A CASE STUDY:
DIFFERENTIATION TECHNIQUES
FROM A SECOND GRADE CLASSROOM
IN A WASHINGTON STATE PUBLIC ELEMENTARY SCHOOL

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Abstract

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How do teachers account for the diverse instructional needs and levels in their classrooms? Differentiation is a philosophy that encourages teachers to consider students' learning needs, achievement levels, and interests when planning, implementing, and assessing instruction, but it differs from individualization. Teachers can differentiate through planning, process, materials, and assessment. I use a case study to consider how Mrs. Smith, a second grade teacher, used differentiation in her public school classroom. I also use pattern-matching techniques to compare the use of differentiation in Mrs. Smith's classroom to best practices in differentiation as forwarded by existing literature. I found that in Mrs. Smith's class, she began with state and district standards and then differentiated her instruction mainly through process and materials, although she did not differentiate every instructional lesson in every possible element at once. When beginning to differentiate, teachers should know their students thoroughly by creating student learning profiles and using a variety of assessments. Teachers should also use simple differentiation strategies first and experiment with more complex techniques as desired. Most importantly, classroom management routines and procedures should be well established so differentiation can be implemented successfully.

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Introduction

Twenty-five students of varying levels of alertness filed into Mrs. Smith's classroom on a cloudy, spring morning. They walked about the room, completing their morning tasks in preparation for a new day of learning. After the backpacks, lunches, and homework papers found their way into the proper shelves and bins, most students worked quietly on their "Morning Work," a book of daily language practice. During this time, Mrs. Smith took attendance and lunch counts, corrected the previous night's homework, and then reviewed the students' morning work. Four students with Individual Education Plans (IEP) worked in the "club room" next door with Mrs. Day, a teacher endorsed in special education, and Mrs. Cornwall, a paraeducator. In the club room, lessons in spelling, reading, and math takes place at students' individual levels within an individualized curriculum that accounts for their learning needs. As they progress and master each section, they move on to the next level. Three of the students are on the Autism spectrum and the other student qualified for special education assistance based on a learning disability.

Shortly after the class leader conducted the flag salute and the morning work was corrected, Mrs. Smith asked the students to put their math books and pencils in the center of their desks and come quietly to the front carpet. Students moved quickly and quietly, since those who followed directions first were awarded a participation point. It was now time for students to practice using a microphone to read their individual biography reports on a famous American. During the previous three weeks, Mrs. Smith led the class through a research and writing process which integrated her reading and writing lessons.

Students chose their subject based on personal interest from a suggested list of Americans who have made a significant contribution to their country. Students worked at their own pace and level, with assistance from their teacher and peers. Now that their reports have been published in their best writing and bound in a hand-made cover, they will present their reports to parents at an assigned time and date; all the students are invited to dress up as their chosen American and bring in artifacts such as pictures, a poster, or objects that represent their person.

Before presenting their reports to the class during rehearsal, the students have previously practiced reading their reports to themselves through a telephone made of plastic pipe pieces and to a partner. Two students have additional practice reading their reports to a reading specialist, three students read their reports during their English Language Learner tutoring session, and four others practice next door in the "club room."

Students enrolled in the club room come and go as needed through a very small section of the wall which opens like a door. Mrs. Smith and Mrs. Day often comment how much easier this set-up makes it to meet the needs of students enrolled in special education. Several students attend the whole-class, direct instruction in their second grade classroom, and then go through the partition for individual and small group assistance. This also allows Mrs. Smith and Mrs. Day to meet regularly and conference on the students' progress, daily behavior, and needs.

After an hour of biography presentation practice, Mrs. Smith begins the daily math lesson. All students are present for this lesson as Mrs. Smith pulls out different types of measuring tools from a bag. She introduces the vocabulary for the math lesson

while discussing the measuring tools. "Capacity is how much something can hold. It's measured in units." She continues on to ask the class if they can guess the missing word in a situation where parents say, "I need a _____ of milk." Students don't respond, so the Mrs. Smith introduces the gallon and shows the class a gallon container, as well as a half-gallon, quart, pint, and cup. Students return to their desks to make a diagram of liquid units of measurement with markers and paper. During this activity, Mrs. Cornwall assists four students with writing, remaining on task, and following directions.

After completing the diagram, Mrs. Smith models a problem from the student's daily assignment in their math book and has volunteers help her complete two other problems. Students then have an opportunity to ask questions about the remaining problems before they return to their seats for independent math work. During this time, five students are not sure how to proceed on their own and need teacher assistance to complete the remaining problems, several others need a hint or prompting to answer the math questions, four students move to the club room for individual assistance or to work on their own math assignments at their level in Connecting Math, and seven students quickly finish the assignment and move on to choice activities. These activities include journal writing, silent sustained reading, or practicing their biography presentations. Finally, students put away their work to get ready for lunch. Three students who have not finished their math assignments must stay in during lunch recess to complete them. The students kept in at recess have attained below grade level marks in math on their last progress reports. While this does allow for an extra opportunity to have uninterrupted individual assistance from the classroom teacher, the teacher's thirty minute break has

been shortened to five minutes after all the students have finished their math work and left for recess.

Imagine being in a situation like Mrs. Smith, where you are the instructor of a diverse group of students in second grade. During one of your lessons, the advanced students seem bored and unmotivated, the beginning students struggle with beginning concepts, other students want to do everything quickly and by themselves, and the remaining students simply watch all the commotion. I have been in situations like this and have wondered how I would challenge all of my students and help them make progress and meet learning goals during limited amounts of instructional time. Thus, my interest in differentiation began, as I looked for ways to meet the needs of all my students.

Literature Review

Regarding differentiation at the elementary level, there are six main areas of research that I will survey here. Research on differentiation can be divided into the areas of elementary education, support of advanced learners, use in specialties, views from countries outside the U.S., and differentiation as a contested educational philosophy. I will briefly outline each below through the work of a central researcher.

Differentiation in the Elementary Classroom

What is differentiation? In "A teacher's Guide to Differentiating Instruction," The Center for Comprehensive School Reform and Improvement (CSRI) defines

differentiation as "modified instruction that helps students with diverse academic needs and learning styles master the same challenging academic content" (2007, p. 1). In *Differentiation of Instruction in the Elementary Grades*, Carol Ann Tomlinson states that differentiation "consists of the efforts of teachers to respond to variance among learners in the classroom" (2000a, p. 2). For example:

> Whenever a teacher reaches out to an individual or small group to vary his or her teaching in order to create the best learning experience possible, that teacher is differentiating instruction (2000a, p. 2).

A teacher can differentiate based on the students' readiness to learn, interests, and their learning profiles. Tomlinson lists four different elements in the classroom which can be differentiated:

> (1) content--what the student needs to learn or how the student will get access to the information; (2) process--activities in which the student engages in order to make sense of or master the content; (3) products--culminating projects that ask the student to rehearse, apply, and extend what he or she has learned in a unit; and (4) learning environment--the way the classroom works and feels (2000a, p. 2).

Tomlinson continues on to give specific examples of how a teacher can differentiate by content, process, product, and learning environment. These examples include using reading materials at a variety of levels to present content, allowing students to use manipulatives during learning processes, having students choose their own product to express what they have learned, and creating an environment which includes space for quiet work and collaborative work (2000a, p. 3).

In 2006, Melinda E. Good conducted an excellent survey of research on differentiation at the elementary level in her paper entitled, *Differentiated Instruction:*

Principles and Techniques for the Elementary Grades. In her research, Good presents the principles and theories of differentiation, appropriate techniques available for primary level students, and common barriers teachers experience when implementing differentiation and possible solutions. A key assumption underlying differentiation, Good writes, "is that whole-class, lecture-style instruction does not adequately support many of the students in our classrooms today" (2006, p. 11). Good recommends differentiation as an educational approach to combat problems arising from traditional instruction, which: "tends to 'teach to the middle,' or primarily focus on reaching average children" with the result that "the needs of struggling and advanced learners are often not adequately addressed" (2006, p. 4).

In addition, four principles for differentiated classrooms are outlined in Good's paper: 1) teachers should set learning goals with high expectations for all of the students, 2) focus should be on individual growth and each students' personal best, 3) teachers should use assessment throughout the instruction, as well as at the end, and use the results to plan lessons and activities, and 4) differentiation is proactive instruction that attempts to "address learners' different needs, rather than planning one lesson for everyone and adjusting it when it does not work for some students" (2006, p. 14). When using these four principles, teachers should keep in mind the differences among students in terms of their readiness, interests, and learning needs (2006, p.14).

Since teachers may deal with barriers such as lack of time, resources, and support when attempting to differentiate their instruction, Good recommends that teachers receive training in differentiation and take small steps when beginning to differentiate by adding

one activity per unit or product in a semester (2006, p. 28). Finally, Good restates her premise that the "creation of a differentiated classroom is a complex process...a slow evolution, best undertaken with the support of parents, colleagues, and administrators" (2006, p. 30).

Differentiation to Support the Advanced Learner

The next set of literature introduces ideas for creating a differentiated classroom which supports advanced learners, as well as their classmates. Carol Ann Tomlinson outlines what differentiation looks like and what it should not look like in her article entitled *Differentiating Instruction for Advanced Learners in the Mixed-Ability Middle School Classroom* (1995). Although this article focuses on differentiation at the middle school level, it is included in this literature review since it can be applied in its entirety to the elementary classroom. Tomlinson highlights key points in implementing differentiation for advanced learners: "instruction is concept focused and principle driven," "ongoing assessment of student readiness and growth are built into the curriculum," "flexible grouping is consistently used," and "students are active explorers" (1995, p. 2).

Tomlinson's article describes specific ways teachers can make "readiness-based adjustments" to learning tasks or instruction, which include providing more interest-based options so students can connect and extend the content into other areas, such as math, literature, hobbies, science, or history (1995, p. 2). Tomlinson lists several ways that advanced learners may need to have instruction differentiated:

> Some students need a longer period to reflect on ideas before beginning to apply them, while others prefer quick action. Some students need to talk with others as they learn, while others need a quiet work space. Some students learn best as they tell stories about ideas being explored, others as they create mind maps, and still others as they construct three-dimensional representations. Some students may learn best through a practical application of ideas, others through a more analytical approach. (1995, p. 2)

From Tomlinson's description of the diverse needs of advanced learners, it is easy to see the importance of knowing each student well and finding out which instructional adjustments will work best for individuals.

It is important to thoroughly know and understand all students and their learning needs, not just the advanced learners, when choosing to differentiate. In the next section, we find suggestions for differentiating in specialties which can be applied to all elementary classrooms.

Differentiation in Specialties

Karen Larsen focuses on the ways differentiation can be applied to library instruction, as well as in any classroom setting. She gives an excellent analogy of differentiation as illustrated by a swim class in her article, *Sink or Swim: Differentiated Instruction in the Library* (Larsen 2004). She asks us to imagine that we are teaching a class of swim students in a pool. There is Karen Larsen, who is terrified of swimming and panics in the deep end when her feet do not touch the bottom. Next, we have her husband who is a certified diver and goes off the high board at the pool. Finally, there are her two daughters who love to snorkel and are on the swim team. As an instructor, asks Larsen, how would you conduct this swim class?

> Would you put us all in the same class? Would it bolster my confidence to see others diving like porpoises while I clutch the side of the pool and cry? Should we form a cooperative learning group where my team's grade depends on how well I learn to swim? Should others be used as unpaid tutors to teach me how to swim? Should others wait for instruction until I catch up to their abilities? (Larsen 2004, p. 14)

The article suggests that the swim instructor in the illustration above should divide the class into "needs-based instructional groups" (Larsen 2004, p. 14).

Larsen shows us how the use of needs-based instructional groups can be applied as differentiation strategies during a second grade lesson on magnets. In this class, there may be some students reading at the sixth grade level, some who are beginning readers, some who love magnets and have read and learned much about them, and some who have never played with magnets or read about them. In a differentiated lesson, the teacher would divide the class into groups. Group One would receive magnets, objects, and a sheet with pictures and names of the objects with the expectation that students would experiment with the magnets and check the box for those objects that would stick. They would then have assistance in writing one or two sentences telling their results. Group Two would have everything Group One received, but with a more advanced sheet without picture clues and an additional section labeled "hypothesis." The teacher would ask the students in Group Two to predict what would happen, experiment, and then discuss and use their discussion and self-reflection skills. The more advanced Group Three would be given objects, magnets, and books about magnets, as they conduct a complete experiment using the scientific process with some assistance from the teacher. Larsen's descriptive example allows readers to see some of the techniques of differentiation in action.

Another helpful article for teachers interested in implementing differentiation is

Rebecca Pierce and Cheryll Adams' *Tiered Lessons* (2004). Although this article describes a tiered lesson for mathematics, the information presented can be used for any subject and grade level. Tomlinson describes tiered lessons as "the meat and potatoes of differentiated instruction" (Pierce et. al. 2004, p. 2). In other words, it is one of the most foundational and commonly used means to differentiate in the classroom. In another food analogy, Pierce and Adams ask the reader to picture tiered lessons as a wedding cake, with several layers of different cakes. In the same way, lesson plans can be adapted for different tiers or groups of students at similar levels of "readiness, interest, or learning profiles" (Pierce et. al. 2004, p. 2). The steps in developing a tiered lesson are as follows:

1. Identify the grade level and subject
2. Identify the targeted national, state, or district standard
3. Identify the key concept and generalization following the standard by asking: "What big idea am I targeting?" and "What do I want the students to know at the end of the lesson, regardless of their placement in the tiers?"
4. Find out what students need to know as background knowledge for the lesson
5. Decide which lesson part to tier, such as the content, process, or product
6. Decide if you want to tier by students' readiness to learn, interests, or learning profiles
7. Decide on the number of tiers you need and plan the lesson
8. Choose an assessment, whether formative, summative, or a combination of both, based on the teacher's needs and the lesson design. Some examples include recorded observation, giving students sticky notes or flip cards, using a rubric for each tier, and giving a paper and pencil test (Pierce et al. 2004, p. 3)

When planning tiered lessons, Pierce et al. recommend choosing only one of the following when beginning to differentiate: content, process, or product. They also encourage simplifying the amount of tiers needed. For example, teachers may plan for only three tier groups, such as below grade level, at grade level, and above grade level, when differentiating by the student's readiness to learn (Pierce et al. 2004, p. 3). When

tiering by learning profiles or students' interests, teacher may limit the choices of lesson activities and assignments or plan for only a few different learning styles at a time when consulting Gardner's multiple intelligences (Pierce et al. 2004, p. 3). Another suggestion for successful differentiation is to use time flexibly so that lessons can be lengthened or shortened to meet the needs of the students, instead of having rigid time constraints (Pierce et al. 2004, p. 1). In addition, the classroom environment should allow for a variety of furniture arrangements so that flexible grouping can be used (Pierce et al. 2004, p. 1).

Successful differentiation, including the implementation of tiered lessons, begins with good classroom management techniques. Pierce et al. describe the importance of teaching students specific rules and procedures for working in a variety of flexible groups or independently. This way, the teacher is able to work without distraction with groups and individuals. Pierce et al.'s suggested rules include the "use of six-inch voices," so the noise level of working students is reasonable and "ask three before me," which calls for students to find out answers to their questions from three classmates before interrupting the teacher (Pierce et. al. 2004, p. 1). When students are waiting for the teacher's help or need something else to do, Pierce et al. encourage teachers to provide "anchoring or sponge activities," which are ongoing activities or assignments that students can complete independently (2004, p. 1).

Overall, Pierce et al. suggest that teachers should start small and choose only one element at a time to differentiate when creating a tiered lesson. They also recommend gaining support from colleagues, including specialists and administrators, and attending

professional development in differentiation (Pierce et al. 2004, p 3).

In Marlow Ediger's article on *Differentiated Instruction in Spelling*, he applies some techniques of differentiation to teaching spelling and lists a variety of ideas which can be applied to any subject. For example, Ediger suggests using contract systems, enrichment centers, learning centers, individualized spelling lists, multiple series of spelling texts, individual and cooperative learning methods, Gardner's multiple intelligence in planning, and computer technology. He asserts that differentiation of spelling instruction and practice can help students "use spelling words in a variety of contextual situations" and helps the teacher to "be observant" and "provide for individual achievement levels of learners" (Ediger 2000, p. 6, 8). Ediger, like many of the authors of studies on differentiation, encourage teachers to thoroughly know their students through observation and assessment of all types, so that they can plan for lessons which meet their students' specific needs.

Differentiation in other Countries

Research also examines the concept of differentiation in other countries. Here, a sample of that research is reviewed, which includes studies from Northern Ireland primary schools and an independent mainstream school in Malta.

In *Differentiation: Teachers' Views of the Usefulness of Recommended Strategies in Helping the More Able Pupils in Primary and Secondary Classrooms*, Trevor and Carolle A. Kerry conducted research on how grade school teachers in England view and value recommended methods of differentiation for able pupils (1997). They report that

"one of the most widespread teaching strategies for handling the learning of able pupils is differentiation" (1997, p. 439).

From this study, fifteen commonly recommended methods of differentiation were developed, which include techniques such as: using graduated worksheets, making available resource packs of additional info, asking open ended questions, using individual student contracts or targets, challenging students' assumptions, increasing the use of support teachers or parent helpers, encouraging self-pacing by students, removing unnecessary repetition, promoting self-marking/self-criticism by students, using homework time for producing extended projects, allowing students to record responses in different ways such as pictures, cartoons, audiotapes, and graphs, asking cognitively demanding questions, setting tasks with no single solution, using role play, and setting tasks with increased thinking demand (Kerry 1997, p. 6-16).

Next, researchers collected teachers' responses to these methods and how they have used them. The teachers' desired outcomes for differentiation were also collected and listed. The Kerry's conclude "that the teachers are more subtle in their use of the methods than the official publications allow for and it suggests that no single method can be applied without understanding the context in which it is used" (1997, p. 439). This quote further illustrates the view that there is not a one-size-fits-all approach to differentiation. Teachers need to reflect on their particular classroom environment and students, when implementing the differentiation suggestions of others.

Another research project examined differentiation in Northern Ireland. *Planning for Differentiation: The Experience of Teachers in Northern Ireland*, written by

McGarvey, Marriott, Morgan, and Abbott (1997), used case studies and questionnaires to determine how differentiation was viewed, planned, and implemented in fourteen primary schools in Northern Ireland. Most of the subjects surveyed reported that differentiation should include "identifying children's needs and matching tasks accordingly, so that each could experience both a challenge and a measure of success" (McGarvey et al. 1997, p. 361). Success, subjects stated, relied upon "good planning, well-prepared resources and good classroom management, including flexible grouping" (McGarvey et al. 1997, p. 361).

Subjects also determined that there were some positive and negative aspects of differentiation. The positive aspects included encouraging students' "self-esteem, motivation and interest and enabling them to work at an appropriate rate and level with time to grasp concepts," while the negative aspects included a "shortage of time to plan, prepare and even to teach" and "dangers of labeling the lower attainers when forming groups for differentiation" (McGarvey et al. 1997, p. 361). One teacher, of students ages 8-9 years old, reported difficulties differentiating between high, average, and low attainers in English and math homework because the workload was very heavy. Another teacher observed how it seemed to be impossible to create and assign differentiated homework when considering the number of students (McGarvey et al. 1997, p. 361). Other problems faced by teachers included a shortage of time for instruction, as well as large class sizes or classes with mixed-age students (McGarvey et al. 1997, p. 362). After assessing the wide range of their students' attainment, teachers also felt unsure of the next step to take towards differentiating their instruction. (McGarvey et al. 1997, p. 354).

McGarvey et al. suggest that "a clearer definition" of differentiation that is realistic and can be acted upon is needed, instead of a seemingly "remote ideal to which teachers can only aspire" (McGarvey et al. 1997, p. 362). In conclusion, the authors note that the participating schools in their study "gave high priority to differentiation in their planning and approaches, but teachers found it very difficult to sustain" (McGarvey et al. 1997, p. 363).

Enhancing Students' Learning Through Differentiated Approaches to Teaching and Learning: a Maltese Perspective (2004) presents Audrey Fenech Adami's research on how teachers used differentiation and how closely their practices matched differentiated instructional strategies presented in research. The study focused on all of the teachers working at one school in Malta. Researchers found that thirty-three percent of the teachers surveyed differentiated their instruction through the use of group work, twenty-eight percent through visual aids, fifteen percent through homework, ten percent through work in the content area, and nine percent through hands-on activities. In conclusion, Adami suggested that the school should include differentiation in policy decisions and create an appropriate school development plan. Another recommendation suggested holding in-service trainings in order for teachers to learn about meeting the needs of all students through differentiation. Furthermore, team planning was suggested to help relieve stress, help teachers "discuss the concepts that are expected to be acquired by students and to ensure that there is a common conceptual base among teachers" (Adami 2004, p. 96).

Differentiation as a Contested Educational Philosophy

In Washington state, we rely heavily on standards to plan our units and lessons, prepare students to take the WASL, measure how they compare to grade level expectations, and measure our success in the classroom when we are setting professional goals and gathering evidence for professional certification. How does addressing student variance and using differentiation techniques fit into standardized goals, curriculum, and helping students meet grade level expectations?

In *A Response: Equal Does Not Mean Identical* (1998), Reis, Kaplan, Tomlinson, Westberg, Callahan, and Cooper confront the view that differentiation creates inequalities, separates classes, and contributes to a system of "meritocracy," and that taking away this system of tracking will raise student achievement by requiring more from all students and allowing equal educational opportunities to all (p. 74). Reis et al. suggest that the issue is not grouping or tracking, but "what happens within the different types of grouping arrangements used in schools—age groups, instructional groups, or interest groups" (Reis et al., 1998, p. 76). Reis et. al. argue that "whole-group, single-size-fits-all instruction rarely offers the kinds of adaptation required to meet the needs of a diverse group of learners" (1998, p. 76). Instead, the authors promote the idea that "students with different abilities, interests, and levels of motivation should be offered differentiated instruction that meets their individual needs" (Reis et al., 1998, p. 74).

An example is given of an advanced reader who entered First Grade reading at the Fifth Grade level, but who was still reading slightly above the Fifth Grade level four years later. The authors find it remarkable that this advanced student did not progress: "If

Latoya has not made any further progress in reading by the end of the school year, she will have wasted valuable opportunities...she will require different, not equal, resources, teaching strategies, and content" (Reis et al., 1998, p. 74).

Reis et al. recommend that teachers use curriculum compacting in order to challenge their advanced learners (1998, p. 75). This technique "eliminates or streamlines content that students already know and replaces it with more challenging material, often based on students' interests" (Reis et al. 1998, p. 74). Reis et al. list some other ways in which teachers can differentiate, such as tailor the curriculum and instruction to advanced learners, use tiered lessons and assignments, account for students' interests in lesson planning, and allow for independent study (1998, p. 75). Above all, Reis et al. insist that "all learners in our schools, including those who are advanced, should be challenged academically" (1998, p. 76).

Carol Ann Tomlinson examines this potential conflict in *Reconcilable Differences? Standards-Based Teaching and Differentiation* (2000b). Tomlinson writes, "recent demands for more standards-based teaching can feel like a huge impediment to encouraging differentiated instruction, especially for teachers and principals who recognize student variance and want to address it appropriately" (2000b, p. 6). Tomlinson concludes, "In truth, the conflict between focusing on standards and focusing on individual learners' needs exists only if we use standards in ways that cause us to abandon what we know about effective curriculum and instruction" (2000b, p. 6). In addition, Tomlinson adds:

"There is no contradiction between effective standards-based instruction and

> differentiation. Curriculum tells us *what* to teach: Differentiation tells us *how*. Thus, if we elect to teach a standards-based curriculum, differentiation simply suggests ways in which we can make that curriculum work best for varied learners (2000b, p. 8).

In her article, Tomlinson defines differentiation as a philosophy and not just a "recipe for teaching," "an instructional strategy," or "what a teacher does when he or she has time" (2000b, p. 7). Even so, Tomlinson does acknowledge a key problem with implementing differentiation: planning and lack of time. "Confronted by too many students, a schedule without breaks, a pile of papers that regenerates daily, and incessant demands from every educational stakeholder, no wonder we become habitual and standardized in our practices" (2000b, p. 11). Yet if teachers see the value in differentiation as a philosophy and persevere in implementation, Tomlinson suggests that they will have "retained—or in some cases, have discovered for the first time—the essential frameworks of the disciplines and the coherence, understanding, purpose, and joy in learning" (2000b, p. 11). When teachers find the meeting place of standards and high-quality instruction, Tomlinson believes, differentiation follows close behind.

When differentiating, Tomlinson suggests that teachers should ponder certain questions to ascertain whether their grading practices are helping all of their students (2000b, p. 11). For example, teachers can ask themselves "in what ways do our current grading practices motivate struggling or advanced learners to persist in the face of difficulty" or "is there an opportunity for struggling learners to encounter excellence in our current grading practices?" (Tomlinson 2000b, p. 11). Furthermore, Tomlinson comments on the difficult but necessary task of self-reflection when implementing

differentiation in any area:

> Not only do we have no time to question why we do what we do, but we also experience the discomfort of change when we do ask the knotty questions. Nonetheless, our profession cannot progress and our increasingly diverse students cannot succeed if we do less (2000b, p. 11).

In order to successfully use differentiation in the classroom, whether in assessment or through planning, materials, or process, teachers need to not only be thorough assessors of their students, but also thorough assessors of their own teaching practices.

To create a context for my study on differentiation, I have summarized all the main points and best practices gleaned from the literature review on differentiation and entered them into a matrix (see Table 1). The best practices in differentiation have been categorized into four areas: differentiation by planning, materials, process, and assessment.

Table 1

Comparison of Differentiation Techniques from Existing Literature

Source	Planning	Materials	Process	Assessment
"A Teacher's Guide to Differentiating Instruction" *The Center for Comprehensive School Reform and Improvement*	Teachers should understand academic content and skill students will learn Teachers should find out how much the students already know and don't know about a given content Teachers should choose instructional methods, materials, and teaching strategies to address student needs	Teachers should vary the materials for supporting instruction such as using a variety of reading level materials, books on tape, pictures, video clips, and newspaper magazine articles	Teachers should vary the way students interact with the materials, vary the instructional activities, plan for several activity options, use whole class, small groups, individuals, and a combination of student groupings	Teachers should teach challenging content Teachers should give students options to demonstrate their mastery of the content Teachers should vary the length of time given for completion of a task or assessment Teachers should allow

2007	Teachers should design assessment to check student mastery of lesson content			written, verbal, student self-assessment, and standard test options Teachers should use rubrics as guides to identify criteria for mastery
Source	Planning	Materials	Process	Assessment
Ediger 2000 *Differentiated Instruction in Spelling*	Teachers can lead students to perceive purpose and value in spelling words correctly Provide a variety of tools to learn a variety of skills: phonics syllabication word patterns contextual use of spelling words basic sight words	Teachers can use enrichment centers, contract systems with individuals, learning centers, multiple series of spelling texts, computer technology, and individualized spelling lessons from student's writing errors.	Teachers should secure and maintain learner attention during spelling instruction Incorporate spelling lessons into a variety of lessons and writing activities, such as narrative, expository, and creative writing Include a variety of experiences for spelling instruction Use individual and cooperative learning methods Use Gardner's (1993) *Multiple Intelligences Theory* in planning and implementing lessons and activities	Teachers should diagnose student errors
Source	Planning	Materials	Process	Assessment
Good 2006 *Differentiated Instruction*	Differentiated instruction is more manageable than individualization because teachers do not attempt something different for each child in the classroom Teachers can plan for several activity options, instead of one for each student Rather than creating isolated tasks...the teacher may work with whole class, small	Teachers can vary the materials by giving few or many directions for how students should use materials Teachers can assign tasks that range from concrete to abstract Teachers can use books on tape, note-taking organizers,	Teachers can use open-ended tasks, simple to complex, activities to encourage active thinking, graphic organizers, additional activities, and multiple formats for those who need extra help Teachers can differentiate instruction by the use of learning centers, and study labs	Differentiated instruction must, by necessity, be assessment-based Assessment becomes a part of the routine and allows the students' needs to be met during the unit, rather than finding out what is lacking after the unit is already completed

	groups, individual students, or a combination of all three Teachers can plan to differentiate by assessment, content, process, product, readiness, interest, and learning profile	different texts, supplementary materials, highlighted texts, and allow students to use reading buddies and participate in think-pair-share activities Teachers can match the starting content with the child's readiness level The goal is to move children along the continuum as quick-ly and as deeply as they can	Teachers can include individual work times so the teacher can meet with individuals and small groups	Teachers can differentiate by pace, different assessment times, use different assessments for different content, use assessment based on the method used
Source	Planning	Materials	Process	Assessment
Kerry 1997 *Differentia-tion: Teachers' Views of the Usefulness of Recommend-ed Strategies in Helping the More Able Pupils in Primary and Secondary Classrooms*	Approaches by Laar (1995) include differentiating by ordering the learning complexity of the task, devoting additional time to students with special learning needs, grouping by ability, providing different levels of support material, accepting different levels of achievement and modes of presentation Students can pursue different strands of the same subject matter Teachers can use classroom assistants for strugglers Students can pursue personal interests within the subject in more depth	Teachers can use graded worksheets Teachers and students can use different resources depending on student need and pacing	Teachers can set open-ended tasks Teachers can use contract systems to help meet students' learning needs and help them set and meet goals	Teachers can use less repetition, ask cognitively demanding questions of the more able, and set tasks with no single correct solution
Source	Planning	Materials	Process	Assessment
Larsen 2004	One goal of differentiation is to bring the ideas and concepts of the curriculum to the learner at a pace and depth that is appropriate for the ability of each student	Teachers can use different materials depending on differentiated activities or expectations	Teachers can differentiate by skill, such as using flexible grouping	The product can be differentiated by group profile, individual students' needs, and activity type.

Source	Planning	Materials	Process	Assessment
Pierce et al 2004	Teachers can plan tiered lessons based on level of abilities or learning styles Teachers should start small by choosing to differentiate in one way for one lesson	Teachers can use anchoring activities to occupy all students while the teacher is helping a group or individual	Teachers can use flexible groupings, compact lessons for advanced learners, use learning contracts with individuals, and use tiered lessons	Some assessment options for teachers are: Formative, summative, both formative and summative, record observations, use flip cards, sticky notes, rubrics for each tier based on resulting product, and formal paper and pencil tests
Source	Planning	Materials	Process	Assessment
Tomlinson, C.A. 2000a *Differentiation of Instruction in the Elementary Grades*	Success in differentiation happens when curriculum is focused on the content that is valued by experts in that particular discipline Teachers should frequently reflect on the match between their classroom and their philosophy of teaching Teachers can try to create a mental image of what they want their classroom to look like and use this image to plan and make it happen Teachers should talk with their class about the classroom, instruction, and environment, including why, how, and what	Materials and tasks should be interesting to students and seem relevant to them Teachers can provide a variety of spaces in the learning environment, including a quiet work space and student collaboration space Teachers should use materials which reflect a variety of cultures and home settings Teachers should set clear guidelines for independent work by developing routines for students who need help, such as "ask three other students and then me"	Lessons, activities, and products should be designed to ensure that students wrestle with, use, and come to understand the essential learnings Learning should be active, joyful, and full of satisfaction for each student Teachers should think carefully about management routines, directions, moving about the room, and where students should put work. Teachers should teach routines carefully, monitor, discuss results, and fine tune	Assessment should be continuous and tightly linked to instruction Teachers should include options for students to choose in order to demonstrate the required learning Teachers should use rubrics that match and extend students' varied skill levels Student should sometimes be given the choice to work alone or in small groups Students may be allowed to create their own product or assignments if they contain required elements
Source	Planning	Materials	Process	Assessment
Tomlinson, C.A. 2000b *Reconcilable Differences:*	"Choose any standard and differentiation suggests that you can challenge all learners by providing materials and tasks on the standard at varied levels of difficulty, with varying degrees of		Teachers can have students work alone, collaboratively, in auditory modes, visual modes, through practical means, or through creative means	Teachers can ask themselves certain questions to help ensure that grading practices are productive for all students

Standards-Based Teaching and Differentiation	scaffolding, through multiple instructional groups, and with time variations" Positive cases in differentiation: Science teachers delineated the key facts, concepts, principles, and skills...their work helped their colleagues see the big picture of science instruction for K-12 over time, organize instruction conceptually, and teach with the essential principles of science in mind...helped students think like scientists, still attended to prescribed standards			

This literature review reveals that there is a need for more research in the field of differentiation, especially concerning the elementary grades. Melinda E. Good suggests that there is a lack of research in these areas: differentiation strategies for preliterate, more dependent, younger students; quantitative studies of the efficacy of differentiation in elementary schools; detailed, specific techniques for implementing differentiation in specific grade levels or age ranges; and more viewpoints on the topic of differentiation (Good 2006, p. 31). In addition, more research is needed: "in the context of differentiation for the more able at least—that there are subtleties of procedures and strategy which have not been, to date, catered for in the literature" (Kerry 1997).

After reviewing the existing literature on differentiation as it applies to elementary education, I was left with two questions I wanted to explore in more depth. These questions became the basis of this action research project on differentiation and are presented in the following section describing my project in full detail.

Research Question

The aim of this single case study is to discover specific, detailed ways differentiation could be implemented in my future primary classroom in order to address the challenge of teaching in a classroom of diverse, multi-leveled students.

My primary question in this project is: What are some specific, detailed ways differentiation is used in one second grade classroom in a Washington State public school? This research project also examines a secondary question: How do best practices in differentiation as forwarded by existing research compare with the use of differentiation in Mrs. Smith's second grade classroom?

Methodology

Methodology and Rationale

I conducted a qualitative case study of one second grade class in a public elementary school in order to consider my formerly mentioned research questions. Robert E. Stake asserts that "the principal difference between case studies and other research is that the focus of attention is the case, not a sample, not the whole population of cases" and "there may or may not be an ultimate interest in the generalizable" (Jaeger 1997, p. 405). A qualitative study was chosen since I desired to better understand differentiation in one classroom through a "complete, detailed description" (Neil 2007, p. 1) and "to develop an understanding through the description of what, where, how, when, and why" (Jaeger 1997, p. 403). I was selective and focused on only two issues, the use of differentiation in Mrs. Smith's class and how her approaches compare to best practices

suggested by literature on the subject. For confidentiality, pseudonyms have been used for the names of teachers and students. The name of the school and district has been withheld.

Sample

My research sample consisted of Mrs. Smith's second grade class of twenty-five students in a Washington State public elementary school. The students represented a diversity of abilities, ethnicities, languages, educational experiences, and backgrounds. In the case study classroom, ten students performed above grade level standard academically, four students performed at grade level standards, and eleven students performed below grade level standard. Five students had an IEP (individualized education plan) and attended the "club room," which provided instruction given individually or in small groups by a special education teacher and paraeducator's assistance. In addition, six students attended sessions with a speech specialist, four students were enrolled in the English Language Learner program, and three students received tutoring from a reading specialist. Seven of the twenty-five students listed their ethnicities as other than Caucasian on their enrollment forms. Finally, there were fifteen females and ten males in this second grade classroom.

In this public elementary school, the overall percentage of students enrolled in special programs are as follows: 8.8% enrolled in free or reduced-price meals, 18% in special education, 2.8% in transitional bilingual educational services, and 0% in migrant programs. Teachers had an average of 10 years of experience, and 58.3% of teachers at

this elementary school held at least a master's degree. The amount of money spent on educating one child for one day in this district was $51.10. Ninety-two percent of the school's third graders met the state standards in Reading and Math on the WASL in 2006-07.[1]

Instrumentation

In this single case study, I acted as the research instrument through which observations were made and data was collected and analyzed. During this research project, I completed an elementary teaching internship in this classroom over a period of six months. Validity is provided through reasonable and clear logic, detailed descriptions, and triangulation as detailed in the procedures section below. In addition, I work to provide enough examples, depth, and breadth to support my claims, as well as make clear connections to existing research.

Procedures

Over a period of six months, I observed and often participated in the daily activities in this second grade classroom. I conducted research as a direct observer and participant-observer. First, twenty hours were spent observing from the back of the classroom and occasionally assisting students with individual math work. Next, the following months included three hours of observation and mini-lessons provided by me daily, five days per week. Finally, I completed a full-day teaching internship, including three days as a substitute teacher in the case study classroom.

1 The data listed above was provided online from OSPI's Washington State Report Cards.

Triangulation

This research project used four of the six sources of evidence for case studies as identified in *Introduction to Case Study* by Winston Tellis: documents, direct observation, participant-observation, and physical artifacts (1997, p.8). In this case study, I used the following sources for data collection:

- Documents: classroom plan books, daily lesson plans, lesson reflection write-ups, and current literature on differentiation
- Direct observation: observation notes were taken with pencil and paper and on a word processor. As much as possible, I observed unobtrusively from the back corner of the room when taking observation notes.
- Participant-observation: I assisted the classroom teacher and completed a teaching internship in this second grade classroom.
- Physical artifacts: notes were taken on the lesson materials used by the classroom teacher, students, and me during participant-observations and included manipulatives used by students, extension activity materials, technology, and any other lesson supplies and materials.

My main research question and secondary question were both considered through data from three sources: classroom plan books and daily lesson plans, observation notes, and materials used for instruction.

Data for Primary Question: Case Study Description

"What are some specific, detailed ways in which differentiation is used in one second grade classroom in a Washington State public school?"

My data was analyzed using the following analytic techniques for case studies recommended by various researchers as reported by Winston Tellis in *Introduction to Case Study* (1997, p. 9-10). In order to answer the first research question, "How is differentiation used in a second grade classroom?" I developed a case description to serve as a "framework for organizing the case study" (Tellis 1997, p. 9).

During direct and participant-observation research in Mrs. Smith's second grade public classroom, several ways of differentiating at the second grade level were observed. The data gathered was placed into these categories on a matrix: Differentiation by planning, materials, process, and assessment (see Table 2).

Differentiation in Planning

In terms differentiation through planning, Mrs. Smith set aside flexible periods of time for subject areas in the daily schedule, which allowed for a variety of groupings determined by instructional need. During the typical week, time was roughly blocked out for Math, Reading, Spelling, Science, Social Studies, Art, and Language Arts. Language Arts instruction included handwriting, journal writing, language practice, grammar, and writing workshop. Social Studies and Science were alternately taught by units which lasted several weeks and shared the same block of time as Art, which was taught on Fridays. In the typical week, two hours and fifteen minutes were scheduled for Language

Arts, six hours and fifteen minutes for Math, three hours for reading, one hour and twenty minutes for "Read Alouds," which were books or journals read aloud by the teacher and students, one hour and thirty minutes for spelling, two hours for Science or Social Studies, and one hour for Art.

Mrs. Smith's curriculum and content were differentiated for students with Individual Education Plans or for students who quickly finished assignments and had time to choose extensions, such as independent reading, journaling, or assisting the instructor and other students. Mrs. Smith made daily and weekly lesson plans based on standards from the Washington State Essential Academic Learning Requirements (EALR's) and Grade Level Expectations (GLE's), district report card goals, and Individual Education Plan (IEP) goals. She used curriculum and materials from the district-adopted programs: *Everyday Math for Second grade*, *Full Option Science Systems* (FOSS), and *Reading Units of Study for Second Grade*. Mrs. Smith also created her own units on American Biographies, American Pioneers, and Butterflies and other Insects, among others. Often, curriculum from Reading, Writing, Science, Social Studies, and Communication was taught in integrated units. Students remaining in Mrs. Smith's classroom were assigned the same assignments, projects, and requirements, except when choosing between listed options during independent work. Students with Individual Education Plans had individualized curriculum and materials from *Read Well* and *Connecting Math.*

Mrs. Smith also used differentiation in planning for spelling curriculum and instruction. In order to meet the diverse instructional needs of the students enrolled in

special education, a separate spelling program was implemented in the club room. The remaining students were given a pretest on Mondays with ten words chosen from related word families and three bonus words from the current Social Studies and Science units. This spelling curriculum was based on a phonics program adapted and designed by the school's reading specialist for the second grade level. If students missed only one word from the list of ten, excluding the bonus words, they received a "Superstar Speller" form and were allowed to create their own list of words with parent and teacher approval. Spelling homework for the students consisted of writing each word three times, writing two sentences which included three of the words each, and studying for the spelling test given on Fridays. Throughout the six months of observation, there was at least one Superstar Speller each week. In addition to this spelling program, the district incorporated a list of most commonly used words students should know at the end of each grade level. These lists were published in a booklet of "No Excuse Words" which all students in Mrs. Smith's class kept in their files and were encouraged to use while writing for many purposes. If students needed help spelling a particular word, they had several options: use a dictionary, ask the teacher, ask another student, or use a small electronic speller. For all of these options, students would write the word in their personal "No Excuse Words" booklet for future reference.

For reading instruction, Mrs. Smith used the same content, district units of study for reading at the second grade level, but differentiated by allowing students to choose reading materials at their level for independent reading. Each day during reading time, Mrs. Smith would give a mini-lesson to the class based on the district's new *Reading*

Units of Study for Second Grade. This curriculum included a yearly calendar, monthly schedule, daily objectives for teaching reading strategies and skills, and resource suggestions. After a short mini-lesson, students would return to their desks to practice these skills as they read books at their independent reading level by themselves. During this independent reading time, Mrs. Smith would also call one book group at a time to the reading corner. Mrs. Smith placed the students into semi-flexible reading groups of three to five students based on their achievement on the district reading assessment in the fall and spring. Students in each group would cooperate together in choosing a book at their instructional level. Students would take turns reading their book aloud, practicing reading strategies, and answering questions. When a book group finished their chosen books, they would go with the teacher to choose another book at the group's instructional level. As individual's finished their "just-right" books at their independent reading level, they chose another book from the class library. Each month, all students were expected to finish at least one "just-right" book independently and write a short book review during writing workshop time.

Differentiation in Process

Mrs. Smith differentiated in her instructional process by using a variety of lesson delivery methods such as direct instruction, inquiry-based learning, discovery learning, and workshop approaches. Mrs. Smith also varied the groupings for instruction using formats such as whole class, small groups, partners, and individual work. As a result, Mrs. Smith had many opportunities to adjust instruction and make lessons longer or

shorter according to students' needs, tutor small groups while other students completed independent work, and give advanced learners opportunities to conference with the teacher, complete optional enrichment tasks, or pursue personal projects. In addition, students with IEP's could attend the whole group direct instruction and then go next door to the club room for individual tutoring and assistance.

Differentiation in Materials

Mrs. Smith differentiated when using and providing a variety of materials for the students. For reading, books in the classroom were color coded and placed into baskets with matching colors, so that students could easily find books at their assessed "just-right" reading level. Mrs. Smith used colors rather than numbers, which helped to differentiate without attracting competition among students regarding their reading skills or levels. In addition, books of varying levels are provided for social studies and science. For example, during the units on the American Pioneers, American Biographies, Insects, and Non-fiction reading skills, Mrs. Smith and I collected books of different types and levels for student exploration.

Any students who finished early or had extra time were always given options for extension or choice activities. For example, materials for writing, publishing, creating, and drawing were always available to students. Each student had their own writing journal for responding to reading or writing prompts, creating their own poems, stories, or illustrations, and writing for different purposes such as making a list or writing a letter. During the last month of observations, Mrs. Smith experimented with a new extension

activity by creating a "writing crate." When finished, the crate would contain file folders with copies of fun, individual writing activities that could be completed by individuals without much direction or assistance from the classroom teacher. Each folder had a sample of the activity and copies of the activity which contained directions and a place to respond. These sheets would be filed in a student's portfolio or placed in a bin to be put into a class book by the instructor. Mrs. Smith collected some of these writing activities and placed them on a table in the classroom as an option for students who finished work early, though she intends to have a writing crate completed for her class in the fall.

A variety of materials helped Mrs. Smith differentiate her lessons to accommodate different learning style preferences and hold student interest. Mrs. Smith used real objects when possible to illustrate concepts, such as actual measuring devices and other math manipulatives from *Everyday Math for Second Grade*, a document camera and projector, visuals such as picture books and large texts or word cards, a chalkboard and chalk, scratch paper and clipboards for student responses, and a variety of teacher and student-created models and examples. Mrs. Smith also used copies of math fact practice sheets which she organized into a crate. For ten minutes three times per week, students completed a fact sheet at their own pace and level. If they didn't finish a fact sheet in the ten minutes given, they could continue working on that same sheet the following day. The math sheets began with addition and progressed to subtraction, multiplication, and division. Students were required to pass four sheets on the same math fact before moving on to the next set. For example, a student would complete four sheets on adding with the number four before moving on to adding with the number five. Students received a star

on their chart to mark their progress. At the end of the year, most students were working on their multiplication facts, a few were making progress with subtraction, and five were racing ahead into beginning division facts. One advanced student discovered that she could figure out the "dividing by four" problems by taking the dividend, dividing it in half, and then dividing it in half again. This helped her answer the problems using her mental math skills. By creating a crate of individual math fact sheets and allowing students to work at their own pace, all students were able to make progress and receive individual feedback.

Mrs. Smith, Mrs. Day, and Mrs. Cornwall collaborated when differentiating by materials for students with Individual Education Plans. Depending on student need, students had modified materials and assignments including larger print, bold print, fewer questions, larger space to write, paper strips for tracking while reading, directions read aloud or repeated, options to give oral or dictated responses instead of written, and individual assignments were sometimes changed to partner or group collaborative work. Extra time to work, more breaks between tasks, extra paraeducator assistance and tutoring, and quiet, distraction-free environments were also provided by the instructors as needed.

Differentiation in Assessment

Differentiation through assessment in Mrs. Smith's class took the form of modification and enrichment opportunities. In general, students were given the same assessment tasks in science, social studies, and writing. For example, all twenty-five of

her students participated in the science lessons and activities. At the end of a unit, several summative assessment options from the *Full Option Science Systems* (FOSS) were chosen and/or modified to fit the instructional goals, methods, and student needs. Following a unit on balance and motion, students completed a paper and pencil test by labeling a diagram with vocabulary words from a list, filling-in-the-blanks for two sentences, and marking three true or false statements correctly. Students enrolled in special education completed their exams with help from a paraeducator. One student who had difficulty with fine motor skills had his oral and written answers interpreted by Mrs. Day. Two other students had the questions and directions read to them. All students had the opportunity to revise their wrong answers after they had been graded by Mrs. Smith. If students didn't understand a test item, Mrs. Smith went over that item with the student or group of students until they made the proper corrections. If they missed many test items and received a below grade level score, they received extra tutoring and retook the assessment. In this case, the final grade was often an average between the first score and the final revised score.

Other formative assessments were also used during this unit, such as observational notes on each student's scientific process, safe use of materials, interaction with other students, and demonstration of understanding through the use of materials and fifteen second interviews. In addition, students were given a summative performance assessment where they demonstrated their understanding of balance and motion through drawing and cutting a shape out of tag board, placing clothespins on it, and adjusting the clothespins so the object would balance on their finger or on a stick taped to the edge of

their desk. Two students received physical assistance from Mrs. Cornwall in cutting and moving the clothespins. Although Mrs. Smith used a variety of assessment forms and needs-based modifications, every student was expected to take the same assessment based on standardized content, with the exception of assessment for students with IEP's who were working on individualized curriculum in Mrs. Day's room. In this case, the students used standard assessments from *Read Well* and *Connecting Math* to check their progress after they had completed a unit to help the teacher determine whether the student should move ahead or revise the previous unit.

Students' grades in subject areas were separated and averaged by Mrs. Smith into district report card items under each of the following subject areas: reading, writing, communication, mathematics, science, social studies, and art. Other subjects, such as fitness, health, and music, were graded by the corresponding specialists. Grades were only differentiated for students with individualized education plans and English language learners who were currently enrolled in their first year of school in the United States. Mrs. Smith's class did not have any first year English language learners. The homeroom teacher and the special education teacher and other specialists collaborated when differentiating grades for students with Individualized Education Plans. Other students' grades were based on their average performance and progress within a trimester as compared to district and state grade level standards.

Overall, Mrs. Smith practiced differentiation through planning, materials, process, and assessment. With the exception of differentiation for students with Individualized Education Plans, Mrs. Smith did not differentiate through planning or assessment as

much as she did through materials and process. Table 2 summarizes the main ways in which Mrs. Smith differentiated within the categories of planning, materials, process, and assessment.

Table 2

Differentiation Techniques in Mrs. Smith's Second Grade Class

Source	Planning	Materials	Process	Assessment
Mrs. Smith's Second Grade classroom	Time is blocked out for subjects, specialists, special events: there is flexibility within subject blocks of time Flexible groupings are used: whole class, small group, partners, and individual or independent work time Variety of space provided for flexible grouping Paraeducator met special needs by assisting small groups or individuals in-class or in quiet room next door "club room" Mrs. Smith led reading groups differentiated by reading levels and other students participate in independent reading during this	Students with IEP's have modified materials: larger print, bold print, fewer questions, larger space to write Alternative options to worksheets and assignments are given, such as the option to give oral response, dictated response, individual or partner/group response, and other individualized accommodations During reading time, students choose leveled books at their "just right" level for independent reading 1.0-4.0+ Any students having extra time have access to materials for writing, reading, publishing, and creating During lessons,	Students progress through assignments, writing workshop, and reading workshop at their own pace, but need to complete the process or assignments by a given date Any students finishing early have extra time to explore extension activities or choice options, for example, materials for writing, publishing, and creating are always available to students Differentiation was encouraged through choice of task during independent work on assigned topics or activities early finishers had choice of extension and optional activities, such as exploring a famous pioneer and	All students have the opportunity or are required to redo questions or problems they miss on standard assessments, such as math. If they miss many, they receive extra tutoring and retake the assessment. In this case, the grade is often an average between the first score and the final revised score. Mrs. Smith differentiated by using or creating IEP-modified assessments, varying the length of assessments, amount of work time given, and using options for oral or dictated assessments Students with IEP's take reading and math assessments which match their curriculum from *Read Well* and

	time in books at their "just right" reading level Pace and depth is planned according to student need for Students with IEP's have individualized curriculum for reading (*Read Well*) and math (*Connecting Math*) at their own level and pace	Mrs. Smith used real objects when possible (realia), and a variety of other materials such as a document camera and projector, visuals such picture books and large texts, chalkboard and chalk, models and examples, math manipulatives from Everyday Math and other measuring tools, and examples created by students Mrs. Smith used materials to provide math facts practice at each student's learning level and pace	creating a project, practice with multiplication and division with partners, working ahead in their handwriting books The process was differentiated for students with special needs through individual tutoring or group assistance from paraeducators, reading, speech, physical therapists, and ELL tutoring	*Connecting Math* to check progress and the need for reteaching or review of units Students on IEP's receive a progress report regarding their IEP goals and a district report regarding their achievement. This is completed with collaboration between Mrs. Smith, Mrs. Day, Mrs. Cornwall, and other specialists. Mrs. Smith's spelling program was differentiated for students with IEP's and for superstar spellers

Data for Secondary Question

"How does differentiation in Mrs. Smith's second grade classroom compare to best practices forwarded by current research?"

I considered my second research question listed above through pattern-matching. Winston Tellis writes that "pattern-matching is another major mode of analysis" which "compares an empirical pattern with a predicted one. Internal validity is enhanced when the patterns coincide...If it is a descriptive study, the predicted pattern must be defined prior to data collection" (1997, p. 10). In this research project, the predicted pattern was defined prior to the collection of data through a comparison of best practices and techniques for differentiation from the existing literature presented in the literature review

of this research project. I placed data regarding the use of differentiation from both existing literature and Mrs. Smith's second grade classroom into a matrix with four categories: planning, materials, process, and assessment (see Tables 1 and 2). In this way, data from both Mrs. Smith's use of differentiation and existing literature's recommendations for differentiating could be compared and analyzed in order to shed light on my second research question.

Analysis for Secondary Question: Pattern-matching

When Mrs. Smith's techniques for using differentiation in her second grade classroom were compared to established best practices presented by existing literature, several patterns were found to match. The analysis will follow these categories: differentiation by planning, materials, process, and assessment.

Differentiation through Planning

Literature on differentiation suggests that teachers should plan for a variety of instructional groups, including whole class, small groups, individuals, or a combo of all three rather than creating isolated tasks or individualizing every assignment (Good 2006, p. 14; Tomlinson 2000a, p. 4). To facilitate using a variety of instructional groups, teachers should plan to provide a variety of spaces in the learning environment for different purposes: a quiet working area, student collaboration area, whole group area, and small group space. (Tomlinson 2000a, p. 3). Teachers can group students by ability, plan more instructional time for students with special learning needs, and use of

paraeducators for strugglers (Kerry 1997, p. 2). Instructors can also plan to differentiate by assessment, content, process, product, readiness, interest, and learning profile (good 2006, p. 14-19).

Mrs. Smith planned for differentiation by setting up the classroom environment so students could have space for independent or group work at their desks. She arranged the students in three groups of six students and one group of seven students. The students would assist the teacher in rotating individuals on a monthly basis. The classroom also contained a reading corner for book choice, a front carpet area for whole group instruction, large tables for partner, group, or individual work, and space around the room on the floor for partner or small group work. Mrs. Smith taught and maintained well-defined guidelines for partner, small group, and independent work. Each time she dismissed students to complete a task or activity, she verbalized her clear expectations and reinforced them as students transitioned to work. Students were to raise their hand if wanted to ask Mrs. Smith a question and work on something else while they were waiting for assistance. Depending on the groupings, students were instructed to work silently without talking, in quiet partner-talk voices, in whispers when using the reading telephones, or in soft voices when working with a group.

Mrs. Smith planned for a variety of instructional groups and additional instructional time for students with special needs or who struggled with a topic or skill. Mrs. Cornwall and Mrs. Day provided individual and small group assistance and extra tutoring for students who had individualized education plans. Students who qualified for extra tutoring and assistance with speech, English language learning, reading, and math

received extra help from specialists.

Mrs. Smith also differentiated through planning by accounting for students' readiness to learn, interest, and process when she allowed students to work at their own pace and level during reading and writing workshops. Students were able to practice math facts at their own pace, choose independent reading material at their level and interest, explore different genres of writing when journaling, and pursue research projects.

Tomlinson suggests that success in differentiation occurs when the curriculum is clearly focused on the information and understanding that content is valued by an expert in a particular discipline (2000a, p. 3). Likewise, Tomlinson states that teachers should organize the instruction conceptually and teach with the essential principles in mind, while still attending to prescribed standards. Mrs. Smith used curricula from district-adopted programs, which were built around key concepts and skills, to plan her instruction.

Ediger encourages instructors to account for a variety of skills when planning spelling instruction, including phonics, syllabication, word patterns, contextual use of spelling words, and basic sight words (2000, p. 3). Mrs. Smith accounted for all of these in her spelling program design. Students worked on rhymes, word families, and practiced basic sight words when writing and spelling. Students also created sentences with their spelling words and were held accountable for spelling words during writing workshop instruction. Mrs. Smith had students edit their writing for spelling individually, with a partner, and with the teacher.

The Center for Comprehensive School Reform and Improvement outlines steps for teachers when planning to differentiate (2007). These steps include understanding the contents and skills the students should learn, finding out what the students know or don't know, decided on the methods, materials, and teaching strategies to meet students' needs, and designing assessments which will check how well students mastered the content. Mrs. Smith found out what students knew and didn't know about the content by using questioning strategies before and during a lesson, graphic organizers, and various forms of assessment. She used district assessments such as the fall and spring writing prompts to assess students' progress and understanding of Mrs. Smith's writing lessons.

Mrs. Smith did not differentiate through planning in some of the ways literature suggested. She did not differentiate through planning by ordering the learning complexity of the tasks or allowing students to pursue different strands of the same subject matter (Kerry 1997, p. 2). During observation, she did not explicitly lead students to perceive the purpose or value in spelling words correctly, although she may have during the first half of the year or at another time when I was not present (Ediger 2000, p. 3). She did not create learning profiles and use them to plan differentiation as suggested by Good (2006, p. 14-19). Larsen suggests that an educational goal of differentiation is to bring a curriculum's ideas and concepts to learners at a pace and depth that is appropriate for the ability of each student (2004, p. 14). Mrs. Smith allowed for an individual pace and depth for students enrolled in special education with Mrs. Day and Mrs. Cornwall; all other students who were instructed in her second grade classroom were usually required to complete assignments in a given time frame and at the same

depth as all the other students. One exception to this observation was when students completed math homework at home; they were able to work at their own pace, but the work was due the following day. Also, students could pursue subjects in more depth through extension activities or other optional choice activities when students finished early.

Another way in which Mrs. Smith did not differentiate was through planning tiered lessons depending on level of abilities or learning styles (Pierce et al 2004, p. 2). This is a technique also suggested by Tomlinson, who suggests that teachers choose a standard and differentiate by providing materials and tasks at varied levels of difficulty, scaffolding, multiple instructional groups, and time variation (2000b, p. 9). Although Mrs. Smith did use multiple instructional groups, especially during reading and writing workshops, she did not plan tiered lessons or tasks with variation in difficulty. She did, however, account for differences in student's pace when administering the district's spring writing prompt by allowing students to have two weeks to independently work through the writing process: prewriting, drafting, revising, editing, and publishing. Some students finished in three days while others needed to use the entire two weeks. In addition, I did not observe Mrs. Smith reflecting on the match between the classroom and philosophy of teaching, speaking about creating a mental image of what she wanted the class to look like and using it to plan, or talking with the class about the philosophy and set-up of the classroom, such as why, how, and what (Tomlinson 2000a, p. 5).

Differentiation through Materials

Several ways to differentiate through the use of instructional materials are raised by the existing literature. Graded worksheets, different resources, and pacing can be used depending on student need (Kerry 1997, p. 5). Teachers can give a few directions or many directions regarding the use of materials and using a variety of organizers (Good 2006, p. 16). Materials for anchoring activities can be made available for students who finish early or who are waiting for the teacher's assistance (Pierce et al 2004, p. 1). Tomlinson also suggests using materials which reflect a variety of cultures and home settings, setting clear guidelines, and developing routines for students who need help during independent work (2000a, p. 3). Last but not least, *The Center for Comprehensive School Reform and Improvement* suggests varying the materials by providing a variety of reading materials at many levels and using pictures to support instruction (2007, p. 1-2).

Mrs. Smith used graded worksheets only for math facts practice completed at the students' level and pace. She allowed students to use different resources when they completed individual research projects. During math lessons, she differentiated by providing access to math manipulatives and allowing students to complete independent work with different amounts of direction or assistance depending on student need. For example, after giving a whole class, direct instruction, she allowed students to choose whether they wanted to remain up front to receive extra assistance or return to their desks to work independently. Some students who returned to their desks asked questions regarding their work after Mrs. Smith finished assisting the group on the carpet.

Mrs. Smith's differentiation of materials also matched the practices presented in

literature when she provided a variety of graphic organizers. Students used these organizers when preassessing their content knowledge, participating in reading mini-lessons, and organizing their thoughts when prewriting for various tasks. During instruction, Mrs. Smith brought in real objects when possible (realia), pictures, math manipulatives, and other interest-gaining visuals.

Additional ways of differentiating materials are outlined in literature that were not a part of Mrs. Smith's practice. For example, Mrs. Smith was not observed to have differentiated her instructional materials for spelling through the use of enrichment centers or series of spelling texts (Ediger 2000, p. 8). She did not assign tasks ranging from concrete to abstract or use activities such as flip books, reading buddies, books on tape, or highlighted texts (Good 2006, p. 16). Likewise, she did not use materials differentiated for tiered activities (Larsen 2004, p. 2-3). Finally, I was not able to assess whether the instructor used materials and tasks which were interesting to students and seemed relevant to them, although students often appeared engaged and interested in the materials and activities (Tomlinson 2000a, p. 3).

Differentiation through Process

Mrs. Smith's instructional processes were aligned with suggested practices in differentiation from existing literature in several ways. She set open-ended tasks (Kerry 1997, p. 5), allowed students to practice spelling for a variety of purposes and writing (Ediger 2000, p. 7), and taught and directed management routines and often ensured that learning was active (Tomlinson 2000a, p. 5). Mrs. Smith also allowed students to work

alone or collaboratively, in auditory or visual modes, or through practical or creative means (Tomlinson 2000b, p. 9). Finally, she used flexible groupings based on skill (Larsen 2004, p. 2), used open-ended tasks, and led activities to encourage active thinking, such as think-pair-share (Good 2006, p. 16).

I did not observe Mrs. Smith using a contract system to account for various student achievement levels or differentiated assignments and projects (Kerry 1997, p. 5; Pierce et al. 2004, p. 1). For spelling, Mrs. Smith had students study their word lists at home with their families, as well as complete their spelling homework within a week at home. She did not use a variety of experiences in spelling instruction such as individual or cooperative learning methods or the use of Gardner's *Multiple Intelligences Theory* in conducting spelling lessons or activities (Ediger 2000, p.), since students did not have formal classroom-based instruction in spelling. They were assisted in using their spelling words for a variety of purposes, though, when using the writing process or their "No Excuse Words" booklets. Mrs. Smith did not use learning centers, study labs, or multiple formats for extra help (Good 2006, p. 16). Finally, I did not observe Mrs. Smith varying the way students interacted with the materials or participated in instructional activities. Mrs. Smith often varied materials and activities during the course of a week for the whole class, but she did not commonly plan for several activity options for each lesson.

Differentiation through Assessment

The following suggestions from existing literature for differentiating assessment in the classroom are ways in which Mrs. Smith also accounted for variation in students'

achievement levels. Tomlinson states that assessment should inform differentiated instruction and should be ongoing and tightly linked to instruction (2000a, p. 4). Mrs. Smith assessed students by asking questions of varying degrees of difficulty during direct instruction time, independent work, and when assisting individuals. She also walked around the room, observing and questioning students working in partnerships or with small groups. The lesson conclusions often gave students the opportunity to share their work and allowed Mrs. Smith to assess student learning. Melinda Good suggests that assessment should become a part of the routine rather than a way to find out what the students are lacking after the unit is complete; it should be based on the instructional method used and differentiated by pace, assessment times, and content (2006, p. 15, 27). Mrs. Smith used assessment as a part of her daily lessons to check students' prior knowledge about topics, progress during lessons, and summative knowledge and skills. For example, she used pretests and posttests for spelling each week. In addition, Pierce et al. agree that assessments used for differentiation can be formative, summative, or a combination of both (2004, p. 2).

According to Kerry, another way of differentiating assessment involves asking cognitively demanding questions of the more able students and setting tasks with no single correct solution (1997, p. 5-6). During whole-class discussions, Mrs. Smith often called on volunteers to answer questions. She would also call on individuals to answer particular questions based on her understanding of their knowledge and skill levels. In addition, she would set tasks with no single correct solution during writing, reading, and science instruction. For example, students were able to conduct inquiry-based learning

experiments with a variety of objects in Science with no single correct solution.

In "A Teacher's Guide to Differentiating Instruction," *The Center for Comprehensive School Reform and Improvement* suggests that teachers can differentiate assessment by varying the length of time for completion of a task or assessment, provide written, verbal, student self-reflective, and standard test options, and use rubrics as guides to identify criteria for mastery (2007, p. 2). In her use of assessments, Mrs. Smith differentiated for students by providing a variety of assessment types throughout the year. She did choose the same type of assessment for a particular skill or content area, though, and gave this assessment to all of her students. Options for assessments and untimed tests were always provided for students with Individualized Education Plans as prescribed or needed. While Mrs. Smith used rubrics from district-adopted curriculum, she did not create tiered lessons and therefore did not create separate rubrics for various levels of student achievement. For example, the rubric used for one writing prompt included the same criteria for all students and ranged in score from significantly below grade level expectations to above grade level expectations on a scale of one to four.

There are some additional ways in which literature suggests differentiation can be used for assessment, ways which were not observed in Mrs. Smith's differentiation practices. For example, teachers can give students options for how to demonstrate required learning or skills in a content area, give students the choice to work alone or in small groups during assessment, or use rubrics created specifically for different skill levels (Tomlinson 2000a, p. 3-4).

Based on my observations, I believe that Mrs. Smith was a thorough assessor of

her students. Although she did not create individual student learning profiles, collect interest inventories, or give students options for assessments, she gathered a large amount of data from a variety of assessments in order to differentiate through planning, materials, and process, and used this data to inform her future instruction.

Conclusions and Applications

This study describes ways in which differentiation was implemented in a particular classroom and compared this with current research. Some of the detailed, specific ways in which differentiation was used in this second grade public school classroom is certainly generalizable to similarly sized and aged classes and at a minimum may be modified to fit other classrooms. This study also addressed some areas of research on differentiation that have not been fully explored: differentiation strategies for younger students and detailed, specific techniques for implementing differentiation in specific grade levels or age ranges (Good, 2006, p. 31).

At first thought, using differentiation in a second grade classroom or any other educational setting appears to be a daunting task. Exactly how does a teacher take into account 25 different learning needs and plan and deliver differentiated instruction so that students can "master the same challenging academic content?" Carol Tomlinson states that "there are no recipes" in terms of implementing differentiation in a classroom setting, "rather it is a way of thinking about teaching and learning that values the individual and can be translated into classroom practice in many ways" (2000a, p. 4-5). In addition, Melinda Good gives this advice:

> When starting out, it is vital to remember that teachers can adapt one or more curricular elements (content, process, or product) based on one or more students characteristics (readiness, interest, or learning profile) at any point (2006, p. 21).

In Mrs. Smith's class, she began with standards from *Washington State Essentiatial Academic Learning Requirements* and *Grade Level Expectations*, district report card goals, and student Individual Education Plan goals. Then, she differentiated her instruction in one or more of the elements above, as Good suggested. Sometimes Mrs. Smith differentiated through planning, other times through materials, process, or assessment. She did not differentiate every instructional lesson and every possible element at once. As Good writes, "teachers do not need to -and should not! Modify every lesson in every possible way" (2006, p. 21). If this were a teacher's goal in using differentiation in their classroom, it would quickly lead to burnout. "Implementation works best when teachers begin with applying simpler strategies, working their way down the continuum as their skills and comfort levels increase" (Good 2006, p. 30).

Just as best practices gleaned from the literature on differentiation revealed, Mrs. Smith's success in meeting her students' learning needs depended on her skill in classroom management. For example, she implemented specific rules and procedures for students to follow during the variety of instructional groupings offered in her classroom, including whole class, partners, small groups, and individual work times. Students knew what was expected of them, what to do if they had extra time, and what would happen consistently if they did not follow the directions or rules and interrupted the learning of others.

Through this study, I found that when teaching according to a district or state

curriculum guide or calendar, teachers might be less likely to differentiate by adapting the curriculum or content to match each student's learning needs or plan for tiered groups. One exception was when students with Individualized Education Plans and their teachers used curriculum and content that was tailored to them and matched their specific learning goals. More likely, like Mrs. Smith, a teacher may differentiate through providing an environment which allows for flexible groupings, providing a variety of materials such as math manipulatives and leveled books, or through specialists, assistants, and individualized learning programs for students with special needs. The reason may be due to a lack of time, resources, training, support, or a combination as some of the literature on differentiation suggests. Whatever the case, Mrs. Smith gave the same direct instruction to the whole group based on the same content and goals for all students present in the classroom. Afterwards, independent work time allowed differentiation to take place as each student worked at their own pace, giving Mrs. Smith an opportunity to work with individuals or small groups as needed.

I believe that teachers who want to implement differentiation in their teaching in order to meet the varied needs of their students should first make a thorough assessment of their students. Teachers should find out what their students know about a particular subject and what skills they have and will need to learn in order to be successful in a given area. Other helpful means of differentiation include making learning profiles for each student by recording anecdotal notes, collecting interest surveys, conducting preassessment interviews or other pretests, and using past assessments and portfolios to diagnose strengths and weaknesses. Next, teachers should start small and try out one

suggested approach or best practice for differentiating, such as those outlined in Table 1.

Overall, teachers implementing differentiation should plan for a flexible time schedule when possible, use student's learning profiles to plan instruction, have consistent and clear classroom management in place, organize the environment with space for a variety of purposes, use flexible groupings, provide a variety of materials, and match assessments to the instructional method and goals. As a final thought, Carol Ann Tomlinson advises:

> It is helpful for a teacher who wants to become more effective at differentiation to remember to balance his or her own needs with those of the students. Once again, there are no recipes...One of the great joys of teaching is recognizing that the teacher always has more to learn than the students and that learning is no less empowering for adults than for students (2000a, p. 4-6).

References

Adami, A. F. (2004). Enhancing students' learning through differentiated approaches to teaching and learning: A Maltese perspective. [Electronic version]. *Journal of Research in Special Educational Needs*, *4*(2), 91-97.

The Center for Comprehensive School Reform and Improvement. (2007). A teacher's guide to differentiating instruction. Retrieved October 25, 2007, from: http://www.centerforcsri.org/index.php?option=com_content&task=view&id=412&Itemid=5

Ediger, M. (2000). Differentiated instruction in spelling. [Electronic version]. Retrieved October 25, 2007, from *Education Research Complete database*.

Good, M.E. (2006). Differentiated instruction: principles and techniques for the elementary grades. Online submission. Retrieved October 25, 2007, from *Education Research Complete database*.

Jaeger, R.M. (1997). *Complementary methods for research in education.* Washington, DC: American Educational Research Association.

Kerry, T., & Kerry, C.A. (1997). Differentiation: Teachers' views of the usefulness of recommended strategies in helping the more able pupils in primary and secondary classrooms. [Electronic version]. *Educational Studies* (03055698), 23 (3), 439.

Larsen, K. (2004). Sink or swim. [Electronic version]. *Library Media Connection,* 23 (3), 14-16.

Mcgarvey, B., Marriott, S., Morgan, V., & Abbott, L. (1997). Planning for differentiation: The experience of teachers in Northern Ireland primary schools. [Electronic version]. *Journal of Curriculum Studies,* 29 (3), 351-364.

Neill, J. (2007). Qualitative versus quantitative research: Key points in a classic debate. Retrieved February 28, 2007, from: http://wilderdom.com/research/QualitativeVersusQuantitativeResearch.html

Pierce, R.L., & Adams, C.M. (2004). Tiered lessons. [Electronic version]. *Gifted Child Today*, 27 (2), 58-65.

Reis, S. M.; Kaplan, S. N.; Tomlinson, C. A.; Westberg, , K. L.; Callahan, C. M.; Cooper, & Carolyn R. (1998). A response equal does not mean identical. Association for Supervision & Curriculum Development. [Electronic version]. *Educational Leadership*, 56, 3, 74.

Tellis, Winston. (1997). Introduction to Case Study. [Electronic version]. *The Qualitative Report*, 3, 2, 1-13.

Tomlinson, C. A. (1995). Differentiating instruction for advanced learners in the mixed-ability middle school classroom. National Association for Gifted Children. [Electronic version]. Retrieved October 25, 2007, from *ERIC Digests.*

Tomlinson, C.A. (2000a). Differentiation of instruction in the elementary grades. (2001) [Electronic version]. Retrieved December 12, 2007, from *ERIC Digests.*

Tomlinson, C. A. (2000b). Reconcilable differences? Standards-based teaching and differentiation. [Electronic version]. *Educational Leadership*, 58, 1, 6-11.