emphasis in gifted education.

The study will address the following question: What does differentiated instruction look like in an elementary classroom? The following sub-questions will provide further clarity.

What effect does the teacher's mindset have on differentiation?
How does the teacher identify learning goals and essential understandings?
How does the teacher determine where students are in relation to the learning goal?
How does the teacher approach grading and assessment?
How does the teacher adjust instruction to address students' needs?
What are the teacher's implicit beliefs about diversity within the classroom?

Participation in the study will be a pre-observation interview, two observations and a post-observation interview. It will also involve allowing me to review some of the teacher's lesson plans, assignments, and assessments. Interviews will be scheduled at the teacher's convenience and should last no longer than 30 minutes. The observations will be video-taped using an iPad. Video will only be viewed by the teacher and myself. The first observation will be scheduled at the teacher's convenience. The second observation will be unannounced. I will be happy to make copies of the teacher's lesson plans, assignments and assessments. In total, participation by your teacher in this study will require no more than one hour of his/her time outside the normal school day.

Analysis will involve coding your responses to determine within case themes as well as cross-case themes. You will be given a psuedonym in an effort to protect your identity. No student work will be required nor will they be the focus of the video observations.

Demographic data of the sample of participants and the results of the analysis will be published in my dissertation. No information that would connect a participant with their responses will be included in the reporting.

I am requesting your help in recommending one first grade and one second grade teacher to participate in the study. I've provided a profile of the type of teacher I am looking for (please see attached). Please let me know which first and second grade teachers best fit the description outlined in the attachment.

Thank you for considering my request. Please e-mail _____ with your recommendations.

Curtis J. Cunningham
Ph.D. Candidate, University of Arkansas
Professional Learning Specialist, Springfield Public Schools

Appendix C
Semi-structured Interview Questions

How do you define differentiation?

How do you decide when to offer choice?

Why do you believe differentiation is necessary?

What makes differentiation hard/easy?

What have you noticed in your students as a result of your differentiation?

Appendix D
Teacher Schedules

Sylvia's Schedule

[redacted] grade Class Schedule 2014-2015

	Monday	Tuesday	Wednesday	Thursday	Friday
8:20-8:40	Breakfast Available	Breakfast Available	Breakfast Available	Breakfast Available	Breakfast Available
8:40-8:50	Announcements in gym	Announcements in gym	Announcements in gym	Announcements in gym	Announcements in gym
8:50-9:10	Word Work	Word Work	Word Work	Word Work	Word Work
9:10-10:30	Math Workshop	Math Workshop	Math Workshop	Math Workshop	Math Workshop
10:30-11:40	Reader's Workshop ELA CCI	Reader's Workshop ELA CCI	Reader's Workshop ELA CCI	Reader's Workshop ELA CCI	Reader's Workshop ELA CCI
11:40-12:20	Restroom/ drinks Lunch	Restroom/ drinks Lunch	Restroom/ drinks Lunch	Restroom/ drinks Lunch	Restroom/ drinks Lunch
12:20-1:10	Writer's Workshop	Writer's Workshop	Writer's Workshop	Writer's Workshop	Writer's Workshop
1:10-1:50	Recess Restroom/ drinks	Recess Restroom/ drinks	Recess Restroom/ drinks	Recess Restroom/ drinks	Recess Restroom/ drinks
1:50-2:25	Science, S.S. or Health Workshop	Science, S.S. or Health Workshop	Science, S.S. or Health Workshop	Science, S.S. or Health Workshop	Science, S.S. or Health Workshop
2:25-2:30	Pack & Stack	Pack & Stack	Pack & Stack	Pack & Stack	Pack & Stack
2:30-3:30	Library or counselling (BRING LIBRARY BOOKS)	P.E. Music (BRING OR WEAR SNEAKERS)	Computer Lab	Art	P.E. Music (BRING OR WEAR SNEAKERS)
3:30-3:35	Dismiss from classroom	Dismiss from music	Dismiss from Lab	Dismiss from art	Dismiss from music

Ruth's Schedule

[redacted] Grade Schedule

Time/Day	Monday	Tuesday	Wednesday	Thursday	Friday
8:35-9:00	Morning Work	Morning Work	Morning Work	Morning Work	Morning Work
9:00- 9:30	Reading Strategy Lesson	Reading Strategy Lesson	Reading Strategy Lesson	Review for Thurs. Test	Reading Test
9:30-10:30	Book Clubs	Book Clubs	Book Clubs	Book Clubs	Reading Test & Daily 5
10:30-11:30	Music/P.E.	Computers	Music/P.E.	Art	Library & Counselor *
11:30-12:00	Lunch	Lunch	Lunch	Lunch	Lunch
12:00-1:00	Math Workshop	Math Workshop	Math Workshop	Math Workshop	Math Workshop
1:00-2:00	Writer's Workshop	Writer's Workshop	Writer's Workshop	Writer's Workshop	Writer's Workshop
2:00-2:30	Recess	Recess	Recess	Recess	Recess
2:40-3:20	Health, Science, or Soc. Studies	Health, Science, or Soc. Studies	Health, Science, or Soc. Studies	Health, Science, or Soc. Studies	Health, Science, or Soc. Studies
3:30-3:35	Dismissal Procedures	Dismissal Procedures	Dismissal Procedures	Dismissal Procedures	Dismissal Procedures

* Counselor some Fridays, but not all.

Mary's Schedule

Schedule

8:50-9:10	Morning Meeting
9:10-9:35	Read Aloud
9:35-10:00	Reader's Workshop
10:00-11:00	SPECIALS
11:00-12:00	Reader's Workshop w/guided reading
12:00-12:30	LUNCH
12:30-12:50	Word Study
12:50-1:20	RECESS
1:20-2:10	Writer's Workshop w/ handwriting
2:10-3:05	Math Workshop
3:05-3:25	Content (science, social studies, health)

Appendix E

Learning Environment

The teacher and students respect one another.
The teacher shows interest in students as individuals.
There is active participation by a broad range of students.
Students seem comfortable with one another.
The teacher creates collaborative learning experiences.
There is an emphasis on *student growth* toward important goals versus on *student competition.*
There are routines and rituals in place that help students feel they belong and are valued.

Comments:

Learning Goals

There is clarity about what students should know, understand, and be able to do.
Students examine big ideas, essential questions, concepts, and/or principles.
Students explore knowledge (e.g., facts, terms) and skills in context (e.g., of ideas, of real-world situations).
The teacher connects learning goals to students' interests and experiences.
All students are working toward common learning goals.

Comments:

Ongoing Assessment

The teacher has used pre-assessment of student readiness, interest, and learning profile to gauge students' points of entry into the unit or lesson.
On-going/formative assessment of student readiness, interest, and learning profile has informed the teacher's instructional planning.
Multiple assessments (including self assessments) and/or multiple forms of assessment are used during the lesson.
The teacher uses assessment to gauge what students have learned.
The teacher uses assessment to help students understand their achievement and progress.
Significant class time is spent on inquiry and reflection.

Comments:

Adjustment for Student Needs

The lesson/tasks make appropriate provisions for a range of student needs.
The teacher proactively planned for differing specific student readiness, interest, and/or learning profile needs.

There is differentiation of content *(how students access essential knowledge, understanding, and skill).*
There is differentiation of process (how students *make sense of* essential knowledge, understanding, and skill).
There is differentiation of product/performance (how students demonstrate what they have come to know, understand, and be able to do).
The teacher uses instructional strategies that are appropriate to the lesson goals.
The teacher uses a range of instructional strategies to support student engagement and understanding.

Comments:

Tasks

Tasks require high levels of thinking.

Tasks are appealing from a student perspective.

Tasks represent a wise use of students' time and allow each student to work efficiently.

Tasks approximate the thinking and/or "doing" of people who do similar work in the real world.

Tasks are aligned with common learning goals, and with one another.

Tasks provide appropriate challenge and/or scaffolding in anticipation of individual student needs.

Comments:

Groupings and Management

Students work in a variety of groups within a relatively short time span.

Students know how to get and give help appropriately as needed.

The teacher uses space, time, and materials flexibly to address varied learning needs.

The teacher and students share responsibility for making the classroom work smoothly.

The teacher acts as a coach or facilitator of learning for individuals and the group.

There are clear guidelines/expectations for how students should work individually and as a group.

Comments:

Appendix F

Post-observation questions: Ruth

I've been in your classroom for the past two or three weeks. How do you feel about your differentiation during that time? What are some highlights of differentiated lessons?

What makes differentiation hard/easy?

What have you noticed in your students as a result of your differentiation?

How did you decide when to differentiate? when to offer choice? when to use flexible grouping? when to tier by readiness?

Are you familiar with growth mindset? (if no, offer a definition)

In what ways (if at all) does a growth mindset align with your philosophy of teaching?

How might (if at all) your view of mindset impact your ability to differentiate?

How did you decide on the learning goals in the lesson you taught over the past two/three weeks?

As you think about the diversity in your classroom how does it add to or take away from the learning environment for your students?

How would you describe the attitude of a teacher who differentiates instruction?

Can you list some characteristics of teachers who differentiate instruction?

What might be some beliefs of teachers who differentiate instruction?

How did you decide on the learning goals and essential understandings of the Caribbean unit?

In the planning stages of the Caribbean unit, what were some ways you accounted for differing readiness, interest and learning profile needs that might not have appeared in the observations?

Please describe your grading or assessment philosophy.

Can you recall a time when you benefitted from differentiated instruction as a student? How has that impacted your willingness to differentiate instruction?

If you were to think of some big ideas, essential questions, concepts and/or principles you've covered this year, what comes to mind?

What are some examples of pre-assessments you used to inform your lessons over the past two weeks? (for instance the main idea lesson with the umbrella)

If you were to advise a new teacher on the reasons to put forth the effort to differentiate, what might you say?

Anything else you would like to add that might inform my study?

Appendix G

Post-observation questions: Sylvia

I've been in your classroom for the past two or three weeks. How do you feel about your differentiation during that time? What are some highlights of differentiated lessons?

What makes differentiation hard/easy?

What have you noticed in your students as a result of your differentiation?

How did you decide when to differentiate? when to offer choice? when to use flexible grouping? when to tier by readiness?

Are you familiar with growth mindset? (if no, offer a definition)

In what ways (if at all) does a growth mindset align with your philosophy of teaching?

How might (if at all) your view of mindset impact your ability to differentiate?

How did you decide on the learning goals in the lesson you taught over the past two/three weeks? (Zoocenomics; Reader's Theater for Mother's Tea)

What are some ways you have emphasized growth toward those learning goals versus student competition?

As you think about the diversity in your classroom how does it add to or take away from the learning environment for your students?

What are some pre-assessments that have informed your instruction over the past few weeks?

What are some areas where you have differentiated the product students are able submit over the past four weeks? Process?

How would you describe the attitude of a teacher who differentiates instruction?

Can you list some characteristics of teachers who differentiate instruction?

What might be some beliefs of teachers who differentiate instruction?

How did you decide on the learning goals and essential understandings of _____ lesson?

Please describe your grading or assessment philosophy.

Can you think of a time when you benefited from differentiated instruction as a student? How has that impacted your willingness to differentiate instruction?

If you were to advise a new teacher on the reasons to put forth the effort to differentiate, what might you say?

Anything else you would like to add that might inform my study?

Appendix H

Post-observation questions: Generic
I've been in your classroom for the past two or three weeks. How do you feel about your differentiation during that time? What are some highlights of differentiated lessons?

What makes differentiation hard/easy?

What have you noticed in your students as a result of your differentiation?
How did you decide when to differentiate? when to offer choice? when to use flexible grouping? when to tier by readiness?

Are you familiar with growth mindset? (if no, offer a definition)

In what ways (if at all) does a growth mindset align with your philosophy of teaching?

How might (if at all) your view of mindset impact your ability to differentiate?

What are some ways you emphasize student growth instead of student competition?

How did you decide on the learning goals in the lesson you taught over the past two/three weeks?

What are some big ideas, essential questions, concepts and/or principles that you covered over the past four weeks?

What are some pre-assessments that have supported your instruction during the past four weeks?

What are some opportunities your students have had for inquiry or reflection?

What might be some examples of a differentiated product?

How might the role of coach or facilitator play out in a first grade classroom? How does that align with your teaching philosophy?

As you think about the diversity in your classroom how does it add to or take away from the learning environment for your students?

How would you describe the attitude of a teacher who differentiates instruction?

Can you list some characteristics of teachers who differentiate instruction?

What might be some beliefs of teachers who differentiate instruction?

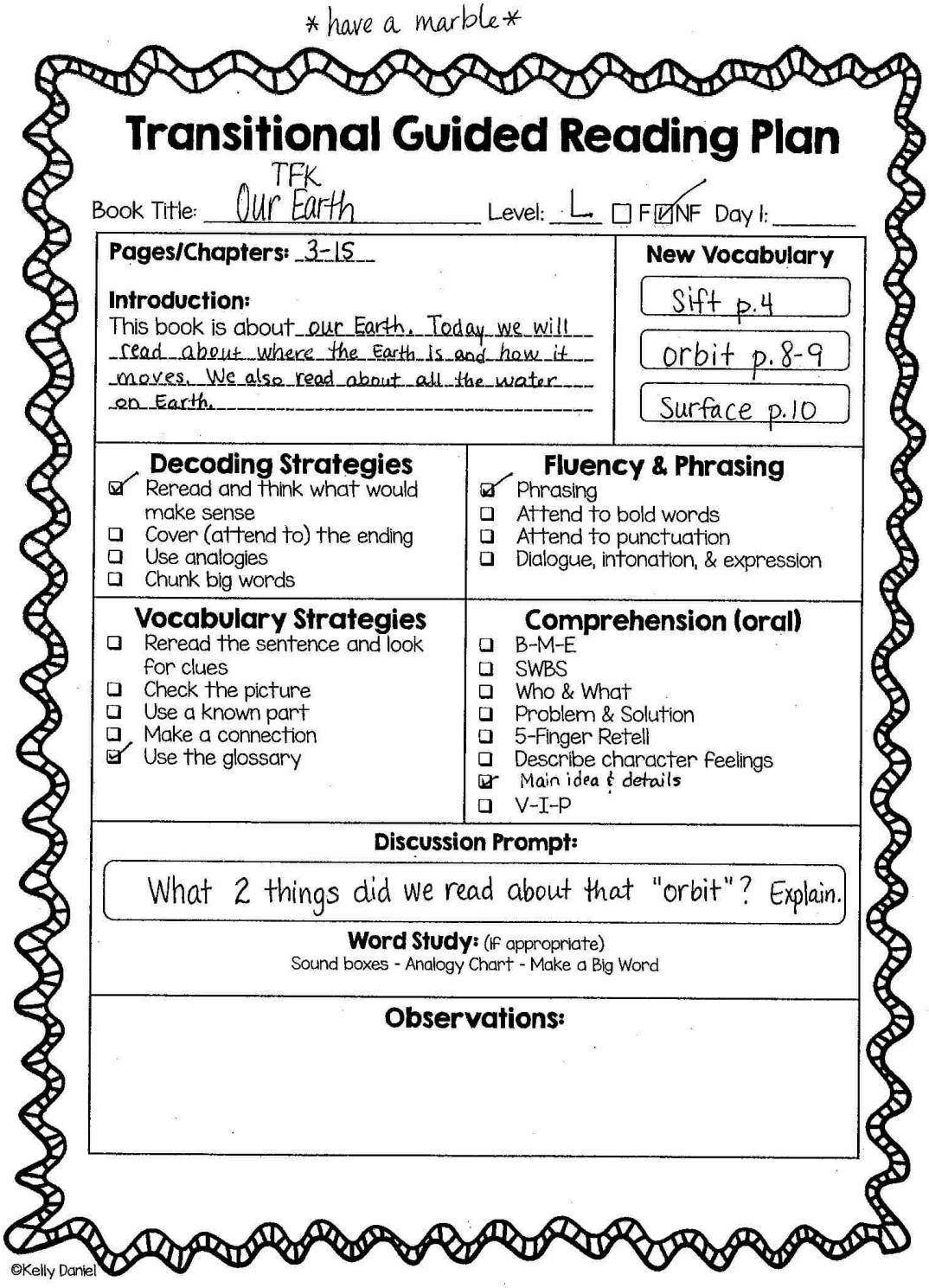
How did you decide on the learning goals and essential understandings of _____ lesson?

Please describe your grading or assessment philosophy.

Can you think of a time when you benefited from differentiated instruction as a student? How has that impacted your willingness to differentiate instruction?

If you were to advise a new teacher on the reasons to put forth the effort to differentiate, what might you say?

Anything else you would like to add that might inform my study?



have a marble

Transitional Guided Reading Plan

Book Title: Our Earth (TFK) Level: L ☐ F ☑ NF Day 1: _____

Pages/Chapters: 3-15

Introduction:
This book is about our Earth. Today we will read about where the Earth is and how it moves. We also read about all the water on Earth.

New Vocabulary
- Sift p.4
- orbit p.8-9
- Surface p.10

Decoding Strategies
- ☑ Reread and think what would make sense
- ☐ Cover (attend to) the ending
- ☐ Use analogies
- ☐ Chunk big words

Fluency & Phrasing
- ☑ Phrasing
- ☐ Attend to bold words
- ☐ Attend to punctuation
- ☐ Dialogue, intonation, & expression

Vocabulary Strategies
- ☐ Reread the sentence and look for clues
- ☐ Check the picture
- ☐ Use a known part
- ☐ Make a connection
- ☑ Use the glossary

Comprehension (oral)
- ☐ B-M-E
- ☐ SWBS
- ☐ Who & What
- ☐ Problem & Solution
- ☐ 5-Finger Retell
- ☐ Describe character feelings
- ☑ Main idea & details
- ☐ V-I-P

Discussion Prompt:
What 2 things did we read about that "orbit"? Explain.

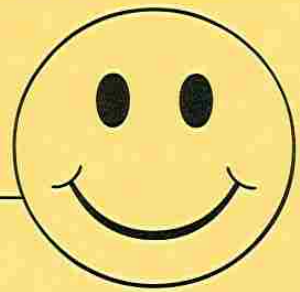
Word Study: (if appropriate)
Sound boxes - Analogy Chart - Make a Big Word

Observations:

©Kelly Daniel

68032

Happy Gram



☆ Building relationships w/ students w/ I noticed/positive statements → increase engagement → increase success

Ruth

Name _____

Lesson 5 Reteach

Time to the Hour: Analog

The minute hand points to _____.

The hour hand points to _____.

The time is 9 o'clock.

Use a  to complete each sentence.

1. 

The minute hand points to _____.

The hour hand points to _____.

The time is _____ o'clock.

2. 

The minute hand points to _____.

The hour hand points to _____.

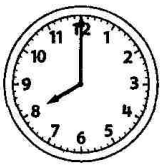
The time is _____ o'clock.

3. 

The minute hand points to _____.

The hour hand points to _____.

The time is _____ o'clock.

4. 

The minute hand points to _____.

The hour hand points to _____.

The time is _____ o'clock.

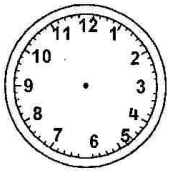
Name _____

Lesson 5 Enrich

Time to the Hour: Analog

Draw pictures of three activities you do each day. Show the time you do each activity on the clock. Circle A.M. or P.M.

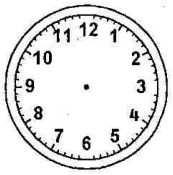
1.



A.M.

P.M.

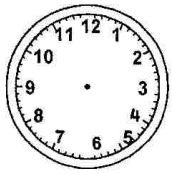
2.



A.M.

P.M.

3.



A.M.

P.M.

Kindergarten Sight Word List

★ D.I word practice for struggling students

Highlighted words are those your child could not identify at the last assessment. Please practice these at home.

Category #1- Decodable words (by saying the individual sounds these words can be decoded and read).

- at
- and
- on
- in
- it
- for
- that
- this
- with
- he
- had
- have
- bat
- so
- go
- me
- we
- up
- can
- am
- an
- no
- a
- hop
- mud
- pig
- ten
- I

Category #2- Sight Words (the letters in these words do not make their typical sounds; therefore, the combinations must be committed to memory).

- his
- is
- as
- by
- you
- the
- are
- of
- to
- said
- them
- here
- one
- see
- like
- my
- was
- they
- from
- do
- come
- look
- went

Appendix J
Samples of Notes Pages

Sylvia 2

Groupings and Management

1 Students work in a variety of groups within a relatively short time span.
2 Students know how to get and give help appropriately as needed.
3 The teacher uses space, time, and materials flexibly to address varied learning needs.
4 The teacher and students share responsibility for making the classroom work smoothly.
5 The teacher acts as a coach or facilitator of learning for individuals and the group.
6 There are clear guidelines/expectations for how students should work individually and as a group.

Comments: 3

Stick to your table team during talk-math and then if you want to get together w/ other friends during station time

Ask your table mates and if they don't remember I'll help your whole table

Table groups are diff from reading groups. diff from math groups. 5

"Close the tab and reopen and start your turn again." 4 5

Red group
diff group for math.
use same geo. shapes as green group.

Whole class
I should see all of you helping to clean up! 5

Reading groups No whole class instruction

Sylvi 6

Ruth 3

Tasks

1 Tasks require high levels of thinking.
2 Tasks are appealing from a student perspective.
3 Tasks represent a wise use of students' time and allow each student to work efficiently.
4 Tasks approximate the thinking and/or "doing" of people who do similar work in the real world.
5 Tasks are aligned with common learning goals, and with one another.
6 Tasks provide appropriate challenge and/or scaffolding in anticipation of individual student needs.

Comments:

Students ~~are~~ pair w/ classmates to work on clock times.
Students use showdown to demonstrate what they know.
Purple worksheet
If you are an early finisher you can write five sentences on the back about your favorite time of day.
(for second grade memory booklet)

What place are we learning about right now?
If you could be one of those fish what would you be. 1, 2,
Students seated on carpet. Whole class instruction.
(T) asks (S) to listen for steal drum.
what types of jobs would you have if we lived in the Carr. 4
which job would you like to have 1, 4
(S) return to seats for independent work.
(S) finish making Carribean brochure 5, 6
(T) provides ~~the~~ an anchor activity (making memory book 3 6, 5

Mary 4

Learning Environment

1 The teacher and students respect one another.
2 The teacher shows interest in students as individuals.
3 There is active participation by a broad range of students.
4 Students seem comfortable with one another.
5 The teacher creates collaborative learning experiences.
6 There is an emphasis on *student growth* toward important goals versus on *student competition.*
7 There are routines and rituals in place that help students feel they belong and are valued.

Comments:

(A) turn to partner to describe what poem "looked like" in their mind 3,4,5
"Finish up and turn back to me."
"What did the poem say that made you think of going high?
"Is this a question about your poem?
"Is there someone who would like to share one part of their poem?"
8 (A) called 4 Boys : 4 girls

Student upset b/c of no partner. "How can we fix this?" 2.
"Is there anyone who is willing to work with Aidan?"
Three groups volunteer. "See how easy that was to solve?" 4

Where is our partner voice that we use during centers.
(A) willingly engage in math games. 3

Group 2
You guys are getting much better @ writing your #'s 1,5
(A) easily select partners to work in groups.

(A) instructs everyone to take out their office. All students 7
immediately open manila folder to ~~take out~~ block classmates view over

210 Administration • Fayetteville, Arkansas 72701 • (479) 575-2208 • (479) 575-3846 (FAX)
Email: irb@uark.edu

Research Compliance
Institutional Review Board

June 18, 2015

MEMORANDUM

TO:	Curtis Cunningham Marcia Imbeau
FROM:	Ro Windwalker IRB Coordinator
RE:	PROJECT MODIFICATION
IRB Protocol #:	15-03-618
Protocol Title:	*Differentiation Revealed: A Multiple-Methods Qualitative Study on the Implementation of Differentiated Instruction in a Mixed-Ability Elementary Classroom*
Review Type:	EXEMPT EXPEDITED FULL IRB
Approved Project Period:	Start Date: 06/18/2015 Expiration Date: 04/08/2016

Your request to modify the referenced protocol has been approved by the IRB. **This protocol is currently approved for 4 total participants.** If you wish to make any further modifications in the approved protocol, including enrolling more than this number, you must seek approval *prior to* implementing those changes. All modifications should be requested in writing (email is acceptable) and must provide sufficient detail to assess the impact of the change.

Please note that this approval does not extend the Approved Project Period. Should you wish to extend your project beyond the current expiration date, you must submit a request for continuation using the UAF IRB form "Continuing Review for IRB Approved Projects." The request should be sent to the IRB Coordinator, 109 MLKG Building.

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The University of Arkansas is an equal opportunity/affirmative action institution.