A Multiple Case Study of Two Teachers' Instructional Adaptations

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Scholars contend that effective teachers adapt their instruction to meet the particular needs of each student. However, little research has studied the ways in which teachers adapt their instruction or their reflections on these adaptations. This article describes a yearlong multiple case study focused on two teachers from different contexts: a Kindergarten teacher in a rural school in the Pacific Northwest region of the United States and a sixth-grade teacher in a suburban school in the Mid-Atlantic region of the United States. This research replicates previous studies of adaptive teaching. Two researchers used classroom observations, post-observation interviews, and artefacts to document these teachers' instructional adaptations and their reflections on these adaptations. Findings demonstrate the complexity of classroom instruction and the metacognitive processes teachers need to succeed in this complex environment. This study has implications for policy, teacher education, and professional development.

Les chercheurs affirment que les enseignants efficaces adaptent leur enseignement de sorte à répondre aux besoins particuliers de chaque élève. Toutefois, peu de recherche a porté sur les façons dont les enseignants le font ou sur leurs réflexions relatives à ces adaptations. Cet article décrit une étude de cas multiples qui a duré un an et a suivi des enseignants de contextes différents : un enseignant à la maternelle d'une école rurale dans le nord-ouest du Pacifique aux États-Unis et un enseignant en 6ᵉ dans une école de banlieue dans les états du centre du littoral de l'Atlantique des États-Unis. Cette recherche reproduit les études antérieures sur l'enseignement adapté. Pour recueillir les adaptations à l'enseignement et les réflexions des enseignants sur celles-ci, deux chercheurs ont eu recours à des observations en salle de classe, des entrevues après les observations et des artéfacts. Les résultats démontrent la complexité de l'enseignement en salle de classe et fait ressortir les processus métacognitifs dont ont besoin les enseignants afin de réussir dans ce milieu complexe. Cette étude a des retombées sur les politiques, la formation des enseignants et le développement professionnel.

Researchers suggest that effective teachers are adaptive in that they adjust their instruction to support student learning and to navigate unpredictable instructional situations (Allen, Matthews, & Parsons, 2013; Corno, 2008; Darling-Hammond & Bransford, 2005; Fairbanks et al., 2010; Gambrell, Mazzoni, & Malloy, 2011; Parsons, 2012; Pearson & Hoffman, 2011; Taylor, Raphael, & Au, 2011; Vaughn & Parsons, 2013). For example, Randi and Corno (2000) suggest, "More and more, 'effective' teaching is being characterized as flexible and responsive to different students and classrooms" (p. 680). Students have various backgrounds, experiences, interests, and levels of language proficiency. The need for teachers to approach teaching from this flexible

stance, therefore, is essential. Despite the recognized need for teachers to be adaptive, little research has addressed the nature of teacher adaptations or the metacognitive thought teachers engage in as they adapt their instruction to meet each student's particular needs (Duffy, Miller, Parsons, & Meloth, 2009; Fairbanks et al., 2010). The research reported here aims to address this gap in the literature by studying two teachers' instructional adaptations and their reflections on their adaptations.

Related Literature

In this section, we first describe the theories researchers have put forth about the importance of teacher adaptability. Then we review research that illustrates adaptability as a characteristic of effective teachers. Finally, we outline our research agenda studying teacher adaptations and describe how the current study builds upon our previous research.

In the 1980s, Schön (1983, 1987) described how professionals, including teachers, reflected on their practice not only after engaging in their work (reflection-on-action) but also in real time as they work (reflection-in-action). This perspective suggests that teachers, while teaching, constantly monitor their instruction and their students' learning, making adjustments as needed. Thirty years later, researchers still note the importance of Schön's theory of reflection-in-action (Zeichner & Liston, 2014). Educational researchers have also described teaching as *improvisation* (Borko & Livingston, 1989; Sawyer, 2004). That is, similar to an actor on a stage, teachers improvise and make adaptations that "emerge from unpredictable and unscripted dialogue" (Sawyer, 2004, p. 13). Researchers have demonstrated that, indeed, teachers are adaptive. For example, Reilly (2009) studied the instructional practices of a high school English teacher and found that the teacher adjusted his language arts instruction by modifying the curriculum to incorporate specific texts to meet his students' instructional needs and interests. Similarly, Honan (2004) examined the ways in which two teachers incorporated critical literacy discourse into their teaching. She found that teachers adapted their instruction by "blending [it] with existing practices and other texts available to them, to produce meaningful changes to their classroom practices" (p. 101).

Likewise, researchers have identified *adaptive expertise* as a fundamental characteristic of effective teachers (Darling-Hammond & Bransford, 2005; Snow, Griffin, & Burns, 2005). This perspective suggests that effective teachers balance efficiency with innovation. That is, they efficiently apply knowledge to their instruction, but they also innovate as they encounter new situations or develop increased understanding. Lin, Schwartz, and Hatano (2005) described effective teachers as possessing *adaptive metacognition*. These researchers emphasized that classrooms are unpredictable contexts where teachers must be metacognitive to adapt their instruction. More recently, Gambrell and her colleagues (2011) characterized effective teachers as *visionary decision makers*. They explain that effective teachers are "knowledgeable and adept at combining and adjusting various methods, practices, and strategies to meet the needs of a particular set of students with a differentiated set of needs" (p. 19).

It seems, then, that researchers agree that effective teachers are adaptive as they engage in their practice. Although they use different terminology, all these theories are rooted in the assumption that teaching is complex and unpredictable; therefore, effective teachers adapt their instruction to meet the needs of particular students in specific situations. Despite wide recognition of the importance of adaptive teaching, there is limited empirical study of how and why teachers adapt their instruction (Duffy et al., 2009; Fairbanks et al., 2010). Indeed, Corno

(2008) has stated, "If teachers need to know more about theories of adaptive teaching, then researchers need to know more about the actual practice of adaptive teaching" (p. 161). In the next section, we review research related to adaptive teaching.

Consistently, research on exemplary teachers has found that a characteristic of effective teachers is their ability to adapt their instruction to meet the specific needs of learners (Allington & Johnston, 2002; Pressley, Allington, Wharton-McDonald, Block, & Morrow, 2001; Taylor, Pearson, Peterson, & Rodriguez, 2005; Williams & Baumann, 2008). Allington and Johnston (2002) describe how the expert fourth-grade teachers in their study engaged in "personalized problem solving" as they adapted their instruction to promote student understanding and to support students' interests, needs, and weaknesses. Likewise, in their review of the research, Williams and Baumann (2008) conclude that exemplary teachers display adaptability by modifying their instruction to provide supports depending on students' instructional needs. The goal of these studies was to determine how exemplary teachers taught. Although they all identified adaptability as a characteristic of exemplary teachers, they did not specifically study how or why these teachers adapted their instruction.

Other researchers have developed and studied the Adaptive Teaching Competency (ATC) framework (Brühwiler & Blatchford, 2011; Vogt & Rogalla, 2009). This framework includes four teacher competencies that are likely to impact student achievement: subject knowledge, diagnosis, teaching methods, and classroom management. Teachers with high ATC use their subject knowledge and diagnostic ability to draw on a diverse set of instructional methods to meet students' needs as well as to regulate the classroom environment so that it is conducive for learning (Vogt & Rogalla, 2009). Vogt and Rogalla used this framework to coach teachers on these competencies. They found that adaptive teaching competencies were developed through coaching and it had a positive effect on student learning. Brühwiler and Blatchford used the ATC framework to rate teacher effectiveness. They, in turn, found that ATC is associated with increased student learning. These studies show the value of teacher adaptability, but they do not answer Corno's (2008) call. That is, they do not reveal to us what teachers actually do when they adapt or what they think when they are asked to reflect upon their adaptations.

Eight years ago, our research team initiated a series of studies that sought to document how and why teachers adapt their instruction (Duffy et al., 2006). We used collective case studies (Creswell, 2005) with common data collection and analysis procedures: observations to document teachers' instructional adaptations and interviews to obtain their reflections on adaptations. Adaptations were operationally defined as a teacher action that was a response to an unanticipated student contribution, a diversion from the lesson plan, or a public statement of change (Duffy et al., 2008). In addition, adaptations were verified in post-observation interviews to ensure that the instructional action was, indeed, unplanned. In the interviews, we also asked teachers why they adapted as they did to obtain their reflection on the adaptation.

Using grounded theory (Glaser & Strauss, 1967), we created codes for adaptations and reflections (see Table 1; Duffy et al., 2008). These codes were used in subsequent studies where we conducted more than 180 classroom observations of 27 teachers in each grade, Kindergarten to Grade 5, to document more than 430 teacher adaptations (Parsons, 2012; Parsons, Davis, Scales, Williams, & Kear, 2010; Parsons, Williams, Burrowbridge, & Mauk, 2011). These studies helped us identify patterns in how and why teachers adapt their instruction. A limitation of these studies is that they all occurred in the same city in the Southeastern region of the United States.

Table 1

Original Codes for Adaptations and Reflections

Adaptations

1. Modifies the lesson objective

2. Changes means by which objectives are met

3. Invents an example or an analogy

4. Inserts a mini-lesson

5. Suggests a different perspective to students

6. Omits certain a planned activity or assignment

7. Changes the planned order of instruction

Reflections

A. Because the objectives are not met

B. To challenge or elaborate

C. To teach a specific strategy or skill

D. To help students make connections

E. Uses knowledge of student(s) to alter instruction

G. To check students' understanding

H. In anticipation of upcoming difficulty

J. To manage time or behaviour

K. To promote student engagement

The present study replicates and extends this work by examining adaptive teaching in two different settings. Replication is a "verification strategy" (Morse, Barrett, Mayan, Olson, & Spiers, 2002, p. 18) that increases trustworthiness and transferability of qualitative research (Firestone, 1993; Lincoln & Guba, 1985). The collection of studies conducted by our research team, which uses common procedures in multiple contexts, embodies the social sciences knowledge-building process (Yin, 2009). The following research questions guided this study:

- How do these teachers adapt their instruction?

- What are these teachers' reflections on their adaptations?

Theoretical Perspectives

This study was informed by theories of social constructivism and metacognition. Social constructivism is based upon the work of Dewey (1938) and Vygotsky (1978). This theory suggests that learning is actively and socially constructed and occurs in a specific context. Further, learning builds upon what one already knows, which is based upon previous experience (Mahn & John-Steiner, 2013). Classroom activity, then, is co-constructed, guided by students and the knowledge and understandings they bring to the lesson, and the social interactions embedded in the activity (Mahn & John-Steiner, 2013). The Zone of Proximal Development (ZPD) and scaffolding are central to social constructivism (Tracey & Morrow, 2012; Vygotsky, 1978). The ZPD is the zone just beyond what a learner can accomplish alone. Scaffolding is the support that a more knowledgeable other provides that allows the learner to accomplish tasks

within their ZPD. To effectively scaffold a student's learning, the teacher must have a deep understanding of the student. Relevant to this study, scaffolding parallels adaptive teaching. Adaptive teaching is at the core of teacher thinking and the process of delivering instructional supports to scaffold student learning. That is, teachers are aware of what their students know and are able to do. Adaptations provide a means for teachers to extend student thinking and provide a bridge between students' current understanding and new knowledge (Vaughn & Parsons, 2013). Metacognition is a process that facilitates teacher adaptations.

Metacognition is traditionally conceptualized as thinking about one's thinking (Flavell, 1976) and is most often considered in relation to students (Thomas, 2012). Applied to teachers, metacognition suggests a conscious awareness of one's thinking as teachers monitor classroom proceedings and use this monitoring to adjust their instruction (Duffy, 2005; Duffy et al., 2009; Lin et al., 2005; Thomas, 2012). Likewise, teachers are strategic as they implement instruction, solve problems, and make adjustments (Duffy, 2005; Duffy et al., 2009). Researchers have demonstrated that teachers make numerous decisions throughout the day (Bransford, Darling-Hammond, & LePage, 2005), and Thomas explained that the degree to which teachers are conscious of these decisions and able to articulate their thinking behind the decisions is fundamental to metacognition.

For the purposes of this research, we define teacher metacognition as teachers' conscious awareness of their thoughts, which they intentionally and strategically use to guide their actions (Duffy et al., 2009; Thomas, 2012). Thus, in a socially constructed classroom environment, a teacher must be metacognitive as the co-construction of a lesson takes shape (Sawyer, 2004). This perspective assumes that teachers are aware of their thoughts, that their actions come from their thoughts, and that they are able to articulate how their thoughts influenced their actions. This perspective, highlighting intentional and strategic thought, distinguishes adaptive teaching from instructional actions that are unplanned but routinely made (Parsons, 2012; Thomas, 2012).

Method

This study used a multiple case study approach to answer our research questions. Case studies allow researchers to study complex phenomena (Stake, 2006). The current research used instrumental case studies. According to Stake (2000), instrumental case studies focus on phenomena rather than the case, itself: "The case is of secondary interest, it plays a supportive role, and facilitates our understandings of something else" (p. 437). The present multiple case study explored the phenomenon of adaptive teaching in two different contexts, thereby allowing the exploration of this important, yet understudied, aspect of classroom instruction (Stake, 2006). When using instrumental case studies to explore a phenomenon, multiple case studies are more compelling than single case studies because the cases provide more comprehensive understanding of the phenomenon (Borman, Clarke, Cotner, & Lee, 2006; Miles, Huberman, & Saldaña, 2014; Stake, 2000) and increase the study's external validity (Merriam, 2009).

Setting and Participants

Teachers were selected for participation in this study because they were recommended to us as highly effective teachers, a sampling technique called "reputational case selection" (Miles et al., 2014, p. 32). University colleagues recommended Ms. Gammon (all names are pseudonyms)

as effective, and the principal of the Ms. Bradley's school recommended her as an effective teacher. Our experiences with these educators corroborated these recommendations. Ms. Gammon was a Kindergarten teacher who worked in a rural community in the Pacific Northwest region of the United States. Her elementary school hosted 126 students; 36% of which received free or subsidized lunch prices. Ms. Gammon was in her sixth year teaching, and she often integrated science and literacy instruction. The other case study focused on Ms. Bradley, who taught sixth grade. Her high-poverty elementary school was located right outside of a major urban city in the Mid-Atlantic region of the United States. A majority of students (83%) in the school received free or subsidized lunch prices, and many students (74%) were learning English as a second language. Ms. Bradley, who was in her seventh year teaching, worked to integrate social studies and literacy instruction. Both teachers were white females close to 30 years of age.

Data Collection and Analysis

The same data collection and analysis procedures were used in both settings. Data sources included: (a) teachers' lesson plans, (b) observations of the teachers' literacy instruction, and (c) post-observation interviews with the teachers. We conducted observations in each classroom from the end of August to June during the 2010-2011 academic school year. Observations occurred weekly during designated integrated language arts times. Over the year, we catalogued a total of 25 observations of Ms. Gammon and 26 observations of Ms. Bradley. Observations lasted between 30 and 120 minutes for a total of approximately 19.5 hours of observation of Ms. Gammon and approximately 18.5 hours of observation of Ms. Bradley.

In the observations, we scripted classroom proceedings and described in detail any adaptations we observed. An adaptation was operationally defined as a teacher action that was a response to an unanticipated student contribution, a diversion from the lesson plan, or a public statement of change. After each observation, we interviewed the teacher. During this interview, we verified that adaptations were, indeed, spontaneous changes. We also asked participants why they adapted as they did; their responses illustrated their reflections on the adaptations. All interviews were audiotaped and transcribed for analysis. Examining the underlying thinking that occurs as teachers adapt their instruction presents a methodological challenge. Lin and his colleagues (2005) state, "When people are in the role of a detached observer, they tend to be less analytic and reflective about their own and other people's teaching" (p. 253). In order to explore teachers' thinking, we explicitly asked teachers to share their reflection on the adaptations we observed. This methodological decision assumes that if a teacher confirms that an instructional adaptation is unplanned and can articulate her thinking in making that adaptation then she was acting metacognitively.

Although the current study replicates previous studies in our research agenda, we chose not to use the coding systems created in our previous studies. We made this decision because the current study took place in two new contexts (the Pacific Northwest and the Mid-Atlantic region) whereas all of the previous research occurred in one city in the southeastern United States. Therefore, we analyzed the data using grounded theory (Glaser & Strauss, 1967). We conducted multiple rounds of analysis. Initially, the first author analyzed his data while the second author analyzed her data. In this first round of analysis, the researchers identified segments of text related to the research questions. These text segments were pulled out of the raw data and displayed on a chart (Miles et al., 2014). Each adaptation was placed in one column and the corresponding reflection was placed in a second column. Independently, the

researchers then repeatedly read through their own displayed data, making notes on the salient aspects of each adaptation and each reflection (i.e., what the teacher did when she adapted and why she did it).

In the second round of analysis, the researchers switched data charts removing the notes from the first round of analysis. The researchers repeated the analytic process with the other researcher's data, repeatedly reading through the data and making notes on the salient aspects of each adaptation and each reflection. Next, we displayed all the notes from each round of analysis on a table. The researchers repeatedly read through these notes, collapsing the notes into themes and patterns, which were reduced to codes for adaptations and for reflections. In the last round of analysis, the researchers together returned to the displayed data and applied a code to each adaptation and each reflection.

Findings

In this section, we first present the overall frequency counts for the teachers' adaptations and reflections. We then provide a case description of each teacher's classroom instruction. These case descriptions allow the reader to see the teachers' instructional adaptations, hear their reflections, and see the coding systems.

Overall Findings

In this study, we documented 93 adaptations in 51 observations of two teachers. Ms. Gammon made 31 adaptations in 25 observations and Ms. Bradley made 62 adaptations in 26 observations (see Table 2). The most common types of adaptations included *inserts a new activity* (n=32), *suggests a different perspective to students* (n=20), and pulls a small group, conducts an individual conference, or changes the grouping structure (n=17). The most common reflections included *to address student misunderstanding* (n=17), *to challenge, elaborate, or enhance student understanding* (n=16), and *uses knowledge of student(s) to alter instruction* (n=15).

Case Descriptions

In this section we provide a description of each teacher's instruction, highlighting the adaptations they made and their reflections on adaptations.

Ms. Gammon. Ms. Gammon integrated science content within her language arts block in order to engage her students in hands-on science inquiry lessons. During the first half of the year, her class completed a project on earthworms. She invited scientists from the community and "soil experts" (graduate students from the local university) to come and discuss science content and vocabulary with her students. During the second half of the year, her students focused on native plant species. Her most common instructional adaptations included *inserting new activities* (n=16) and *modelling a skill or inserting a mini-lesson* (n=8). Her most common reflections on adapting her instruction were *to challenge, elaborate, or enhance student understanding* (n=9) and *to promote student engagement or involvement* (n=7).

Table 2

Frequency Counts of Adaptations and Reflections for Ms. Gammon (G) and Ms. Bradley (B)

Adaptations	G	B	Total
1. Introduces new content	1	1	2
2. Inserts a new activity	16	16	32
3. Omits a planned activity	0	2	2
4. Provides a resource or example	0	8	8
5. Models a skill or inserts a mini lesson	8	4	12
6. Suggests a different perspective to students	4	16	20
7. Pulls a small group, conducts an individual conference, or changes grouping structure	2	15	17
Total	31	62	93

Reflection	G	B	Total
A. To address student misunderstanding	5	12	17
B. To challenge, elaborate, or enhance student understanding	9	7	16
C. To teach a specific strategy or skill	0	3	3
D. To help students make connections	5	10	15
E. Uses knowledge of student(s) to alter instruction	1	12	13
F. In anticipation of upcoming difficulty	0	4	4
G. To manage time or behaviour	0	8	8
H. To promote student engagement or involvement	7	5	12
I. To follow student interest, curiosity, or inquiry	4	1	5
Total	31	62	93

Episode 1. In an observation early in the school year, Ms. Gammon conducted a guided reading lesson. A student writing independently at her desk interrupted Ms. Gammon's guided reading group to ask how to spell the word cat. Ms. Gammon stopped her small group instruction (where students were doing a picture walk of the book) and modelled, using a whiteboard, how to listen to a word, stretching it out to hear the sounds. She conducted this model for the student and then included her reading group. Ms. Gammon again modelled how to listen, stretch, and "sound out" words when trying to write unknown words. She then gave word tiles to each student in her reading group and the student who came and sought help. They practiced stretching out words and listening for all the sounds to make words.

When asked why she modified her instruction in this way, Ms. Gammon responded, "Elsa was having trouble with the word, and I thought since she was... the group I was working with, they could benefit from seeing how to sound the word out and spell it." Given her rationale for adapting in this manner, this reflection was coded as *to address student misunderstanding*. In her reflection, Ms. Gammon explained that she modified the lesson to capitalize on Elsa's question and understanding of how to spell words:

> Sometimes when they [students] get stuck like that, I think it's a good decision [to adapt]...also because some of the things that I heard from the group I was with made me think that they could

benefit from this—they were also not getting some of the high frequency words in the book we were reading.

This episode demonstrates that Ms. Gammon was aware of her thinking—her reflection-in-action—about how to best meet her students' needs.

Episode 2. During another observation, Ms. Gammon indicated that the objective of the lesson was for students, in table groups, to record observations of the class terrariums. There was one terrarium per table. After Ms. Gammon walked around the room and listened to her students talk, she called the class back together on the rug and held a class discussion about the groups' findings and what she termed their "rich thinking." She said to her students, "Martin said that he only saw one worm. Why do you think there was only one?" She invited the students to discuss with their partner. She then asked the class, "We put in 36 worms. How come we only saw one worm today? What does that mean?" In addition to adapting her lesson by adding this discussion piece, Ms. Gammon invited her students to compare and contrast their findings with each other as a way to scaffold these discussions. This adaptation was coded as *inserting a new activity* because Ms. Gammon incorporated a discussion piece into the lesson as a way to explore more deeply students' questions and understandings about the lesson at hand.

Ms. Gammon reflected on the adaptation, "That just got them to get more out of what we were doing. It seemed like a good way to get them to share their own ideas about what was going on [with the worms]." This reflection was coded as *to challenge, elaborate, or enhance student understanding* because Ms. Gammon explicitly stated in her interview that she adapted her lesson to include a discussion piece because she wanted "them to get more out of what we were doing."

Episode 3. In a different observation, Ms. Gammon adapted her instruction during the Morning Meeting lesson by encouraging her students to write words and sentences on individual whiteboards. She modelled how to "sound out" unknown words on large chart paper and then invited her students to spell words on their whiteboard. During the lesson, Ms. Gammon scaffolded student understanding by saying, "There are three letters that make the /ing/ sound. Think about the sounds and write what you think on the board." In this way, Ms. Gammon altered her typical Morning Meeting where students, one at a time, come to the Morning Message and share the pen. Instead, she provided each student with a whiteboard and invited all of the students to write with her. In doing so, she *inserted a new activity* within the original planned lesson.

When asked about her reflection for adapting her instruction in this way, Ms. Gammon stated, "No, I hadn't planned on that but was thinking, with shared writing, sometimes just a few students can come up and write—by doing this [including the white boards], I got to get more students to do the writing." This reflection was coded as *to promote student engagement or involvement* because she stated her main rationale for modifying her instruction in this way was to involve more students in the writing process.

Episode 4. In another observation, Ms. Gammon conducted a mini-lesson on personal narratives within her Writer's Workshop time. She adapted her instruction by incorporating small-group discussions at each table. The original plan for the lesson was for students to work independently at their seats. However, after listening to her students' discussions during the "pair and share" portion of the whole-class mini-lesson, Ms. Gammon asked her students to go back to their seat and talk with others at their table rather than writing their narratives individually. She said to her students during this adaptation, "Write your good thinking down."

In her reflection on this adaptation, Ms. Gammon referred to her students' rich thinking as her primary reason for modifying her instruction in the manner she did. She stated, "I thought about filling out on chart paper—but their thinking was so rich, so I had them talk and then go back—I didn't anticipate the deep thinking they had engaged in." She further explained her rationale for adapting in this way:

> I kinda wanted them to be more quiet with their writing and then share out, but I actually saw that it helped them kinda talk through their story a little bit as they're drawing. And then I heard them ask questions like, "Well, where's your dad? You need your dad in there." Um, so then I allowed that type of interaction between the students when initially I thought that this would disrupt them.

This reflection was coded as *to promote student engagement or involvement*. She explained that adapting in this manner was a way to provide an opportunity for her students to engage more deeply in the lesson at hand. This episode demonstrates how Ms. Gammon's monitored classroom proceedings and reflected-in-action to adapt her instruction.

Episode 5. In a different observation, the original objective of the lesson was for students to record their thoughts on their paper after hearing the story *How a Seed Grows* by Helene J. Jordan. After the read aloud, rather than adhering to this original objective, Ms. Gammon incorporated a group writing activity at each table. She provided each group with a large sheet of chart paper and said, "I hear a lot of great conversation and excitement. Work together in your group and draw and write about what you have learned about the seeds." As students worked together at their seats, Ms. Gammon suggested, "Sketch out what you think and what you know now about plants."

When asked why she modified her lesson in this way, Ms. Gammon stated, "I noticed the students were doing a lot of thinking and discussion as they went [around the room]—such rich oral conversations—having them work in a group was better because it gave everyone an opportunity to share together." This reflection was coded as *to promote student engagement or involvement*. Ms. Gammon stated that her rationale for modifying her instruction in this manner was to promote student involvement or to provide "an opportunity to share together."

Case summary. During the course of the study, Ms. Gammon modified her instruction at least once during each observed lesson. Her adaptations reflected her knowledge of effective early childhood instructional practices. Ms. Gammon frequently adapted her instruction as a way to enhance student understanding and promote student involvement. She often did this by inserting a new activity, modelling a skill, or inserting a mini-lesson.

Ms. Bradley. Throughout the school year, Ms. Bradley intentionally integrated language arts and social studies instruction. In the state where she taught, the focus of the sixth-grade social studies curriculum is the colonization of the United States, beginning with a study of Native American tribes. To integrate language arts and social studies, Ms. Bradley frequently organized instruction around projects. Most of the observed lessons began by reviewing school system-created PowerPoints that explicitly covered content students would need to know for the standardized social studies assessment that occurs at year-end. Ms. Bradley talked through the content and students would take notes. Often students had a graphic organizer to support their note taking. Throughout the discussion of the PowerPoints, Ms. Bradley would frequently ask questions, helping students make connections with previous content.

Episode 1. Early in the school year, the class learned about different Native American tribes. The observed lesson focused on the Sioux, and it began with a video. Ms. Bradley then led

a discussion about how they were nomadic, migrating to follow the buffalo. A student asked if that made them immigrants (many students in this class were immigrants to the United States). Ms. Bradley adapted her instruction to distinguish "migrate" from "immigrant," explaining that the two words share the same root. This adaptation was coded as *models a skill or inserts a mini-lesson* because she provided a small vocabulary lesson.

Ms. Bradley reflected on this adaptation:

> Because there was something for them to latch onto. They know what an immigrant is and then I was actually impressed. That's why I argue to use these movies: They use vocabulary that if I taught them, they would never use. For them to say, "Oh a nomad is someone that migrates." They never use "migrate." If I taught them to use migrate with me using it, I don't think they would have used that word. But because something about the movies they just pick up, like it's natural for them to have the vocabulary that they start using. So I just wanted them to have that connection in their brain that migrating means to move. And if they have migrated here... plus they all were talking about it.

This reflection was coded as *to help students make connections* because Ms. Bradley capitalized on student discussion to help them make connections between the content and their own lives. This episode demonstrates the co-construction of classroom activities that took place: Ms. Bradley responded to student input to adapt her instruction.

Episode 2. In another lesson, the social studies content was leading up to Christopher Columbus' "discovery" of America. This particular lesson focused on explorers' motivations for exploring. The class brainstormed motivations for exploring. Ms. Bradley adapted her instruction to contextualize their thinking. She stopped students' conversations and stated, "Rewind 500 years ago. Today we're going to discuss the motivations of the explorers who found where we live now." She asked students if they had ever been to Antarctica. They said no. She asked what animals they would expect to find there. Student responses included polar bears and wolves. Ms. Bradley asked how they knew that if they've never been there. Students replied TV, books, and the Internet. Ms. Bradley remarked, "So 500 years ago, there was no TV, Internet, telephones... When you are going on an exploration, it is totally unknown." This adaptation was coded as *suggests a different perspective to students* because Ms. Bradley encouraged students to take the perspective of a previous time.

She explained why she adapted her lesson in this way:

> Because I wanted to drive home the point that we can explore from the comfort of our homes now, but... it was not like that back then. They would actually, they would hear a little hearsay, but they would actually have to get up and see it [themselves].

This reflection was coded as *to challenge, elaborate, or enhance student understanding* because Ms. Bradley challenged students to think differently about the content.

Episode 3. In another observed lesson occurring midyear, the class studied the British colonies in North America. The task was for students to read an article about the differences between New England and Mid-Atlantic colonies. Ms. Bradley asked students to underline important information as they read, a strategy they had been practicing. She arranged for her poorest readers to meet in a group with her, so she could scaffold their reading. She adapted her instruction by asking a particular student, Marco, to read with another student, Ivory, instead of coming to the group. This adaptation was coded as *pulls a small group, conducts an individual conference, or changes grouping structure* because she altered the grouping structure she had

planned.

Ms. Bradley reflected on this adaptation as follows:

> I made a moment's decision to either pull Marco into the group that I was working with or to do something else with him because Marco is quote, unquote, my lowest reader, but he's so bright that I felt like he'd be bored by sitting in that group...he's [Marco] very motivated and really self-aware, so I felt like, you know the kids I worked with, they won't ask for vocabulary. I have to kind of brainstorm in my brain while I'm teaching them, what words they might not know and kind of bring it up. "Do you know this word?" Well, Marco will tell, "I don't know that word, I don't know that word." So I felt like working with Ivory—and she's so knowledgeable—that they could work together and he would get more out of it than [if he was with]... the other group.

This reflection was coded as *uses knowledge of student(s) to alter instruction* because Ms. Bradley's reflection demonstrated a deep understanding of her students. Marco recently immigrated to the United States and was her "lowest" reader because he was learning English. However, Ms. Bradley knew that he was an intelligent, self-aware student who would not be afraid to ask questions. She also knew that Ivory, a very bright and English proficient immigrant from Sierra Leone, would be willing to support Marco.

Episode 4. In another observation, the class studied the Declaration of Independence. They watched a brief video, and then Ms. Bradley asked them to write down three words that were important in the clip. She adapted her instruction by comparing the activity to finding the Main Idea. "In reading we've been talking about Main Idea... in the Declaration of Independence, what was the Main Idea? ...This is an activity to support Main Idea." This adaptation was coded as *models a skill or inserts a mini-lesson* because Ms. Bradley connected the current activity to a skill they have been focusing on in reading.

She reflected on this adaptation:

> Because, actually, I've been reading a lot on how to teach Main Idea and different structures to teach Main Idea and one of them was this three-word structure: Everyone pulls their most important three words and then you see how that connects back to the main idea. So I thought that would be a really good structure to use for social studies.

This reflection was coded as *to help students make connections* because she wanted students to see the connection between this activity and finding the Main Idea in reading.

Episode 5. In one observation, the class reviewed a PowerPoint presentation on important people in the early history of the United States. They came to Paul Revere. Previously, Ms. Bradley had explained that, in fact, it was a woman who had alerted the colonials of the forthcoming British invasion. When the presentation came to Paul Revere, a student asked why he got all the credit. Ms. Bradley adapted her instruction by initiating a discussion about how certain groups of people were left out of history: women, African Americans, Native Americans, and slaves.

The following is her reflection on this adaptation:

> Well, they brought that up. So I thought that's a really good time to talk about it because we just looked at Phyllis Wheatley and I could tell that they didn't get who Phyllis Wheatley was—like Gio asked, you know it was a really good question, he says, "Well, why is she important? She is a poet and a playwright. Who cares? A lot of people at that time were like that." So it was clear—and I was

thinking as I was teaching them, they don't get that this is a slave [who] is now educated, is literate, and can do it—which is a big thought to overcome. But then she threw out Paul Revere and I'm like that's kind of an easier way to broach that conversation... there are a lot of people [who] did really important things but because of who they were in society, they weren't acknowledged at all. So I was just pointing [it] out. And I felt like the girls, I have some strong girls in my class, there are girls that will take that whole idea, "Oh, those women are left out of history," and run with it.

This reflection was coded as *to follow student interest, curiosity, or inquiry* because Ms. Bradley followed a student question to highlight an important consideration when studying history. This episode illustrates how the teacher and students co-construct classroom activity.

Case summary. Throughout the year, Ms. Bradley adapted her instruction 62 times in 26 observed lessons. Her adaptations illustrated a deep knowledge of her students. She frequently adapted to suggest a different perspective to students and to modify the grouping structure.

Discussion

As schools become more diverse, researchers increasingly point out the need for teachers to adapt their instruction to meet the needs of their students (Allen et al., 2013; Corno, 2008; Darling-Hammond & Bransford, 2005; Fairbanks et al., 2010; Gambrell et al., 2011; Parsons, 2012; Pearson & Hoffman, 2011; Taylor et al., 2011; Vaughn & Parsons, 2013). Additionally, teaching is complex and unpredictable (Bransford et al., 2005; Zeichner & Liston, 2014). Therefore, adopting an adaptive and flexible approach to teaching is essential to navigate this unpredictability. This study highlights the unpredictable nature of teaching through the documentation of two teachers' instructional adaptations and their reflections on adaptations. These teachers frequently adapted their instruction to enhance opportunities for their students to engage in the curriculum. Given the unique strengths and instructional needs of their individual student populations, these teachers skillfully wove their knowledge of effective pedagogy with their knowledge of their students in order to provide these opportunities.

How the Findings Compare to Our Previous Studies of Adaptive Teaching

Replication is important in social sciences research (Morse et al., 2002; Yin, 2009), especially with case studies, which, by design, focus on the particular (Stake, 2000). Repeated documentation of teachers' adaptations and their reflections on their adaptations using the same methods in different settings allows us to refine our findings and increase our understandings about these important phenomena (Firestone, 1993; Lincoln & Guba, 1985). The teachers in this study adapted their instruction in a variety of ways and for various reasons. In our previous work on adaptive teaching (Duffy et al., 2008; Parsons, 2012; Parsons et al., 2010, 2011), we used grounded theory (Glaser & Strauss, 1967) to create coding schemes to categorize teachers' adaptations and reflections. Our previous work occurred in one urban centre in the Southeastern region of the United States. The current case studies took place in two new contexts: a rural school in the Pacific Northwest and a suburban school outside a major city in the Mid-Atlantic. Due to these new contexts, we began our analysis with no a priori coding systems. We used the grounded theory process to create codes for these teachers' adaptations and reflections.

The codes that came out of this process were very similar to the previous codes. Many

differences were semantic: the essence of the code is the same, but the language of the code became clearer and more accurately captured the adaptation or reflection. For example, the new adaptation code *inserts a new activity* captures a similar action as the previous code *changes means by which objectives are met* (Parsons et al., 2010), but the new code clearly and concisely describes the teacher's action. The new reflection code *to address student misunderstanding* captures the same idea as the previous code *because the objectives were not met* (Parsons et al., 2010). The language, in our opinion, is clearer with the new codes. Old codes that did not emerge in the current study include the adaptation code *changed the planned order of instruction* and the reflection code *to check students' understanding*. Two completely new codes include the adaptation code *pulls a small group, conducts an individual conference, or changes the grouping structure* and the reflection code *to follow student interest, curiosity, or inquiry*.

Table 3 displays the cumulative totals for all of our previously published work on teacher adaptations (Duffy et al., 2008; Parsons, 2012; Parsons et al., 2010, 2011). These data were collected through 181 observations of and interviews with 27 teachers from Kindergarten to Grade 5. The most common codes for adaptations included *invents an example or analogy* (36% of identified adaptations were coded in this way) and *changes means by which objectives are met* (27%). In the current study, the most common adaptations were *inserts a new activity* (34%) and *suggests a different perspective to students* (22%). The most common codes for reflections in the previous work were *because the objectives were not met* (27% of reflections were coded in this way) and *to help students make connections* (18%). In the current study, the most common codes for reflections were *to address student misunderstanding* (18%), *to challenge, elaborate, or enhance student understanding* (17%), and *to help students make connections* (16% of reflections).

Despite starting with no explicit a priori codes for adaptations, the codes that emerged from the data in these two new contexts were very similar to the codes identified in our previous research. The most common types of adaptations and reflections were also similar. It seems, then, after 232 observations of and interviews with nearly 30 teachers in three different contexts, we have identified consistent patterns in how and why elementary school teachers adapt their instruction.

Comparison of the Two Teachers in this Study

Ms. Bradley adapted her instruction twice as many times (n=62) as did Ms. Gammon (n=31). A possible explanation for this difference may be the student populations each teacher served. Ms. Bradley's sixth-grade classroom was likely to have a larger variety in proficiency levels than Ms. Gammon's Kindergarten classroom. Although there is certainly diversity in Kindergarten achievement levels, as students advance through school, the gap between high- and low-achievers widens (Stanovich, 1986; Walberg & Tsai, 1983). Ms. Bradley may have adapted her teaching more frequently as a result of a wider range in performance levels among her students. Similarly, while a majority of Ms. Gammon's students share an ethnic and cultural background, the majority of the students in Ms. Bradley's class had immigrated to the United States from different countries. The added complexity of working with students who have myriad cultural backgrounds and variable English proficiency may have increased the need for the teacher to adapt her instruction.

Table 3

Cumulative Totals from our Previously Published Work on Adaptations

Adaptations		
1.	Modifies the lesson objective	5
2.	Changes means by which objectives are met	116
3.	Invents an example or analogy	153
4.	Inserts a mini-lesson	41
5.	Suggests a different perspective to students	52
6.	Omits a planned activity or assignment	54
7.	Changes the planned order of instruction	10
Total		431
Reflections		
A.	Because the objectives are not met	115
B.	To challenge or elaborate	39
C.	To teach a specific strategy or skill	30
D.	To help students make connections	77
E.	Uses knowledge of student(s) to alter instruction	61
G.	To check students' understanding	19
H.	In anticipation of upcoming difficulty	38
J.	To manage time or behaviour	29
K.	To promote student engagement	23
Total		431

There were also differences in how the teachers adapted. Of the adaptations observed in Ms. Gammon's classroom, 77% were *inserts a new activity* (n=16) or *models a skill or insert a mini-lesson* (n=8). Ms. Bradley also frequently adapted by *inserting a new activity* (n=16). Other common types of adaptations for Ms. Bradley included *suggests a different perspective to students* (n=16) and *pulls a small group, conducts an individual conference, or changes the grouping structure* (n=15). The differences in their adaptations also appear to be shaped by the students with whom they are working and, perhaps, the teachers' levels of expertise. That is, each teacher used different practices supportive of their specific contexts to scaffold student learning.

Ms. Gammon, for example, often incorporated new activities by including a discussion or providing an alternative means for her Kindergarten students to display their knowledge (e.g., a writing task where students were given choice to draw or write their understandings). Ms. Bradley often incorporated comprehension and vocabulary strategies to support her English language learners' (ELL) understanding of content. The difference between teachers reflects the literature suggesting that adaptive teaching responds to the unique and individual needs of today's diverse student populations (Parsons, Dodman, & Burrowbridge, 2013; Randi & Corno, 2000). Interestingly, each teacher had taught at her grade level for several years and was comfortable with the subject matter. As such, adaptations were likely shaped by teacher expertise, experience, and their repertoires of existing strategies.

Characteristics that Supported These Teachers' Adaptability

These teachers' reflections demonstrate that they were metacognitive in their work. The most common reflection offered by the teachers in this study was *to address student misunderstanding*. They were consistently observing students' reactions and work, and if they noticed student misunderstanding, they adapted their instruction to address it. Ms. Bradley, for example, adapted her instruction by directing students to go back to the text to help them better understand the concept of accomplishment. She reflected, "I didn't expect to see them struggling so much, but I realized it wasn't concrete… so when I saw that they weren't getting that… I thought that I'd need to make it more explicit so I got them into a group." Ms. Bradley, then, was acting metacognitively. She was monitoring students' understanding and thinking about how to best address misunderstanding, demonstrating a conscious awareness of her thinking.

These teachers also demonstrated an understanding of effective pedagogy through their teaching and reflections. Consider Ms. Bradley's reflection above. She realized that the abstract meaning of the word "accomplishment" was not presented concretely. She knew that ELL students often need explicit instruction to understand abstract word meanings (Echevarria, Vogt, & Short, 2007). In addition, Ms. Gammon frequently incorporated time for students to discuss their thinking. She once explained that she had students share their reflections on their science observations so they could "get more out of what we were doing." She knew that learning is socially constructed (Vygotsky, 1978) and that students need time to discuss their learning. She also recognized the importance of the reading-writing connection for her students who are in the early stages of literacy development (Fitzgerald & Shanahan, 2000). She stated, "I'm starting to think about how I need to add the writing component to anything they're reading."

The teachers' reflections also demonstrated a deep knowledge about their students. In one observation, students worked on a project in class. Ms. Bradley adapted her instruction when she called a student to her desk. "Teresa, can you bring me your work please?" She looked over the student's work and gave her some feedback. When asked about this adaptation, Ms. Bradley revealed an understanding of this student and her work habits:

> Teresa's a student who will look really busy, and she's very slow moving and can keep herself looking busy, and she's not accomplishing what she needs to. So I wanted to just check-in with her and make sure she was accomplishing something while she was working on that.

This minor adaptation was based upon Ms. Bradley's knowledge of this particular student and served as a regulatory instructional move for the student and as formative assessment for the teacher.

Finally, although not explicitly studied in this research, it is important to note that by the end of the school year, each student in Ms. Gammon's Kindergarten class was reading well beyond their grade level (with ranges from 2nd grade to 4th grade levels), and Ms. Bradley's students performed well on the state standardized tests.

Implications

This study demonstrates the complexity of classroom instruction and the resulting need for teachers to be adaptive. A frightening trend, though, is the movement toward more restrictive

instructional environments (Coburn, Pearson, & Woulfin, 2011; Pearson, 2007; Zeichner & Liston, 2014). Increasingly, teachers are required to teach from prescribed programs and to teach each lesson plan with fidelity (Ede, 2006; Smith-Collins, 2012). This top-down mandated instruction harms both students and teachers. One-size-fits-all instruction prevents teachers from meeting students' diverse needs, and such mandated instruction positions teachers as technicians rather than as metacognitive professionals (Duffy & Hoffman, 1999; Pearson & Hoffman, 2011). Therefore, we urge policy makers and administrators to protect teachers' autonomy. Instead of mandating fidelity to a particular program, they should provide professional development to help teachers build their "tool kit" of effective practice that they can apply as they see fit given the particular students they teach.

Similarly, teacher educators and professional developers need to strive to prepare thoughtfully adaptive teachers. Indeed, adaptive teachers have a strong understanding of child development and effective instruction (Parsons et al., 2013; Vaughn & Parsons, 2013), so it is vital that teacher educators and professional developers continue to emphasize how people learn and effective practices to support students' learning. Nonetheless, it appears that adaptive teachers also have something else. What exactly that "something else" is has been elusive. Fairbanks and her colleagues (2010) recently addressed this issue in their article "Exploring Why Some Teachers are More Thoughtfully Adaptive than Others." They described *personal practical theories*, *visioning*, *belongingness*, and *identity* as possible perspectives for understanding what makes teachers thoughtfully adaptive. Additional research is needed to better understand how we might support teachers to become thoughtfully adaptive.

Conclusion

The teachers in this study taught in two distinct contexts. One taught Kindergarten in the rural Pacific Northwest region of the United States and one taught sixth grade in a suburban school outside of a major urban city in the Mid-Atlantic region of the United States. Despite different teaching contexts and different student populations, this study found commonalities in how these teachers adapted their instruction to meet their students' needs. These commonalities fit within the previous research on adaptive teaching. The repeated study of teachers' instructional adaptation and reflections on those adaptations is building our understanding of this important phenomenon. These studies demonstrate the complexity and unpredictability of classroom instruction and the resulting need for metacognitive teachers who have a strong understanding of effective pedagogy and who know their students well.

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