THE INTEGRATION OF ENGLISH LANGUAGE ARTS, SCIENCE AND OTHER
SUBJECTS: LEARNING FROM ELEMENTARY EDUCATORS’
KNOWLEDGE AND PRACTICE

by
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April 2013
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# TABLE OF CONTENTS

1. INTRODUCTION ............................................................................................................. 1
   Historical Perspective ................................................................................................. 1
   Statement of the Problem ........................................................................................... 4
   Purpose of This Study ................................................................................................. 7
   Research Questions .................................................................................................... 8
   Definition of Key Terms ............................................................................................ 9
   Significance of This Study .......................................................................................... 9
   Limitations and Delimitations ..................................................................................... 10
      Limitations ............................................................................................................. 10
      Delimitations ......................................................................................................... 10
   Chapter Summary ....................................................................................................... 11

2. REVIEW OF THE LITERATURE .................................................................................... 12
   Foundations ............................................................................................................... 12
      Origins ................................................................................................................... 12
      Literacy across the Curriculum ............................................................................. 15
      Common Core ....................................................................................................... 17
   Benefits of Integration ............................................................................................... 17
   Definitions .................................................................................................................. 22
   Continuum and Domain ............................................................................................ 25
   Teachers Perceptions and Beliefs .............................................................................. 26
   Chapter Summary ....................................................................................................... 28

3. RESEARCH METHODOLOGY ..................................................................................... 30
   Research Paradigm ..................................................................................................... 30
   The Context ................................................................................................................ 30
   Selection of Participants ............................................................................................ 31
   Positionality ............................................................................................................... 31
   Pilot Study ................................................................................................................. 32
   Data Collection ......................................................................................................... 34
   Data Analysis ............................................................................................................ 37
   Quality Measures ...................................................................................................... 37
   Chapter Summary ....................................................................................................... 38

4. RESULTS OF THIS STUDY ....................................................................................... 39
   Case Studies ............................................................................................................... 39
      Cullen Case .......................................................................................................... 39
      General Description .............................................................................................. 39
5. DISCUSSION

Summary of the Findings ................. 80
Teachers’ Descriptions of Integration .... 81
Teachers’ Practice of Integration ......... 84
Compatibility of the Findings and the Literature Framework .... 85

TABLE OF CONTENTS - CONTINUED

Planning and Structure .......................................................... 40
Continuum Matrix .................................................................. 42
Knox Case ............................................................................. 47
General Description ................................................................. 47
Planning and Structure .............................................................. 47
Continuum Matrix .................................................................. 49
Havel Case ............................................................................. 52
General Description ................................................................. 52
Planning and Structure .............................................................. 53
Continuum Matrix .................................................................. 54
Bilas Case ............................................................................. 58
General Description ................................................................. 58
Planning and Structure .............................................................. 59
Continuum Matrix .................................................................. 60
Donner Case ........................................................................... 64
General Description ................................................................. 64
Planning and Structure .............................................................. 65
Continuum Matrix .................................................................. 66
Cross-Case ............................................................................ 70
Compatible Themes ................................................................. 71
Organizing Description ............................................................ 71
Planned and Natural Process .................................................... 71
Grounded in Content ................................................................. 72
Range of Options .................................................................. 73
Perfect World versus Reality .................................................... 74
Best Practice ........................................................................ 76
Contrasting Features ................................................................. 76
Understandings of Common Core ...................... 76
Whole versus Part ................................................................. 77
Collaborative Teams ................................................................. 77
Themes ............................................................................. 78
Standards ........................................................................... 78
Organic Process ................................................................. 79
Chapter Summary ................................................................. 79

5. DISCUSSION

Summary of the Findings .......................................................... 80
Teachers’ Descriptions of Integration ...................... 81
Teachers’ Practice of Integration ........................................ 84
Compatibility of the Findings and the Literature Framework .... 85
TABLE OF CONTENTS – CONTINUED

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describing the Domain of Integration</td>
<td>89</td>
</tr>
<tr>
<td>Implications</td>
<td>97</td>
</tr>
<tr>
<td>Suggestions for Future Research</td>
<td>99</td>
</tr>
<tr>
<td>Summary</td>
<td>100</td>
</tr>
<tr>
<td>REFERENCES CITED</td>
<td>102</td>
</tr>
<tr>
<td>APPENDICES</td>
<td>110</td>
</tr>
<tr>
<td>APPENDIX A: Informed Consent</td>
<td>111</td>
</tr>
<tr>
<td>APPENDIX B: Yearlong Theme</td>
<td>113</td>
</tr>
<tr>
<td>APPENDIX C: Pre-Observation Interview Guide</td>
<td>115</td>
</tr>
<tr>
<td>APPENDIX D: Post-Observation Interview Guide</td>
<td>117</td>
</tr>
<tr>
<td>APPENDIX E: Integration Matrix</td>
<td>119</td>
</tr>
<tr>
<td>APPENDIX F: Interview Transcripts</td>
<td>121</td>
</tr>
<tr>
<td>APPENDIX G: Observation Notes</td>
<td>184</td>
</tr>
<tr>
<td>Table</td>
<td>Page</td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>1. Two Variations on a Continuum of Integrated Practice</td>
<td>26</td>
</tr>
<tr>
<td>2. Modeling the Domain of Integration: Descriptions and Evidence</td>
<td>90</td>
</tr>
</tbody>
</table>
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>My Personal Conceptualization of Integration</td>
<td>32</td>
</tr>
<tr>
<td>2.</td>
<td>Matrix of Integration’s Domain</td>
<td>35</td>
</tr>
<tr>
<td>3.</td>
<td>Cullen Matrix of Integrated Practice</td>
<td>43</td>
</tr>
<tr>
<td>4.</td>
<td>Knox Matrix of Integrated Practice</td>
<td>50</td>
</tr>
<tr>
<td>5.</td>
<td>Havel Matrix of Integrated Practice</td>
<td>56</td>
</tr>
<tr>
<td>6.</td>
<td>Bilas Matrix of Integrated Practice</td>
<td>62</td>
</tr>
<tr>
<td>7.</td>
<td>Donner Matrix of Integrated Practice</td>
<td>68</td>
</tr>
<tr>
<td>8.</td>
<td>Matrix Comparing Teacher Practice and Desired Practice</td>
<td>75</td>
</tr>
<tr>
<td>9.</td>
<td>Matrix Comparing Teacher Understandings of Common Core</td>
<td>77</td>
</tr>
<tr>
<td>10.</td>
<td>Variables Associated with the $x$ and $y$ Axes on the Bubble Chart</td>
<td>93</td>
</tr>
<tr>
<td>11.</td>
<td>Variables Associated with the Circles in the Bubble Chart</td>
<td>94</td>
</tr>
<tr>
<td>12.</td>
<td>A Model of Subject Area Integration</td>
<td>96</td>
</tr>
</tbody>
</table>
A cursory review of the literature reveals that integration is a difficult practice to define, yet elementary teachers are quick to speak positively of integration and many claim to integrate in their practice. If there is a lack of consensus about what integration means, what then are these teachers doing when they say that they integrate? Surprisingly, few researchers have taken the time to explore the descriptions and practices of elementary educators. This study investigated five cases in an effort to establish how teachers view the domain of subject area integration. Qualitative data was collected through interviews with the participants and observations of the integrated lessons they taught. The data revealed a healthy mix of commonalities within and differences between the teachers’ descriptions and practices. These similarities and differences revealed a model of integration that goes beyond the linear continuums common in the literature. The conclusions of this study propose a model of the domain that consists of four variables. These variables can be used to describe with great detail an individual practice of integration and allow educators and administrators an opportunity to consider and plan for growth in the practice of subject area integration.
CHAPTER ONE

INTRODUCTION

Historical Perspective

The practice of content area integration began in the early part of the twentieth century; however, its philosophical origins have been traced into the 1800s. Mathison and Freeman (1997) explained that it was Herbert Spencer’s writings of 1855 that brought the idea of integration into the fields of social science. The British psychologist suggested that the last step of a changing or adapting organism was that of integration. Whatever had changed must be successfully integrated into the whole organism for the adaptation, the evolution, to be a success. Fifty years later Gestalt psychology connected Spencer’s natural science thoughts of the organism as a whole to the realm of psychology. One of the branch’s founders, Köhler, made the connection when he found evidence for similar behaviors between natural systems and psychic systems (Humphrey, 1924). In the world of education this produced two practical realities. First, the learner was seen as a whole in need of meaningful learning experiences that reflected this reality. Second, learning was not simply a linear project with new ideas being added onto others. Instead, it was complex and interactive—filled with rebuilding and transformation (Harrell, 2010). It was this progressive thinking that led to integrated curriculum and authentic experiences that kept learning meaningful (Mathison & Freeman, 1997). For progressives, integrated curriculum was the curriculum of life. It was curriculum based on real life situations and issues where the disciplines were brought to bear on these real-
world problems. These studies were authentic because of their orientation to real life and therefore were thought to be inherently more meaningful.

Through the first half of the twentieth century, integration was advanced in both theory and practice by a number of innovators. Two such leaders were Dewey and Caswell. John Dewey’s many contributions to the world of education include exhortations for a curriculum closely tied to real life, relevant learning experiences to accompany rigor, and inquiry-based learning (Bunting, 1987). These ideals are still embraced today by teachers desiring to integrate (Nollmeyer, 2012). If progressive education originated with Dewey, then Core Curriculum began with Caswell. In the early 30s, Hollis Caswell used a curriculum laboratory to train and write a Core Curriculum—which is fully integrated—for a number of southern states (Fraley, 1977).

One of the highlights of the progressive movement was the famous Eight-Year Study. Thirty schools participated in the research which involved topic-based curriculum with “fused” or “correlated” content areas (Applebee, Adler, & Flihan, 2007; Kain, 1993). This student-centered, life-applicable learning remained en vogue into the 1950s; however, with the arrival of the post-Sputnik era, there was, once again, a strong push for discipline-based curriculum—emphasizing rigor over relevance (Hartzler, 2000; Tanner, 1989).

Around the same time, Piaget and other psychologists were developing constructivist theory which suggested that as knowledge was constructed by learners; their very cognitive structure was reorganized in the process (Marzano, 1991). If these theorists were correct, then the connections created through integrated learning
experiences was vital, and the post-Sputnik shift back to content rigor and discipline isolation was a step in the wrong direction. After all, Garmston and Wellman (1994) emphasized that constructivists see the student, and not knowledge or skills, as the focus of the learning.

It wasn’t until the 1980s that integration made another surge in popularity. From the mid-80s to the late 90s, integration was once again on the minds of educators, researchers, and policy makers. This rich period in the history of integration has been attributed to curriculum organizational theory, brain research, and learning theory (Hartzler, 2000). Whatever the impetus, several of the movement’s most cited advocates sprang up during these years, including James Beane (1991, 1992, 1993, 1995), Robin Fogarty (1991, 1992, 1994, 1998), and Heidi Hayes Jacobs (1989, 1991a, 1991b, 1998; Jacobs & Borland, 1986) This was a time of heavy research as well; Hartzler (2000) located and analyzed thirty quantitative studies on integration that met her criteria all between the years of 1985 and 1997. Finally, a number of policy groups also turned to integration for answers in the 1980s and 1990s including the National Association for the Advancement of Science [NAAS] (1988), the Bradley Commission on History in Schools (1988), the National Research Council [NRC] (1989, 1996), the National Council of Teachers of Mathematics [NCTM] (1989, 1991, 1995), the American Association for the Advancement of Science [AAAS] (1989, 1993), and the National Council for the Social Studies [NCSS] (1994).

With so much interest and support from national organizations, it appeared that the promotion of subject area integration would be a fixture of education for some time;
however, in the years surrounding the turn of the century, calls for accountability resulted in a surge of high stakes testing. Over the next decade efforts in integration declined as teachers faced the pressure of the No Child Left Behind legislation (Musoleno & White, 2010).

Today, integration has been brought back to the vanguard. The arrival of the Common Core Standards (National Governors Association Center for Best Practices, 2010) and with the Next Generation Science Standards set to publish soon (Committee on Conceptual Framework for the New K-12 Education Standards National Research Council, 2012), relevance has once again been added to rigor. This shift in thinking is not novel, but it has brought subject area integration back to the forefront of the conversation among policy makers and educators.

**Statement of Problem**

Montana and most other states have officially adopted the Common Core Standards and begun the process of implementation. One aspect of that task is the cross-curricular approach to the instruction of literacy determined in the Common Core Standards for English Language Arts [ELA] (Office of Public Instruction, 2011).

Research has shown that such curriculum and instruction is accompanied by both benefits and challenges. Students experiencing integrated curriculum are more motivated to learn (Brown, 2011; MacMath, Roberts, Wallace, & Chi, 2010), find their studies more meaningful (Leung, 2006; Yager & Lutz, 1994), and do as well if not better on standardized tests (Hartzler, 2000; Vars, 1997). Nevertheless, teachers who chose to integrate subject areas face a number of challenges. Mcbee (2000) consolidates, from a
number of authors, a list of these barriers: lack of professional development, minimal
time for developing curriculum, poor administrative and peer support, the drastic change
in teaching practice required by integration, and the compartmentalization of content in
published materials.

These challenges are further complicated by the literature’s lack of uniformity in
defining integration. Though Beane (1992) speaks with confidence about the various
terms without acknowledging the possibility for multiple interpretations and Brown
(2011) goes so far as to define “true curriculum integration”, most authors do not write in
such definite terms. Instead they point out the lack of consensus before applying their
own definitions to their writing (Applebee et al., 2007; Shoemaker, 1991; Shriner,
Schlee, & Libler, 2010).

Researchers find that many students prefer and succeed in integrated classrooms.
Montana’s policy-makers have called for ELA to be integrated throughout the
curriculum, yet the literature demonstrates a lack of consensus in describing the domain
of integration. What will Montana’s elementary educators do in responding to the
Common Core Standards as they attempt to integrate ELA into science and other subject
areas? In a pilot study, Nollmeyer (2012), found that all teacher participants reported low
levels of current integration with a desire to integrate at higher levels. What do educators
mean when they say that they “integrate”? Do teachers’ definitions of integration align
with any of the researchers’, theorists’, or advocates’ definitions? Will the range of
definitions uncovered provide evidence for a continuum of integration as suggested by
the literature? “Confucius said, ‘If names are not correct, language will not be in
accordance with the truth of things”’ (Patton, 2002, p. 361). What then is meant by “integration”?

Even with experts divided on defining the domain of integration, relatively few researchers have attempted to examine educator beliefs, perceptions, or experiences. My comprehensive search revealed only 11 such studies: Collier and Nolan (1996), DeCorse (1996), Greenleaf et al. (2011), Harrell (2010), Kain (1996), McBee (2000), Offer and Mireles (2009), Shriner et al. (2010), Stinson, Harkness, Meyer, and Stallworth (2009), Wang, Moore, Roehrig, and Park (2011), and Weilbacher (2001). Only two of these studies are particularly important to the proposed research.

The Collier and Nolan (1996) study asked similar questions to the ones proposed in my study. They sought to understand how elementary teachers defined, applied, and evaluated three instructional models for integration: integrated, interdisciplinary, and thematic. Unlike most authors, the two speak with confidence about the unique definitions of these approaches. “A review of the literature indicated a clear distinction between the three instructional models. . .” (Collier & Nolan, 1996, p. 7). A more in-depth look at the literature muddies the water. For example, where in these three approaches is Beane’s (1992) integrative curriculum, Fogarty’s (1991) shared model, or any stage of Adler and Flihan’s (1997) continuum of integration.

Collier and Nolan’s (1996) study is a foundation upon which to build, yet it is inadequate in addressing the current problem for two crucial reasons. First, the fact that the study is now sixteen years old increases the possibility that findings today may differ. Second, the authors’ choice to limit their search to an understanding about just three
approaches in integration artificially limits a definition of the whole domain—a stated goal in the study I conducted.

DeCorse (1996) conducted conversations with five elementary educators in order to discover their thoughts on developing and implementing an integrated curriculum. One of the questions DeCorse asked the educators was how they would define curriculum integration. Her results on this issue, that elementary educators define the term with a range of differences, is similar to my own preliminary findings (Nollmeyer, 2012). Like, Collier and Nolan’s (1996) study, this research by DeCorse becomes a foundational piece to my research. However, there are two reasons it is not adequate. The first is timeliness, because DeCorse conducted her study more than sixteen years ago, it is time for the questions to be asked again. Second, her central purpose in the research was to connect pre-service teacher preparation in integration with in-service teacher practice. As a result, she does little interpretation of the data involving educator definitions.

Purpose of This Study

The purpose of this study was to explore elementary teachers’ descriptions and practices of subject area integration. An emphasis was placed on how these educators describe and practice the integration of science and English language arts. A gap in the literature leaves an unclear picture concerning what elementary educators mean when they say that they “integrate”. Since what teachers are doing when they “integrate” is unknown, it is impossible to predict with any certainty if the Common Core’s expectations for a cross-curricular approach to ELA instruction will be met or what modifications in practice need to be made in order to meet expectations in the future.
This study addressed the problem by interviewing educators about their practice and observing them teaching integrated lessons. Establishing what elementary educators do when they integrate ELA into science and other subject areas will help to lay the groundwork for success with the Common Core. Once current practice is revealed, steps toward desired practice can be suggested.

**Research Questions**

In seeking to understand elementary teachers’ thoughts and practices, this study answered two main research questions. Complete answers to the questions were achieved by answering several sub-questions.

- How do elementary educators map the domain of English language arts integration with science and other subjects?
  - How do elementary educators describe subject area integration?
  - How do elementary educators describe a continuum of integration?
  - How do elementary educators see the Common Core fitting into this domain?

- How do elementary educators’ practices fit within their map of the domain of English language arts integration with science and other subjects?
  - What do elementary educators do when they integrate subjects?
  - In a perfect world, how would elementary educators change their practice of integrating subjects?
  - How do elementary educators feel about their current practice in light of the Common Core?
Definition of Key Terms

- Integration or Integrated – unless otherwise noted, is used as a broad all inclusive term for forms of curriculum and methods of instruction where learning is centered on students constructing meaningful understandings regardless of disciplinary boundaries (Gehrke, 1998).

- Subject Area Integration, Content Area Integration, Curriculum Integration, or Integrated Curriculum – are used as the connecting, merging, or blending of topics from two or more content areas with the intention of allowing students to construct meaningful understandings regardless of disciplinary boundaries.

- Interdisciplinary and Cross-Curricular – unless otherwise noted are used interchangeably with subject area integration.

- All other integration terms are only used in accompaniment with ideas of researchers or participants (i.e. integrative, multidisciplinary, transdisciplinary, core curriculum, correlated, fused).

Significance of This Study

The study is important for me personally because I have always been a strong advocate for integration (as I define it); therefore, I desired to understand what other definitions and practices I may have been advocating when I spoke on behalf of “integration”. I wondered how many educators defined integration with the same rigor found in my own definition. Second, for my professional interests, I see this study as a foundation from which I hope to build future research.
The study is important for the profession because the call for integrated curriculum and practice is not new and it continues. As Montana educators respond to the Common Core’s interdisciplinary demands, one may wonder if their practices will be able to meet the expectations. With integration as a central component for the success of the Common Core adoption, knowing how educators describe integration and put it into practice is essential. The conclusions drawn from this study are important for the profession and have implications for OPI, Common Core Leadership Teams, districts and administrators, and teacher training programs.

Limitations and Delimitations

Limitations

There are two limitations to be addressed with this study. First as a qualitative study, the sample size is a limitation. It was not possible to include a large number of educators as participants; therefore, the conclusions drawn from the study cannot be used to generalize. Second, the data collection has some limitations; data collection occurred over a period of a few months. Following each teacher throughout the year would have provided a far richer set of data. This, though, was not practical.

Delimitations

Several delimitations also need to be addressed. First, this study focused only on subject area integration. The domain of integration is not limited to just subject area integration (Nollmeyer, 2012; Shriner et al., 2010); however, this was the boundary of the study. The answers sought in this research were teachers’ descriptions of subject area
integration with an emphasis on English language arts and science. Next, the study only involved elementary educators. Integration is a practice that is used in education from pre-k to adult, yet this study was limited to elementary education. Finally, Montana was the only state included in the study. Most states have adopted the Common Core; this study only addresses the implications of that adoption for the state of Montana.

Chapter One Summary

Integration has a rich and varied history, yet it is a fluid term that cannot be pinned down. With a number of states, including Montana, adopting the Common Core Standards, practitioners have been called upon to integrate ELA into the content areas. Since little is known about how elementary educators describe or practice integration, it was unclear how they will aspire to meet the expectations found in the new standards. This study sought to uncover part of the answer by interviewing and observing practicing teachers.
CHAPTER TWO

REVIEW OF THE LITERATURE

This chapter is devoted to a review of literature relating to the study. Because of the various converging elements in this study, a number of topics are investigated. First, the foundations of integration are explained. These foundations include the historical origins, the drive for literacy across the curriculum, and the recent arrival of the Common Core Standards for English Language Arts. Then, the aspects of integration that directly apply to the study’s purpose are explored. The benefits of integration are delineated. The fluid nature of defining integration is presented, as well as the evidence for a continuum of integrated practice. Finally, the literature investigating teachers’ perceptions is examined. The results of this review clearly display a gap in the literature that this study helps to fill.

Foundations

Origins

The notion of integration in the classroom has two founding cornerstones that arrived on the scene around the turn of the twentieth century. These cornerstones were Gestalt psychology and progressive education. Gestalt psychology originated in Europe through Max Wertheimer’s work of 1912 (Elder, 1977). Nonetheless, his efforts may have been for naught if it had not been for the teamwork of Kurt Koffka and the verifications in hard science by Wolfgang Köhler. These three, with the help of students and fellow researchers, advanced Wertheimer’s original thoughts by demonstrating the
danger in explaining away the phenomenon of apparent movement using traditional scientific principles (Köhler, 1967). This was the heart of Gestalt. Could phenomena be fully explained by structural analysis, the process of reducing a whole to its component parts, or do the collective parts have an interdependence that carries meaning which is lost when structurally analyzed? (Carr, 1934; Humphrey, 1924; Köhler, 1967).

According to Gestalt, a functional analysis—of the whole—was required. In the timeless example of Mach’s tree, classical, structural analysis stated that the tree is understood by considering its many parts. Gestalt thinking argues that because we experience the whole tree, it is the whole that must be analyzed. Meaning is altered when context is removed in favor of a part (Humphrey, 1924).

Gestalt thinking dovetailed with the thoughts of progressive educators like John Dewey who believed that education needed to be a process of continual growth of social and individual experiences. Since social environments are dynamic, meaningful learning required active discovery by the learner in those environments. When Gestalt psychology was applied to these progressive thoughts, the natural result in curriculum was integration (Carr, 1934; Harrell, 2010; Mathison & Freeman, 1997).

Progressive educators and Gestalt psychology formed a foundation for integrated curriculum, yet the origin of formal practice was Hollis Caswell’s curriculum laboratory. Fraley (1977) documents Caswell’s role in the Core Curriculum movement. Beginning in 1929 he worked with six southern states to develop an integrated curriculum; this curriculum he titled, Core Curriculum. Educators from a particular state were brought to Caswell’s curriculum laboratory at George Peabody University. Here they worked to
develop a curriculum based on the functions of real life (i.e. conservation, production, consumption, and communication). The resulting framework for these social realities was then applied to the subject areas so that each discipline was teaching through the lens of the framework and the curriculum was truly integrated. Caswell’s model for developing a core curriculum was followed in at least five additional southern states, though without Caswell’s consultation.

At the same time, the Progressive Education Association (PEA) began a project that would become famously known as the Eight-Year Study. Progressive educators believed that the traditional curriculums being delivered in secondary schools were seriously flawed by the isolation of the disciplines (Mathison & Freeman, 1997). They believed that preparing young adults to live in a democracy required addressing the everyday concerns of the students and teaching them the knowledge and skills required to meet those challenges (Mitchell, 1985). Dealing with such flaws and making radical changes to curriculum necessitated the cooperation of the university systems since they required the completion of specific subjects for admission. The PEA was able to secure that partnership from 300 institutions for a five-year period beginning with the graduating class of 1936 (Mitchell, 1985; Whitford & Vance, 1979).

The sudden task of constructing a new and relevant curriculum was more difficult than first assumed. Consequently, the PEA leadership organized the Commission on Secondary School Curriculum (CSSC) to establish guidelines for an integrated curriculum. This was no easy task and the resulting contentions eventually became the movement’s downfall (Bullough & Kridel, 2003). Fortunately, for the purpose of the
study, leaders were able to find common ground in the ideals of democracy (Mitchell, 1985). The result was a topic-based curriculum with “fused” or “correlated” content areas (Applebee et al., 2007; Kain, 1993). Science investigation was problem-based and explored through a thematic approach, “Students investigated ‘The impact of Science upon Present Living.’ They explored ‘Superstition versus Science,’ and ‘Health versus Disease, with emphasis on individual and community problems’” (Mitchell, 1985, p. 15).

Surely students coming from such “progressive education” would lack discipline; they would be unintelligent according to classical tradition. Contrary to such assumptions by many outspoken professors, students from the 30 schools outperformed their carefully matched comparison group peers. A few of the highlights include the following: slightly higher grade average, greater degree of intellectual curiosity, larger percentage of non-academic honors, and more active concern for what was going on in the world (Mitchell, 1985). Unfortunately for the PEA and the participants in the Eight-Year Study, the results of the effort were not published until the States had become entangled in World War II (Whitford & Vance, 1979). Because of this understandable distraction, the nation largely missed the study’s shocking results of success.

**Literacy across the Curriculum**

The new Common Core Standards for English Language Arts call for an increased emphasis on literacy across the curriculum, yet this is not a new idea. Content area literacy was a major topic in the literature of the 1980’s and 1990’s (Langer, 1986). The American Library Association (1989) described the need for informational literacy and how it would be achieved through an active, integrated curriculum based on real-
world problems. The primary thrust of the movement was using reading and writing to facilitate learning in the content areas (Harp, 1989; Langer, 1986; McKenna & Robinson, 1990). Writing about content knowledge is an effective way for students to make sense of their own understandings as well as grasp the limitations to their knowledge (Harp, 1989). Children’s literature brings mathematics to life and provides a context for learning (Stewart & Cross, 1993). Integrating literacy, though, is not only helpful for learning the content.

Reading and writing in the content areas is also important for the development of literacy skills. With prior knowledge playing such an important role in reading comprehension, content area reading comes with a whole new set of challenges for students. The need for teachers to teach intermediate students new skills for reading nonfiction content texts challenges the old adage that primary students learn to read and intermediate students read to learn (Harp, 1989). Reading and writing in the content areas also provides a meaningful backdrop for the complex tasks involved in literacy. The content applications allow students to explore their understandings of literacy while focusing on the content (Taylor, 1989).

The Common Core English Language Arts Standards expect teachers to integrate literacy into the content areas. As such, there is an increased emphasis on nonfiction texts. In the 1980’s, the National Council of Teachers of English encouraged teachers to do this same thing. They wanted nonfiction text to represent 50% of the reading in elementary classrooms (Stewart & Cross, 1993). The push for reading in the content
areas emerged in the 1980’s. This emphasized an aspect of integration that was unexplored by early promoters of the practice.

**Common Core**

The title of the Common Core Standards for English Language Arts is “English Language Arts and Literacy in History/Social Studies, Science, and Technical Subjects”. This title makes it clear that ELA skills are a necessary element to understanding. The new standards demand a high level of reading competency and bring back an emphasis on writing (Gewertz, 2012). These demands combined with the push for nonfiction text—even for the youngest students—will require a successful integrated response. Still, the expectation is not simply an application of language skills. Rather, students must learn how language skills (reading, writing, and speaking) apply uniquely in each of these disciplines. The cross-disciplinary ELA standards present a picture of the requirements for college and career readiness (Office of Public Instruction, 2011).

**Benefits of Integration**

It is difficult to argue against the evidence; integration benefits students. Research has shown that students experiencing integrated curriculum are more motivated to learn, find their studies more meaningful, and do as well if not better on standardized tests. The democratic nature of Beane’s (1992) integrative curriculum motivates students to learn because they have a stake in the success of the program. Students are part of the process of curriculum development. They identify major themes for the year, work to reach consensus, and prioritize the topics to establish a yearlong curriculum (Brown,
According to one student, her level of motivation was largely impacted by being given this shared power, “to make such significant decisions: ‘I enjoy having more choice about what we’re doing, especially in choosing writing topics and what we read. We get to explore, excel, and it’s inspirational. Others don’t get to make as many decisions as we do’” (Brown, 2011, p. 201). However, motivation is not only tied to student decisions and the integrative version of curricular integration. MacMath et al. (2010) draw connections between the literature on student motivation and integration. They point out that students are motivated when concepts are meaningful and connections are made to prior knowledge and life outside of school. Such learning experiences are central to integrated curriculum.

Closely connected to student motivation is meaningful learning. Jacobs (1989) expressed the problem through the eyes of a child, “Mike, a 2nd grader, defines mathematics as ‘something you do in the morning’” (p. 1). Students rarely enjoy learning that clearly has no application outside of the classroom. As Beane (1991) suggests, schools often dispense knowledge to students in unconnected fragments like a pile of puzzle pieces without a picture from which to build. Such methods require the students to simply trust teachers when they say the pieces do make a complete picture. Without seeing the full picture—indeed participating in the creation of the picture—the whole affair carries little meaning for the learners. So, where does such learning leave students? “A high school student explained the . . . curriculum like this: ‘Math isn’t science, science isn’t English, English isn’t history. A subject is something you take once and
need never take again. It’s like getting a vaccination; I’ve had my shot of algebra. I’m done with that”’ (Fogarty, 1991, p. 61).

A central aim of curricular integration is meaningful learning; this has always been the case (DeCorse, 1996) and was a driving force behind the progressive education movement of the early twentieth century—as demonstrated by the passionate words of Alfred North Whitehead (1929),

The solution which I am urging is to eradicate the fatal disconnection of subjects which kills the vitality of our modern curriculum. There is only one subject matter for education, and that is Life in all its manifestations. Instead of this single unity, we offer children—Algebra, from which nothing follows; Geometry, from which nothing follows; Science, from which nothing follows; History, from which nothing follows; a couple of Languages, never mastered; and lastly, most dreary of all, Literature, represented by plays of Shakespeare with . . . substance to be committed to memory. Can such a list be said to represent Life, as it is known in the midst of the living of it? The best that can be said of it is, that it is a rapid table of contents which a deity might run over in his mind while he was thinking of creating a world, and had not yet determined how to put it together. (pp. 6-7)

As a constructivist approach to learning, integrated curriculum requires students to construct their own understandings without the passive transfer of knowledge (Yager & Lutz, 1994). It seeks to bring knowledge and skills to bear on the issues of life that matter to the students. This real-world application enhances the meaningfulness of learning (Erlandson & McVittie, 2001). Such student-centered, cognitively engaging activities are rare in traditional classrooms, yet they are at the heart of integration (Applebee et al., 2007).

Following Susan Kovalik’s model for integration, Mrs. Ogborn’s first-grade class offers an example of the meaningful learning achieved through curricular integration. While a new building was under construction for the growing school, Mrs. Ogborn’s
class worked on an integrated thematic project to design and construct their own school. They began with designing and planning which included learning about scale drawings and blueprints. Next, a variety of building materials were used as students constructed miniature models of their designs. When the actual builders began working on the foundation, students learned about rocks and soil. Among other books, *Mike Mulligan and His Steam Shovel* by Virginia Lee Burton was used to help students illustrate the process of construction. Finally, the first graders learned about plants as the landscaping was completed on the actual school (Greene, 1991).

Research has also demonstrated that students receiving integrated instruction perform as well and better than control or comparison groups. Romance and Vitale (2001) conducted a multi-year experiment study involving 51 teachers and 1200 elementary students. The treatment was their own model for integration called, In-depth Expanded Applications of Science (IDEAS). This model devoted a two hour period, traditionally allotted to ELA, to an integrated science and ELA curriculum. Each year, the students in the treatment group outperformed the comparison group on standardized tests. The researchers followed their study up with a second, much larger, multi-year study in the 2000s. This second study involved 185,000 elementary and middle school students. Only elementary students received the IDEAS curriculum, yet the transfer effect was measured by following the students into their middle years. The study showed that students in the treatment group out-performed the control group in both science and reading standardized testing during and after the treatment (Romance & Vitale, 2011).
Romance and Vitale researched their own model for integration. What about other approaches; do other curricular integration programs succeed? Vars (1997) sought to answer this question by examining over 100 studies. In virtually every case, students receiving the various implementations of an integrated curriculum performed as well and often better than the comparison groups.

In much greater detail, Hartzler’s (2000) dissertation research evaluated the results from 30 studies on student achievement in integrated programs. Her selection of studies were collectively more recent than Vars’ (1997) 100 studies, yet she did not simply look for the most current research. She followed strict criteria for inclusion in selecting the studies to be in her meta-analysis. Part of those criteria: “Only quantitative studies were included. Each study had an experimental group, a control group or an equivalent, provided the information needed for abstracting, and the numeric data needed for calculating effect sizes. Each study also provided one or more measures of student achievement” (pp. 45-46).

Hartzler found that collectively the integrated programs had positive effects in all of the assessed categories. Some showed great gains over the comparison groups. Only a few studies had negative effects in any of the single areas of assessment and even those had positive overall outcomes. These results were regardless of the grade levels of implementation, any professional development, the type of integrated model, or the specific students and teachers involved.
Definitions

Over the years there have been attempts made to define integration and its relative terms. Nissani (1995) cites five specific authors who make such an effort. To his list I would add Beane (1992), Brown (2011), and Collier and Nolan (1996) because these authors are willing to write with a level of definitiveness.

- Beane (1992) lumps most “interdisciplinary” models into a “multidisciplinary” designation. In his view, an interdisciplinary curriculum is one in which the concepts and activities are derived by the needs of a central theme. There is no concern for how each discipline may contribute to the study.

- Brown (2011) seems to take his thoughts a step further. Not only does he speak with conviction on definitions, he separates multidisciplinary and interdisciplinary approaches from what he calls “true” curriculum integration. The major distinction he draws is that “true” integration requires student involvement in the design process. In doing so he claims, “Few educators [understand] the design of ‘true’ CI” (p. 195).

- Collier and Nolan (1996) state that the literature clearly presents three models for integration: integrated, interdisciplinary, and thematic. Interestingly their statements do not completely align with either of the previous authors who also speak with confidence.

In general, authors and researchers seem willing to allow the fluidity of the terminology to remain. After all, integration seems to elude those who have attempted to pin it down or break it into any variety of distinct components. On this issue Nissani
(1995) offered his thoughts, “Because such definitions attempt to confer upon this term a precision it does not possess, they run the risk of missing its essential nature” (p. 122).

Therefore, as researchers require definite terminology to express their findings, many point out the lack of consensus before applying personal definitions to their writing (Adler & Flihan, 1997; Applebee et al., 2007; Hartzler, 2000; Jacobs, 1989; Kain, 1993; Lonning, DeFranco, & Weinland, 1998; Nissani, 1995; Shoemaker, 1991; Shriner et al., 2010; Toren, Maiselman, & Inbar, 2008; Wang et al., 2011). Since these authors admit that the terminology is fluid, what do they conclude for their own writing?

Instead of attempting to nail down one definition, most of these authors propose a continuum or range of integrated approaches (Adler & Flihan, 1997; Applebee et al., 2007; Jacobs, 1989; Lonning et al., 1998; Shoemaker, 1991). A couple do propose a broad, all encompassing definition: “[Integration is] bringing together in some fashion distinctive components of two or more disciplines” (Nissani, 1995, p. 122); “Integration involves relationships – relationships between different subject areas, relationships between different content, relationships between different skills . . .” (Hartzler, 2000, p. 19). Wang, et al. (2011) divide the domain into two categories of integration they label as “multidisciplinary” and “interdisciplinary”. The last group, Kain (1993), Shriner (2010), and Toren, et al. (2008), argue that all varieties of integration can fit within two approaches to integration. The approaches they identify are Beane’s, student-centered, integrative approach (Beane, 1991, 1992, 1993, 1995) and Jacob’s subject-centered, curriculum, approach (Jacobs, 1989, 1991a, 1991b, 1998; Jacobs & Borland, 1986).
A couple researchers do not address the fluid qualities of integration yet still take time to define their view of the domain. These two authors are distinguished from previously mentioned researchers (i.e. Beane and Brown) who also fail to discuss the fluid nature of integration. The two are separated because they remain broad in their definitions and do not limit specific terms. Gehrke (1998) defines curriculum integration as, “A collective term for those forms of curriculum in which student learning activities are built, less with concern for delineating disciplinary boundaries around kinds of learning, and more with the notion of helping students recognize or create their own learning” (p. 248). Case (1991) defines content and skill integration as:

Integration of content means connecting the understanding promoted within and among different subject areas or disciplines. For example, a course on environmental problems might integrate information from biology, geology, economics, and cultural anthropology. Integration of skills and processes refers to so-called generic skills and processes. The call to “teach reading and writing in the content areas” is an example of integrating reading and writing “skills” into subjects such as social studies and science. (p. 216)

I have been speaking of integration as a whole domain; but, since my study will focus on integrated curriculum and instruction, how does the literature specifically help to define that word, “integrated”? My search for that answer portrays the disparity in the field: Beane (1992) sees “integrated” as related to just knowledge and skill in a theme; Jacobs (1989) avoids the term completely in her list; Applebee et al. (2007) associate it with predisciplinary curriculum; Lonning et al. (1998) consider “integrated” to describe the connections between disciplines; Huntley (1998) proposes that curriculum is “integrated” when equal attention is given to each discipline through concept assimilation; Harter and Gehrke (1989) agree with Dressel’s terminology where
“integrated” curriculum presents unified knowledge and becomes “integrative” if students create relationships themselves. And the list of authors goes on, most with a slightly different or drastically different view on each word associated with integration.

Yet, beginning with integration’s foundations in Gestalt psychology and the progressive education movement and following the literature through to present day, two consistent threads emerge. First, integrated curriculum in some way always addresses connections between discipline content and/or skill. Second, integration enhances the relevance of school through meaningful experience, and/or student-centered approaches.

**Continuum and Domain**

Part of the frustration in defining the terms surrounding integration is alleviated by seeing the wide range of approaches not as competing models but rather complimentary ones under a large umbrella. This can be justified by identifying these approaches as part of a continuum of integrated practice. Some researchers speak directly of a continuum and propose their own (Adler & Flihan, 1997; Applebee et al., 2007; Fogarty, 1991; Huntley, 1998; Leung, 2006; Lonning & DeFranco, 1997; Lonning et al., 1998; Mathison & Freeman, 1997). Others infer or leave the possibility open in their presentation of the terms (Beane, 1992; Drake & Burns, 2004; Fogarty, 2009; Jacobs, 1989; MacMath et al., 2010). Few of these authors agree on the terminology to be used at each stage of the continuum; however, there appears some agreement as to the scope and directionality of a continuum of integration. In scope, the continuums or variations stay solidly on the side of curriculum and content. Such focus leaves out any consideration of instruction or delivery. In direction, Mathison and Freeman (1997) point
out that most suggested continuums move from discipline based models at one end to totally integrated ones at the other end. Table 1 presents two continuums of integration; both clearly display the scope and directionality found in the literature. Applebee, et al. (2007) refer to their structure as the “Interdisciplinary Continuum”. Jacobs (1989), on the other hand, calls hers as a “range” within the interdisciplinary field.

Table 1

<table>
<thead>
<tr>
<th></th>
<th>Disciplinary</th>
<th>Correlated</th>
<th>Shared</th>
<th>Reconstructed</th>
</tr>
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<tbody>
<tr>
<td>Disciplinary</td>
<td>Discipline-based concepts</td>
<td>Discipline-based concepts related to common topics</td>
<td>Concepts overlapping across disciplines</td>
<td>Concepts reconstructed, eliminating disciplinary boundaries</td>
</tr>
<tr>
<td>Crossdisciplinary</td>
<td>Multidisciplinary</td>
<td>Pluridisciplinary</td>
<td>Transdisciplinary</td>
<td></td>
</tr>
<tr>
<td>Jacobs (1989, p. 8)</td>
<td>Viewing one discipline from the perspective of another</td>
<td>Juxtaposition of several disciplines on one problem</td>
<td>Juxtaposition of disciplines assumed to be related</td>
<td>Beyond the scope of disciplines</td>
</tr>
</tbody>
</table>

*This continuum actually begins with what they call predisciplinary which deals specifically with early elementary.

**Teachers’ Perceptions and Beliefs**

Considering the years that integration has been a topic of research and the difficulty in pinning down a definition of any of the terms, it is surprising that there are so few studies investigating educators thoughts. Of the studies that do seek to understand educators’ perceptions, only two actually requested elementary teachers’ assistance in defining terms. In general, elementary educators’ opinions have been rarely studied. The overwhelming majority of these studies sample middle school and high school educators. This should not be surprising considering the middle school movement’s
assimilation of integration (Beane, 1991). Briefly, I present all eleven of the studies seeking teacher insights.

- Collier and Nolan (1996) sought to understand elementary teachers’ perceptions of three instructional models derived from a slice of the literature: integrated, interdisciplinary, and thematic.
- DeCorse (1996) interviewed elementary educators to discover how their pre-service training prepared them to write and implement integrated curricula.
- Greenleaf et al. (2011) provided professional development for biology teachers and studied how that training affected their success in integrating literacy into their science classes.
- Harrell (2010) investigated middle school and high school science teachers’ preparedness in delivering an integrated curriculum.
- Kain’s (1996) case-study sought to identify how one middle school interdisciplinary team worked through conceptualizing curricular integration.
- McBee (2000) researched elementary and secondary teachers to determine what led them to invest the time and effort required to teach an integrated curriculum.
- Offer and Mireles (2009) sought to understand middle school teachers’ beliefs about the integration of math and science before and after professional development.
- Shriner et al. (2010) studied the extent to which K-12 teacher attitudes and beliefs about integration could be modified through professional development.
• Stinson et al. (2009) surveyed middle school science and math teachers. The purpose of the research was to discover their understandings about the integration of science and math.

• Wang et al. (2011) studied secondary teacher beliefs about STEM integration during and after a year-long training.

• Weilbacher’s (2001) study examined the reasons why middle school teachers chose to use integration as a model for curriculum development.

Just a couple of these studies explored elementary teachers’ thoughts on defining or understanding curriculum integration. DeCorse (1996) found that experienced teachers held to a variety of definitions. These educators were doubtful about their ability to fully practice what they believed integration to be. Collier and Nolan (1996) reported similar findings. When presenting three terms—integrated, interdisciplinary, and thematic—on integration, teachers’ descriptions differed. The responses were unclear and, at times, contradictory. The researchers concluded that professional development was needed for the clarification of terms and the success of any implementation (Collier & Nolan, 1996; DeCorse, 1996).

Chapter Summary

Integration has a rich history and recent relevance. It was first promoted by John Dewey and the progressive education movement the early 1900s. The high point of the early years was the great multiyear study of the 1930s known as the Eight-Year Study. The results of the study, while overshadowed by the outbreak of WWII, revealed that integration clearly had positive effects on students. These finding have since been
confirmed multiple times. At least two researchers, Vars (1997) and Hartzler (2000), have written about the vast collection of studies supporting integration’s success.

With such a long history, it is not surprising that pinning down a consensus definition is difficult. The fluid nature of integration and the variety of approaches that have been developed lead to the need for further study. Some researchers see the domain as being divided between curriculum driven approaches and student-centered approaches. Others present the possibility for a continuum of ways that integration can be accomplished. Few of these studies have sought to understand the perspective of in-service teachers. With the new Common Core Standards expecting literacy to be taught across the curriculum, more research is required into what teachers understand about integration and what they are doing when they integrate.
CHAPTER THREE

RESEARCH METHODOLOGY

In this chapter I present the methods employed to study teachers’ descriptions and practices of integration. First, I lay the groundwork for the study by discussing the research paradigm. Next, I present the study’s context, participants, and my positionality. After this, a pilot study conducted in 2012 is highlighted. Then, the study’s data collection and analysis methods are described. Finally, I address quality concerns and discuss strategies used to ensure trustworthiness and credibility.

Research Paradigm

I worked from the inquiry paradigm of constructivism in this study. Patton (2002) suggests that constructivism asks: “How have the people in this setting constructed reality? What are their reported . . . ‘truths’ . . .?” (p. 96). These thoughts capture the essence of my study. With the experts in congenial disagreement over the definition and practice of integration, what is left for educators to do besides construct their own reality? Therefore, it made sense to employ this natural inquiry paradigm.

The Context

The context of my study is elementary teachers currently teaching in an elementary classroom from kindergarten to fifth grade. These educators are from the Bozeman Public Schools. The selection of the Bozeman Public Schools meets a primary requirement within the structure of the study which is being part of a state that has
adopted the Common Core Standards. The selection is also a convenient one since I live and work in the valley.

**Selection of Participants**

In order to answer my research questions, I identified participants using a combination of snowball and maximum variation sampling (Patton, 2002). I snowball sampled by talking to the school principals about teachers in their building who integrated frequently. I also was given direction by the district’s instructional coach. Following the leads supplied, five participants were selected based on several demographic factors for maximum variation: grade levels taught, current grade level, and years of experience. These participants were assigned pseudonyms for purposes of anonymity.

**Positionality**

In my classroom, integration involved science and English language arts on a daily basis. Science was the backbone of the curriculum; reading and writing skills were taught in isolation and then integrated into the science content. This integrated curriculum was conceptual and thematic. An example yearlong theme is presented in APPENDIX B. This particular example, called *Just Dig It*, my teaching partner and I wrote for a third-grade and fourth-grade multiage classroom. This theme (written for an Alaskan classroom) played off the state’s mining history. The driving concepts that pulled content and skill together were: discovery, similarities and differences, interaction, and cause and effect. From my years of writing and implementing such curriculum, I see
at least a dual directionality to the domain of integration which can be summed up in the phrase, “curriculum and instruction”.

While my experience agrees with the increasing levels of subject area connections (curriculum) found in continuums suggested in the literature, I feel the need for a separate continuum “branch” for the delivery (instruction) of the content. This dualistic thought is displayed simplistically in Figure 1.

![Figure 1. My Personal Conceptualization of Integration.](image)

**Pilot Study**

During the spring semester of 2012, I conducted a pilot study on elementary teacher perceptions about the integration of science and ELA. The pilot was conducted in conjunction with my Qualitative Research class, EDCI 507. The questions asked during the pilot study were similar to the ones proposed in this study. (1) How do elementary educators’ thoughts about integration help to map the domain? (2) How do elementary educators’ descriptions of their practice of integrating science and reading
language arts fit within this domain map? In answering these questions, I sampled teachers from the SILC project (Science Inquiry Learning in Classrooms) using an open-ended questionnaire. Then, I interviewed four of the responding elementary educators and analyzed the data using case study analysis.

The pilot revealed a number of findings that helped me design this study. All four educators saw integration as connecting and blending. They each believed that their current practice of integration was at a low level. This reflected infrequent integration pulling one or more subjects into another content area. Only one teacher spoke of her integrated practice as unit or theme based. Even more uniform was the four educators’ desired practice of integration. In an ideal situation, all four wanted to be integrating at high levels. Yet, they all agreed that being “fully integrated” faces a number of challenges. The challenges they identified can be grouped under several themes: scheduling, planning, management, and comfort/knowledge.

The teachers saw a continuum to integration; nevertheless, they added complexity to the domain by proposing a holistic factor. They felt that real-world experiences and connecting through learning styles were important parts of integrated teaching. These holistic connections coupled with subject area blending resulted in each educator seeing great benefits to integration. All four desired to integrate more fully so that their students would be more engaged and make more meaning from their learning.

The literature places a high emphasis on the vocabulary. Most writers make distinctions between multiple terms. This array of terms indicates or directly calls for a continuum of integrated practice. The four teachers in this study spoke of a similar
continuum of increasing amounts of subject area integration without using terms from the literature to make any distinctions. Instead, they called the differences “amounts” or “levels”.

Data Collection

Data was collected for this study by conducting interviews and observing lessons. The following pattern was used in data collection: pre-observational interview, lesson observation, and post-observational interview. This process was completed with each participant in a compact period of time; I focused on one or two participants at a time.

The first interview was 30 to 45 minutes long and was conducted in the participant’s classroom at the participant’s convenience. The interview guide (Patton, 2002) found in APPENDIX C was used as a framework for the first semi-structured interview. Data was collected during the interview by audio recording. The final question of this interview asked the teacher to perform three tasks with the matrix of integration depicted in Figure 2. Each participant was asked to mark the location that best describes her current practice, mark the location that best describes what her teaching would look like in a perfect world, and mark the location that best describes her understanding of the Common Core Standard’s expectations for integration.

Shortly after the first interview, I observed a 30 to 60 minute lesson where subject areas were being integrated. Data collection during the observation consisted of my type-written notes. In the days following the observation, I conducted a second interview with the participant. Again, these interviews lasted no more than 45 minutes, and every attempt was made to comply with participant’s preferred time and location.
The interview guide in APPENDIX D was used as a framework for this interview. The final question of the interview asked the teacher to place one more mark on the matrix of integration (Figure 2). The participant was asked to mark the location that best describes the lesson taught for the observation.

Figure 2. Matrix of Integration’s Domain

During the pilot study (Nollmeyer, 2012), I developed the matrix teachers used in the interview in an attempt to blend the literature and my own experiences to picture the
domain of integration (Figure 2). For the purpose of labeling the matrix, I used Huntley’s (1998) terminology to establish three of the four points on the matrix.

- “An intradisciplinary curriculum is typified by instruction that focuses on one discipline” (p. 320).

- “An interdisciplinary curriculum is one in which the focus of instruction is on one discipline, and one or more other disciplines are used to support or facilitate content in the first domain” (p. 320).

- “An integrated curriculum is one in which a teacher, or teachers, explicitly assimilates concepts from more than one discipline during instruction” (p. 321).

Across the bottom (x axis) the integration of the curriculum’s content is seen moving from intradisciplinary to interdisciplinary. Up the side (y axis) the delivery of instruction is distinguished by a range from intradisciplinary to needs driven. “Needs driven” is my own invented term; I define it as, delivering instruction on content and skills as such instruction is needed. The diagonal line crossing the matrix moves from intradisciplinary to integrated. The upper right hand corner, integrated, is an equal mix of interdisciplinary curriculum and needs driven instruction.

The process was completed with each participant in a compact period of time. I was able to meet my goal of completing data collection with each participant in less than two weeks. This data collection included the pre-observation interview, the lesson observation, and the post-observation interview.
Data Analysis

The unit of analysis in this study was the individual, and the method of analysis was case study. Patton (2002) gives credence to this approach, “If individuals or groups are the primary unit of analysis, then case studies of people or groups may be the focus” (p. 439).

I transcribed the recordings shortly following each interview. These transcriptions were entered into HyperRESEACHER and coded as a case study. I used a combination of inductive and deductive themes while coding these data. The deductive themes arose from my pilot study (Nollmeyer, 2012) and a review of the literature. Using HyperRESEARCH’s reporting feature, quotes were grouped by theme and printed. From this themed data, a case study was written and then emailed to the participant for member checking. All five case studies were returned with positive comments. Each participant was pleased with how well her case study captured personal thoughts on integration. Finally, all five case studies were compared in a cross-case analysis.

Quality Measures

Patton (2002) gives an involved list of ways for constructivist researchers to control for quality in their research. I have controlled for quality by recognizing my subjectivity, triangulating data collection, piloting my study, and using member checking. First, the constructivist researcher needs to acknowledge his subjectivity and address potential bias. I have done this in the section of chapter 3 called “Positionality”. Second,
triangulation, which can involve a number of measures built into a study, ensures that the results are not manipulated by bias. One set of measures deal with the collection of data. “While interviewing is often an efficient and valid way of understanding someone’s perspective, observation can enable you to draw inferences about this perspective that you couldn’t obtain by relying exclusively on interview data” (Maxwell, 2005, p. 94). I triangulated my data collection by using multiple methods—Interviews and observations—as Maxwell suggests. Next, the pilot study conducted in 2012 also served to control for quality. The interview guides used in this study were piloted and modified based on that experience. The matrix used as a tool during the interviews was used with great success during the pilot study. Finally, I employed member checking to ensure that participants were being presented in a manner that matched what they actually believe. The case studies were promptly delivered to each participant for member checking and were accepted without changes.

Chapter Summary

This chapter was devoted to presenting the methods used to study teachers’ descriptions and practices of integration. I discussed the research paradigm and how it impacted the conduct of the study. I laid out the study’s context, participants, and my positionality. Then, I presented the pilot study that helped to prepare this research. I followed that with an explanation of this study’s data collection and analysis methods. Finally, I handled quality concerns and discussed plans for ensuring trustworthiness and credibility.
CHAPTER FOUR

RESULTS OF THIS STUDY

This study sought to answer two questions. (1) How do elementary educators map the domain of English language arts integration with science and other subjects? (2) How do elementary educators’ practices fit within their map of the domain of English language arts integration with science and other subjects? In order to answer these questions, five participants were studied as cases. In an attempt to map the domain of integration in light of the literature base, each case study was written using the following structure: general description, planning and structure, and continuum matrix. Finally, a cross-case analysis was completed to compare the cases. This chapter presents these cases beginning with the kindergarten teacher, Ms. Cullen, on up to the fifth-grade teacher, Ms. Donner. The cross-case analysis follows the case studies.

Case Studies

Cullen Case

General Description: Ms. Cullen, a kindergarten teacher with 26 years of experience, sees integration as making connections and a natural part of teaching. She believes it is teaching kids the whole of something instead of just the parts. “Boy, I think it’s really hard not to. The minute I think of a topic, I think of the books that go with it because that’s just a love of mine and I think because I’ve seen kids love that.” “I always think, ‘How do kids think?’ And I just don’t believe that kids see an apple and think it’s
just red. They see the whole thing.” Cullen uses the book, *Seven Blind Mice* by Ed Young as an example of this view of integration. “The seven mice, they see an elephant and one sees a pillar; one sees a rope. I always think of it that way. That’s such a great story to show that all the mice saw something—a little different part of the whole, but together the whole was an elephant.” This type of whole teaching includes subject area connections as well as connections of any kind. “I’m a believer in connections. I don’t really care what the connection is. It’s firing a synapse; it’s growing curiosity and questions and interest. And those are all good things.”

**Planning and Structure:** When Cullen plans for integration it is an organic progression. She builds her integrated lessons around science content and the inquiry process. This is her method of choice because of her passion for science, and she understands how engaged children are when given opportunities to explore their world. “I just want kids to love learning, and I think if you have a big topic with a question, they’re going to be curious.” Using her own version of the 5-E model for inquiry (BSCS & IBM, 1989), Cullen plans organically for integration. She doesn’t plan with a detailed structure assuring that any certain number of subject areas or skills get brought into the lessons. Instead she allows for the integration to occur more naturally. “I guess I don’t feel like I purposely set out to integrate like, ‘This will be a math table, and this will be a social studies table.’ But as you are just doing experiments you can relegate them that way.” This works well for Cullen because she does not need conscious planning to ensure high levels of integration. Everywhere she looks she sees opportunities for bringing ELA, math, social studies, and art into her science lessons. “How can you talk
about rocks without talking about measuring and weighing them and that’s math.” “The minute I think of any kind of topic I think of the books that go with it . . . .”

As powerful as Cullen sees the inquiry process, she believes that integrating other subjects is very important. It enriches the learning experience by creating more connections and increasing the possibilities of meaningful learning.

We did some writing which is always good because the writing is where a lot of the explaining comes out in my opinion with the younger kids. They start explaining, and the more that they work at it, they start saying, “Ohhh!” I see a lot of light bulbs when they start to write about things, and then when they read it to the group later.

“So, integration to me, over the long term, helps [students] make connections better and that’s really critical.” “I think [reading] hits a different area. And I don’t want to say it cements it, but it either sparks interest, or it creates a synapse connection to what they were doing with their hands.”

Ms. Cullen believes that her method of integrating is just one among many. In fact she views diversity in teachers as one of the great strengths of a public education; students get to experience the talents of many teachers as they grow.

“I think that’s just me. I don’t think that it’s necessary; I know some fabulous teachers that [integrate] around art or social studies . . . . And I would think immediately about how history impacts science and I would think of Galileo, but a history buff would see it another way. And I don’t think that there’s a difference; I think it’s perfectly fine.”

As Cullen thinks of the different options in integrating, she doesn’t see one as being better than another or even really being different. For example, when her students work with her to write a group sentence about the science concept, she makes a point to completely involve them in the process. “They tell me what to write. I go over a lot, ‘Oh, it’s the beginning of a sentence. I need to use that capital. What do I do? I need a
new word here; what do I do? Finger. Space.’ And I just elicit a lot of that as we’re writing. It’s just modeled writing.’ Yet, she felt that it would still be writing integration even if the teacher simply took the students words and wrote them on the pad with all the needed corrections or additions. “The first time I like to go through the process of writing and how we get to it, but I guess either one would be fine. I just like to put in the process because there are kids that get real excited because they remember, ‘Oh, we need to put a period!’”.

Continuum Matrix: Even though, Ms. Cullen never discussed a continuum or even levels of integration, she readily stated that her ideal practice would put her in the upper right hand corner of the integration matrix (See Figure 3). However, she struggled to place her current practice on the matrix. “I guess I have no idea where I would plot myself, but I would of course like to be—this is where I’m aiming (pointing to upper right corner).” Eventually, she agreed to place a triangle over the area that most closely pictured her practice. Cullen conceded to this because she felt that when she did integrate it was a natural process and things were delivered concurrently without a lot of planning for specific content areas.

As for her practice in a perfect world, Cullen felt that she would like to balance out that ability to integrate organically, with an increased level of structured planning so that she had a more complete integration of all knowledge and skill. She referred to this as a good balance between the delivery of content on the y axis and the combination of
content on the $x$ axis. “I would hope that it would be balanced and that’s hard in kindergarten because we’re always leading up to something else . . . . I guess I’d like it to be up here and be using both of these.” She also believed that this balanced approach should be in the upper right hand corner of Figure 3, where everything was integrated. At first she felt like some rote things needed to be handled in isolation, but as we explored it, Cullen determined that even low level knowledge and skill could and should be integrated. “It would be pretty close to all the way though I’m well aware that there are some quadrant ‘A’ things that have to be done.” “Then, I would go all the way up
because even those little rote things like drill and practice numbers—we could be making it slightly more exciting.”

As with placing her full practice on the integration matrix, Cullen struggled to determine where the observed lesson belonged—quickly admitting the process was difficult. “It is! Because I don’t really set out planning, it just kind of happens. It’s the way that I see things.” In an effort to help Cullen position her lesson, I talked her through what I had seen. At that point, she agreed that the lesson itself belonged up in the upper right hand corner of the matrix. The lesson was an inquiry-based science lesson that integrated ELA, math, social studies, and art. It was a multiday lesson on water; the science content involved the states of water, water’s interaction with other materials, and the water cycle. Cullen stated that tackling such lofty scientific learning goals and such complex concepts was only possible through high levels of integration. She particularly saw the value of integrating reading, writing, and speaking.

Well, I hope the literature (we have fiction and nonfiction), I hope that both of those support the science—especially in this area that’s a little bit more abstract. Up until this point we’ve had something we could hold in our hands: pinecones, wood, shells. Water and the water cycle is a little bit more abstract. So, I really count on the literature to give them a better mental picture.

The day before I observed, students had created a water color painting of things associated with water (i.e. clouds, bodies of water, or boats). This one activity alone not only used the very subject they were studying, water, but allowed for multiple integrated elements.

I think that [art project] fits right in with the new ELA standards because anyone that wanted to share about their artwork later could tell about it, and that getting up and speaking and explaining about something you’ve done and something you’ve created is really difficult for some kids. And
it’s very rich . . . . That fits right in with the ELA because they’re listening and speaking and sharing. That verbalization is great prewriting at this level.

As she always does with her inquiry-based lessons, on the day I observed Cullen had five tables set up through which small groups rotated. She began with reviewing the big question, “What is unique about water?” and the three states of matter. Then, Cullen read, *All the Water in the World* by George Ella Lyon. After some discussion about the book and the powerful words it used, Ms. Cullen took students to each station and explained what they would be doing.

At station one, the students added to their watercolor painting with colored pencil. Cullen regularly checked in with the students at the table and prompted them with things to draw as well as praised them for science content. “You could add some clouds or a glacier.” “Are you remembering that we can get water above ground and underground? That’s what your picture reminds me of.” At station two, an adult helper read books about water with the students. Each student received his/her own copy of the books and at least some helped with the reading. There were both fiction and nonfiction books read at the table. At station three, students explored what happened when water interacted with different substances. Another adult helper was there to assist students in their exploration of water’s interactions. At the fourth station, math was integrated with science. Students explored how many lid-fulls of one lid would fit into a variety of other container lids. Students counted as they poured. They were encouraged to make predictions before each trial, and Ms. Cullen checked in with them on a regular basis. On the previous day, students had counted drops placed on penny-heads.
With this Common Core math, the kindergarten team is doing Common Core this year; we’re piloting it. So, I’m really focused heavily on counting. We did the penny experiment the other day with the drops of water. Our question was, “How many drops of water can the head or tail of a penny hold?” Well, I heard more counting during that half hour than I could have gotten doing anything else. So, to me I think that’s a perfect example of how integrating science and math sparked their interest enough that there was counting. And I heard things like: “This time I got 30. That’s more than last time. Last time I only got 22.” “Somebody over there got 40. That was more than my 30. I’m going to try to get more this time.” And I just thought, what great stuff—at least in my opinion.

Finally, at station five where Cullen spent most of her time, students worked on the next page in their water books. They had already completed the ice page and were working on their liquid page. Each page of the book included both drawings and writing to express their thoughts. Students used various strategies as they wrote on their pages, and Ms. Cullen differentiated her scaffolding with each student. “I usually offer them three things. They can either copy out of a book, or they can try to invent it themselves, or I’ll give them parts. For a lot of them, I’ll just give them parts of words depending on where that child is.”

As for Cullen’s understanding of the Common Core’s expectations for integration, she felt like it was there, but not a point of emphasis (see Figure 3). “I’ve only seen one thing that addressed that specifically, and it was in Science and Children. It was integrating the math and the science which of course is one of the easier things to integrate but also a very important thing to integrate.” One thing that Cullen felt encouraged integration was that the Common Core offered some flexibility to teachers. “I am thankful everyday that we’re all different and that we have latitude. That’s one of the things I like about the standards. I think it frees us and gives us more latitude to teach the way that works best for us.”
Knox Case

**General Description:** Ms. Knox, a first-grade teacher with twenty-two years of experience, describes integration through the lens of teamwork. While acknowledging that integration can and does occur within her classroom without the collaboration of fellow teachers, Knox believes true integration involves grade level teamwork. “What it looks like to me is that you’re team teaching with a group of people that have the same grade level and the same subjects that you teach.” “That’s the beauty of integration—when you work with teachers. That’s what I think integration is when you really work with a group. Integrating [by yourself] in the classroom, you do the best you can.”

Knox says that integration is a matter of weaving together subject areas in the way that is best for kids. “It’s not how many subjects you can teach at the same time. It’s how well kids can relate to real life situations. Can they apply logical reasoning?” This requires a long view on things and collaboration with colleagues. In this way, integration cannot be simple single lessons done by individual teachers. Integration has a long term focus and an essential collaborative emphasis. “It’s an ongoing lesson; it’s not just one shot. It’s ongoing—just like this unit. We could do this for the rest of this year if we wanted. We could take quality rather than quantity and just build on what we do this week.”

**Planning and Structure:** Ms. Knox plans for integration by meeting with her grade level teaching team. They meet weekly and plan for special integrated units. These meetings are inviting, not demanding. “It’s an invitation to teachers, and I’m learning that you can’t demand it. But, if it’s collaboration and you invite—I said, ‘Hey
guys, what do you think about this when we do the Polar Express?’ Treat it as novelty and then build with the team.” The integration that follows provides meaningful learning that weaves together all subject areas. “So, throughout that whole day, they are getting one topic integrating all subjects.” Yet, this teaming approach allows Knox to see even these successful efforts as a work in progress—continually building, improving, and creating greater learning experiences for students.

It’s ongoing and it gets better. It’s always ongoing learning, always, when you’re working with a team because the excitement is there. “Oh, next time I’ll pull in this” or “I’ll do that” or “I can still do this with the next lesson.” It’s the finding out, and then all along the kids don’t stop learning. They’re always learning; it’s just how well you deliver it.

A recent example of her team’s collaboration was the Polar Express Unit. It was delivered fittingly just before Christmas break and ran for a whole week. Using the movie as a building block, Knox taught students all about trains and maps while her colleagues taught other subject areas. For example, one partnering teacher taught a science and math lesson using marshmallows and cocoa. “We were able to integrate all subjects and have fun and teach—like I’m doing transportation. The understanding of different engines, passenger engines, freight engines, freight trains and learning how a train would travel on a map.” “[Ms. Johns] is doing science with measurement of hot cocoa and you know marshmallows and the scientific process of going through how many marshmallows is it going to take to fit on your cocoa.”

While team collaboration is important, Knox strives to integrate even when she is unable to involve her grade level team. At the same time, she feels like the resulting lessons lack the great richness of multiple perspectives and talents. “When you’re doing it by yourself, you don’t get as much. I mean, even though we’re not talking or stopping
because we’re getting it done, we still know that our kids are getting such a menu of each other’s work in our expertise. If I’m doing it by myself, sure they’re getting it.” As Ms. Knox discussed the lesson I observed, which included ELA, social studies, and math, she described how even that successful integration would be strengthened by involvement of her grade level team. “It would be great if they could go into [Ms. John’s] room now and build onto that city or town or go into [Ms. Collins’] room and she would be building on—that would be the time saver. I mean if we did that for a week, we could be done, instead of me trying to pull it out.”

Continuum Matrix: Knox believes that integration is an ongoing process that needs to be accomplished with a team of teachers. Therefore, single lessons that combine subjects have little value in terms of integration. As I discussed this thought with her further, Knox stated that it would be an integrated lesson, but not integration. Because of this long-term, multidiscipline view of integration Knox saw her current practice as a dynamic positioning on the integration matrix (see Figure 4). The issue was not as much the number of subjects being woven together because she was always doing that. The change throughout the year was the increasing opportunities for integration. As the year progresses, Knox is able to build increasing levels of teamwork. “Well, I’ll get a [few] more teachers involved, and we plan more science days . . . . You have to invite them and say, ‘Hey, wouldn’t it be great to save time if we did it this way?’”
In a perfect world, Knox would like to be integrating all of the time with her grade level team; however, she placed this full integration up towards the upper right hand corner of Figure 4 because there is always room for growth. “Oh, if I had everybody, we’re all doing it together. It would be here (indicating spot on matrix). There’s always room for improvement; there’s always learning.” As beneficial as Knox sees such full integration, she recognizes a number of barriers that prevent it from occurring including planning time, district mandates, lack of support, and funds for integrated materials.

Figure 4. Knox Matrix of Integrated Practice.
There’s got to be some direction. There’s got to be some help or else you could flounder around forever. There’s got to be more than one person or two people. It’s got to be—you can’t buck the system either; you’ve got to have collaboration in integration. Wouldn’t it be awesome if we were all integrating? But, we’re not.

The lesson I observed was a multiday social studies lesson that integrated a number of subject areas on the day I observed. Throughout the full course of the lesson, all subject areas were integrated, and Knox placed the lesson up in the upper right hand corner of the matrix. On the day I observed, Ms. Knox began by reviewing the previous day’s work. She did this by taking the students back though the book *Me on a Map* by Joan Sweeney. The book was a natural fit to her lesson because it builds from small to large, just as she was doing in the lesson. “It’s the beginning of the bigger picture; understanding the concept of a world map. I guess if I threw a world map at a first grader, they’d say, ‘What?’” After reviewing Knox shared some of the lists that students created for homework. These lists consisted of items that can be found in each child’s bedroom. Next, before asking students to create their own maps, Knox modeled the task by drawing a map of her own bedroom on a sheet of butcher paper. Then, students used their own lists to draw their bedroom map. While working, they used rulers as a tool to draw straight lines.

In the days following my observation, students shared their maps with their peers and then went “bigger”. “Then, we’ll move into the state, and then we’ll move in to the country. Then, we’ll move into the bigger picture—the world map which is the social studies Common Core question, ‘Draw a picture of the world map.’ That is a question [first graders] are asked three times a year.”
Ms. Knox saw the expectations of integration within the Common Core Standards as being very high. She did not hesitate to place the mark in the far upper right hand corner. The expectation is that all subject areas will be integrated; nonetheless, she expressed concern over the support and tools in living up to that expectation. “Common Core did a nice job of delivering, but they always—there’s no basic foundation. They said, ‘This is where you will be; this is how you’re going to do it,’ but they don’t give the tools to get there.”

Havel Case

General Description: Ms. Havel, a first-grade teacher with seven years of teaching experience, describes integration as teaching two subjects at one time. While she did see places for skills from one subject to be used as “tools” for mastering content within the primary content area, “true” or “full” integration, Havel asserted, needs to have lesson objectives for all subject areas being taught. “I think you’re getting more bang for your buck as far as student learning goes . . . . Are you integrating both subjects fully if there aren’t objectives attached to both? I think you’d hear argument for and against.”

And teacher’s would say, “That’s a tool supporting that”; but then, well, is that full integration? I would say now it’s not because they’re not meeting the goals and objectives in each subject. It’s just the one, and then what are you going to do? The reverse later so you can meet the other one? Why not do them together?

Ms. Havel also sees a completely different kind of integration. She stated that you can integrate through themes; these she described as big ideas or concepts that transfer across subject areas.
One common theme is patterns. We learned patterns in our first unit—which is Common Core because our team has adopted Common Core math earlier than the district. We’re not required until next year, but we just wanted to do it. So, patterns was the big theme . . . . That also translates into reading because one of the strategies in reading is looking for patterns in words . . . . So, tying that much in together, I just think it makes it easier for kids to learn because they see that, “Wow, patterns are patterns no matter where!” I know I see them—patterns in numbers, patterns in words.

Planning and Structure: Planning for integration comes easily for Havel because literacy is naturally a part of every content area. Regardless of what she is teaching, her lessons involve reading, writing, speaking, and listening. “[Literacy is] one common subject that’s in every subject, everyday. I’m constantly repeating a word, having them repeat it back—speaking and listening, that covers that. Writing down their thoughts in each of the subjects so you have writing integrated with math and science and social studies.” Over the past couple years, Havel has become more aware of her integration and much more intentional in her planning, but she realizes that she has always integrated even before she thought much about it. “So, when I think about integration, now I’m thinking, ‘You know, I’m probably integrating more than I think I am—than I’m even aware that I am.’ And that ‘aha’ moment for me came when I realized that literacy was such a huge part of my day.”

Now that she is aware of the potential for integrating ELA throughout her day, Havel is very intentional in what she does, and she believes that it does make a difference. Her integration now is far better that before she was aware of it. Now, being more intentional with her integration, Havel notices the ELA skill work of her students outside of the domain. This allows her to plan with greater foresight and observe their
progress in the all important literacy skills. “The other subjects really can’t be understood or taught without [literacy]. Student that are poor in literacy or are struggling in literacy will have problems in other subjects, and that’s what we see.”

Integration for Havel is more than connecting literacy throughout the content areas. She also integrates math into science and feels that it is an easy match to make. The lesson that I observed is a good example of this. Students used unifix cubes to measure the height of shadows in their science lesson. “Math and science are definitely an easy thing to integrate . . . . You just have to think about how one subject can be used. If it’s math and science, how can math be used as a tool, or how can math be used to present evidence about what you’re doing in science?”

Planning for integration, whether it’s ELA in social studies, science, and math, or some other combination of subject areas, is something Havel is constantly doing because it enriches the learning and it maximizes her learning time. “It’s really hard to cover every single concept in math or in science alone during that block when you have it. The only way to cover each and every area is to integrate because of the time in the day”

“You have to integrate [your content] with all the other subjects. First of all because of time—time to do it—and to make it more meaningful for the kids.”

**Continuum Matrix:** When describing levels in integration, Havel never used the term “Continuum”; however, she did employ several other terms and descriptions. Mostly she discussed different “levels” of integration, but she interchanged this with “full” each time she described the highest level of integration. At one point, Havel also connected the upper right hand corner of the integration matrix in Figure 5 with this idea
of “full” integration. In describing integration in different lessons she had taught, Havel compared them by discussing the difference in the “degree” of integration.

From this discussion she concluded that indeed there was a range to integration. She employed this range while discussing the integration she had done in two lessons. “This would be like a 1 or a 2—on a scale of 1 to 5—this would be a 2, and that would be a 4 or 5 because of the nature of how I did it.” The 1 or 2 piece was how she integrated art into the lesson I observed. Students were drawing pictures of their experiment; yet, they were not working on specific art skills. The lesson that was a 4 or 5, for her, was a much more involved art and science integration. The students had painted images of the sun with great scientific details. “I would say there was more art in that lesson because I was giving them instruction on how to make colors . . . . [The] lesson was on how to use your brush to make the lines. So, that part of it is more art, and the concept was science with the sun.”

Clearly having spent time considering how she was integrating as well as the levels at which she tended to integrate, Havel identified the location of her current practice on the integration matrix with some definitiveness and was able to discuss in detail why. She placed herself just past half way to the right side but well below the line. This was where Havel felt her practice belonged because she was not able to integrate everything, yet but she did so at every opportunity. She also felt that the inherent structure to her day limited her ability to be any further up the y axis.
I’m always trying to bring in at least one. If I can bring in more, I try to do it. But I would—and definitely on this side (pointing to below the line) and not this . . . . I’ve had discussions with my principal and his vision in the future is seeing where we don’t have a reading or a math or a science block; it’s not even call that anymore. So, you’re more here (pointing up the y axis) because you’re not set to a block.

Because of how she has already begun using the Common Core standards, Havel believes that she is already integrating at the level that the new standards expect. She feels that they demand a pretty high level of integration. “There is more integration, from what I can tell, on the Common Core in the math and reading than there has been before . . . . And with the new Next Gen. Science Standards—a lot of integration.”
Ms. Havel was fairly content with the amount of subject area integration she was able to do. The place she really wanted to have more flexibility was in the delivery of her curriculum. In the perfect world she would have as much blending of instructional time as she had of connections between content. Her practice would be balanced that way, on the matrix line, up toward the right hand corner (see Figure 5). “I think I’d want to be up here; like this, but I still think there would have to be some subject areas that I teach that would have to be—like spelling. I don’t think I could teach it any other way just because of the structure involved.”

In the lesson I observed, Ms. Havel began by explaining the exploration in which students were about participate. She did not tell them what they were to do; instead she discussed what they would find at their tables and how they could explore shadows. Each set of partners had a cardboard box, a flashlight, a Playmobile figure, and a stack of unifix cubes. Ms. Havel also prepared the students for the worksheet that went with their inquiry by reading through it. Then, students were turned loose to join their science partner; in a matter of minutes all students were working successfully in their exploration. Ms. Havel and an adult helper she had in the room both began checking in with each group. Havel used a number of inquiry based questions to challenge and prompt students: “How did you use your unifix cubes?” “Can you write that down? Use your words.” “Oh! What happens when you move it back?” While some students took a larger role in writing the answers, Havel was intentional with her encouragement because it was important for her that both partners wrote. “I think the writing part was effective and the drawing for most groups. I know some groups had trouble with the writing. I
actually had to ask what they wrote because I can’t read what they wrote, but that was the intensive kids.”

After students had plenty of time to explore the shadows and complete the questions and drawings on their paper, Ms. Havel brought them back over to the meeting rug where she had students share their findings. She used student comments to think out loud about scientific principles and connect the experiment to shadows cast by the sun. In integrating speaking and listening with the lesson, Havel was very intentional in giving opportunities for each student to speak. “I wanted them to be working together, and that’s why I made sure, when they were sharing, that they each had a chance to say something.”

The lesson was a science inquiry lesson; however, the math and ELA integrated into it were of equal importance to Havel. She feels like that is an important feature of integration; each content area needs to have a purpose within the integration—even when it’s being used as a tool. “I would say subject area integration is teaching two subjects in the same lesson sequence. You know, not less equally, so, with objectives in place for both.” Havel felt that one subject could be used as a tool to facilitate the teaching in a different subject; though, this practice wouldn’t be considered “full” integration. “I would argue that that’s not integration. I guess you could say full integration or not true integration if the objectives on both sides aren’t being met.”

Bilas Case

General Description: Ms. Bilas, a third-grade teacher with nine years of experience, describes integration in terms of connections. These connections can be
between subject areas or bridging the gap between school and the real world. While regularly planning for integration in a variety of ways, Bilas also sees the advantage of connections that arise through teachable moments. Connections coming from teachable moments do not necessarily involve connecting subject areas. Instead, they connect school learning to real life. “And the Native American perspective is completely different than the European perspective . . . . I feel like those connections are integrating kind of real life, like the bigger ideas because students may not remember all of the little things about the Native Americans or whatever, but I think the bigger idea is perspective.”

Planning and Structure: Bilas plans for subject area integration because she believes that connecting reading and writing to her content area units is critical to maximizing instructional time. “So, like when I was thinking about this last writing assignment . . . the first thing I thought about was my social studies content. How can I build a writing assignment around what I’m going to be teaching in social studies, or how can I build a writing assignment around what I’m going to be teaching in science.” This is a regular thought process for Bilas because there is so much ground to cover. She knows that if something had to be cut because of time constraints it would be her science or social studies content that would suffer. Plus, from a pragmatic stand point, connecting subject areas only makes sense. “Why would you be reading other nonfiction texts? That doesn’t make any sense. Why not teach your students how to read the nonfiction texts that gives them the [social studies and science] content?”
According to Ms. Bilas, planning for subject area integration could begin in a number of ways—anything from a topic within a content area to an attention grabber. “I feel like you could start with anything that will spark motivation and excitement for learning in the kids and then once that get’s going that’s when you can start to bring in other pieces—other content areas.” Usually the motivating or attention grabbing piece is based in her science or social studies content. The lesson I observed was part of a unit studying a traditional Native American story; however, it was the reading skills and not the Native culture that formed the foundation of the unit. The social studies content, Indian Education for All (IEFA) standards, science content, and writing skills were given attention as they were needed. When possible, Bilas makes good on natural connections. Since the Native American story was about how the Salish people got fire, Bilas brought scientific inquiry and content about fire into the unit. This unit was unique for Bilas. Normally she allows the content to determine the reading and writing skills needed. “In my animal studies unit we started with an inquiry based investigation, and then, that led us to writing letters to zoos and then collecting information that way. That also led us to writing informational pieces about animals we had chosen.” Integrating reading and writing to her content area units by looking for logical connections allows Bilas to maximize her instructional time.

**Continuum Matrix:** While she did not use the term “continuum”, Bilas saw levels to integration where higher levels of integration would include multiple content areas. “I guess better integration, if it was on a scale, would be when you’re able to connect multiple disciplines . . . . So, if I can connect simple machines with the industrial
revolution and the writing process that would be more complex integration, and you’d be getting a lot more bang for your buck.” These thoughts were reflected well as she identified various points on the continuum matrix (Figure 6). She positioned her current practice toward the bottom left hand corner of the matrix based on the fact that much of her day is not integrated. Regardless of taking advantage of many opportunities to integrate, Bilas is constrained by school-wide structures and the challenges of planning.

The school’s leveled reading program, called Walk-to-Read, makes it very difficult for Bilas to integrate reading with the content areas. During the reading block, she has students from all the third-grade classrooms. If she brings other subjects into this time, she ends up doubling up on what the students do in their homerooms. Attempting to connect reading to science or social studies content at other points in the day is also challenging since her students are in a number of different classrooms for reading.

“Coming from an area where we weren’t doing [Walk-to-Read], I was like, ‘Wow, that’s really cool! The kids are getting reading instruction at their level.’ But, then you can’t integrate because, I’ve only got a third of my regular students in my classroom during that block.”

As much as she loves integration, Bilas concedes that the planning involved in high levels of integration is overwhelming. “I think that it can be difficult on a daily basis so any kind of connecting is beneficial rather than having things taught completely in isolation, separate from each other.” These constraints keep Bilas from integrating as fully as she would like. As her “desired practice” mark on Figure 6 demonstrates, she would like to integrate most subjects most of the time.
She still sees the need for some isolated instruction and isolated content. Primarily, this view is based on the specific needs of her current students. “So, I don’t feel like I can be like, here (pointing to upper right hand corner of the matrix) because math has to be taught in isolation. Especially the last two years I’ve spent here with these students because I think that they have, in some ways, really weak math skills.

The lesson that I observed Ms. Bilas teach was a reading lesson integrating social studies and IEFA. During the lesson, students listened to a traditional Salish story about how the tribe got fire. Students were working on the reading strategy of visualization.
The lesson was heavy on reading and the reading skill. Bilas felt that it could have been more balanced if the students had been able to watch video of the story being told. This could not happen though because the reading skill was visualization, and Bilas had the students close their eyes and try to imagine the story. “If you see the video, it shows an actual Salish leader telling the story. It shows real life Salish children; it shows them in a teepee. So, there’s a lot of their lifestyle piece that you don’t see unless you watch the video, and I didn’t want them to see the video”. This pattern continues throughout the unit. Even though the whole unit involved some social studies, IEFA, science, and art, Bilas stated that it was focused on specific reading skills. Because of this heavy tilt to the lesson, she felt that the mark needed to be above the line and on the far left side of the matrix (see Figure 6).

I think it’s always going to be heavy on the reading—it just is. So, I think that when the opportunities arise, I try to integrate stronger social studies content. Then, you know, like when we’re doing the science lesson, we’ll just be doing the science piece. But I think if you look at the whole unit, it’s going to be heavy on the reading throughout.

As for her understanding of Common Core’s expectations about integration, Bilas felt that the expectation is for nearly everything to be integrated.

I think they do want you, seriously, not even thinking about different subjects. I think they want you to completely integrate it where you would be [fully integrating]. In reading you would be reading about the topic—either fiction or nonfiction. In science or social studies you would be getting the facts about the content through reading or inquiry based activities, and the writing would be connected. Then, your math would be somehow connected to the real world.
Donner Case

**General Description:** Ms. Donner, a fifth-grade teacher with eight years of experience, sees integration as teaching multiple subject areas at the same time. She thinks that it is important for there to be a natural fit in the content being taught, and any subject brought into the lesson needs to contribute to the purpose and goal of the learning. “If it’s a natural fit, I’ll do it. If I’m pushing, I’ll think, ‘Eh, maybe this isn’t the right thing.’ So, if naturally, if I can think of good ways where I’m not just trying to push subjects in, then I do it.” When we began our discussion about integration, Donner felt that anytime another subject area was brought into a lesson (i.e. writing about science content) integration was occurring. “I think you’re integrating if you have multiple disciplines going at one time . . . you can have integration where you’re taking science and putting a little Indian Ed. for All and a little social studies and a little math wrapped in that lesson.” As we explored these thoughts deeper and Donner spent time considering her own practice, she came to the conclusion that true integration required knowledge or skill to be taught for each subject being integrated. In other words, just because students drew a picture about their social studies content or read a book about math concepts did not mean that integration had occurred. Instead, each subject area brought into the lesson needed a purpose beyond being a tool for the mastery of the primary content. “Well, in my original statement, I said yes . . . I guess if I could rephrase it, you know actually teaching skills within different subject matters. Not just having reading in it but actually teaching some skills.”

Often times I start with the science standard and then say, “Okay, so I need to get these math standards, ELA standards [covered].” And so I do
think it does make the integration a whole lot more rich and applicable for students [as opposed to] just throwing in a little of this, a little of that. “Yeah, we’re reading; sure, we’re doing some math.” No, it’s very intent on what I choose.

Planning and Structure: Ms. Donner’s planning for integration occurs primarily around her science content. The main reason for this structuring of curriculum is that she has a love for science. Since her fifth-grade team rotates students for several subjects, science is also the place where Donner has the greatest opportunities to integrate.

For me, my easiest way to integrate is in science. I look at my standards in science, and “Well, okay! This is kind of the big idea, and this is what I have to teach. So, how do I push other subjects into that idea?” On Wednesday, we’re going to do an environmental [lesson]. So, we have to teach environments—we’re going to do environmental impact. And then, I’m thinking like, “Okay how can I get Indian Ed. in there, how can I get social studies, how can I pull other ideas?”

For Donner looking for opportunities to integrate is a natural part of planning. She may begin with her science standards, but that does not mean that content from other subjects is used merely as a means to an end. She examines the standards of other subject areas to determine what should be brought in—what would be a natural fit and also needs to be taught. “I have an environments kit now, and so, I have to look where I’m at in the math standards . . . . If I can find objectives that meet my objectives in science, that’s when I put them together.”

The lesson I observed fit the typical planning method for Donner. She began with her science standards and then looked to the other subjects for the natural fit. The lesson was an environmental impact lesson that integrated Indian Education for All (IEFA), social studies, mathematics, and ELA.
I thought, “Okay, I need to talk about stewardship, and I also need to talk about environments in general.” [That] is the broad standard. But, then underneath that there was this piece of stewardship and so I thought, “Okay, I know about this book which I like a lot” . . . . There was a natural progression into the industrial revolution—which is what we have to teach.

Donner plans for integration in this manner because it works well for her and fits her strengths in teaching; nonetheless, she knows that it is by no means the only way to integrate. There are many options for planning. “It is absolutely one way because I am one person who has a passion for a certain thing; and if you went next door, it would be approached differently—just because of who we are, how we teach, our philosophical beliefs . . . . Yeah, there are many different approaches and entry points.”

**Continuum Matrix:** Donner discussed the range in integrated practice with the highest level as the “best practice” of integration. She compared these levels of integrated practice to anything else in education. We have an ideal best practice for each aspect; but in reality, teaching is always limited by a variety of constraining factors.

Maybe best practice of integration, from the standpoint of what you would maybe read in a book or you see in those special schools, is that you don’t have necessarily a schedule. And so, let’s say you’re studying the environments. Well, somehow you would take your math standards and your science standards and your ELA standards and all of that would kind of be in harmony. You would not necessarily be able to say, “It’s math time, so take out your math,” or “It’s reading time.” Everything is just put together, and the day just kind of flows. And you’re teaching everything all the time.

According to Donner, that would be ideal for teaching and learning—which is why she placed her preferred practice in the upper right hand corner of the integration matrix of Figure 7. However, a number of things get in the way of such full integration.

Integrating completely is challenging because finding reading materials at the correct and
various reading levels is difficult and time consuming. “In English Language Arts at this point, I think my biggest hang-up [is that] I can’t always find the right lexile . . . . To find reading material in math and in science and in social studies at their lexile is actually more difficult that I thought it would be.” There are also practical limitations within any school building. Donner’s school uses a leveled reading program called, Walk-to-Read. She has a number of resource students who are working on a completely different math curriculum.

As a result of these limitations, Ms. Donner identified her current practice toward the bottom of the y axis on the matrix. Yet, because of her focus on bringing subjects together whenever possible, she placed her mark nearly half way through the x axis (see Figure 7). In a perfect world, she would be fully integrating all things. “I would be right here (pointing to the upper right-hand corner), where you would integrate fully all day, and the curriculum was completely integrated. There [would be] no time constraints—if it was possible.” At the same time, Donner acknowledges that such a teaching practice would require an unbelievable amount of commitment. As it is, teachers work very hard and do not have any time to spare. “I say this in full honesty; the dedication that it takes for a teacher to begin the practice of integration I think is really difficult. And so we’re given curriculum, and some days you’re like, ‘Okay, next page.’”

In the lesson I observed, Donner began by grouping students and giving them all a fair-sized strip of butcher paper. Students were being given a chunk of land that bordered a river. Donner tasked them with developing their land however they wished.
With great excitement, students busily got to work. Their strips of land filled up with houses, hotels, and sports complexes. One group added a waterwheel and solar panels to power their development; conversely, most planned without any concern for the environment. Then, Donner hung their land end to end up on the white board—displaying a whole stretch of river. She discussed how people often build our towns and cities next to rivers and the environmental consequences associated with this choice. Each group of students was then called up to describe their development, beginning with the land that was the furthest upstream. After each group presented their development,
Donner explained the pollution challenges related to their development and gave them a handful of “pollution” (represented by paper clips). Each group handed their pollution and any inherited pollution off to the next group downstream. This pattern continued until the last group presented and had gathered all of the pollution.

In the time after my observation, Donner read aloud, *A River Ran Wild: An Environmental History* by Lynne Cherry. It is about the environmental destruction and restoration of Massachusetts’ Nashua River. As a nonfiction piece, it discusses the historical significance of the river to the Nashua tribe and their involvement in restoring the river. Since it was industry that destroyed the Nashua River, Donner next had the students consider the impact of the industrial revolution by analyzing a line graph showing the history of inventions. Then, students wrote and defended a position.

“Would you rather live without those conveniences, or would you rather have those conveniences and have some of the backlash of the environment?”

The lesson included nearly all of the subject areas, and Donner positioned it on the matrix far on the right side. However, she felt that within the lesson there still was significant separation between subject areas; therefore, she was not comfortable placing the lesson very high on Figure 7. Instead, she marked the lesson towards the bottom, far below the balanced line “because there was isolated moments. I mean we put the book away, and we looked at math. There was times when the math was used to—I mean everything tied in—but there was definitely time where I said, ‘Here is the math’. So, we looked at just math.”
Ms. Donner believes that the Common Core Standards do not really expect much subject area integration. She argues that because all of the standards are written separately from each other there could be no real intent to integrate. Donner points out that the new science standards have not been completed yet, and social studies standards have not even been discussed. “I think that the fact that they write them in isolation, to be honest, they don’t have any intention in integration. And the fact that they are just doing ELA and math, and they’ve neglected to include social studies and science—there is no integration at all.” “There was no mindset for Common Core to be integrated, and I don’t know if they looked at the fifth-grade ELA standards and the fifth-grade math standards. The fifth-grade science standards aren’t even done, and they’re by a completely different, ‘they’.”

**Cross-Case**

In this cross-case analysis, I present the compatible themes that emerged within the cases studies, as well as, the contrasting features between the cases. The similarities found within the cases are an organizing description, a planned and natural process, grounded in content, range of options, perfect world versus reality, and best practice. The differences between the cases are understandings of Common Core, whole versus part, collaborative teams, themes, standards, and an organic process. First, I will address the compatible themes within the cases.
Compatible Themes

**Organizing Description:** All five participates described subject area integration as combining subjects. Cullen and Bilas described this in terms of connections, Havel and Donner stated that it was teaching multiple subjects at the same time, and Knox saw it as a practice of weaving. Each statement contains nuances; nevertheless, the foundation is the same. According to these educators, subject area integration is simply combining two or more subjects into the same lesson, lesson sequence, or unit.

**Planned and Natural Process:** In describing integration and how they practiced it, these educators clearly saw it as both a planned for and natural process. Bilas, Havel, and Donner all explicitly stated that they were constantly looking for opportunities to combine subjects. Knox, emphasized the planning done with a grade level team; however, as the lesson I observed demonstrated, she also regularly planned for integration on her own. Of the five, Cullen spoke the least about structured planning, yet the lesson I observed contained a high level of subject area orchestration. The need for planning and the challenge of planning was one of the limiting factors in the frequency of the integration that occurred in at least four of the classrooms. Again, Cullen spoke little about planning and so it is unclear if she sees it as challenge to frequent integration.

At the same time, each teacher spoke to one degree or another about the naturalistic elements within the process of integrating. For Cullen, Knox, and Havel they described integrating as a part of who they are as teachers. Cullen questioned whether she could “disintegrate” if she tried. Knox, saw a natural flow to the whole year that was foolish to separate. Havel, realized that she had been integrating even before she was
aware of it. While clearly more planning oriented, Bilas and Donner felt that true integration required natural connections. They both spoke of combining subjects that had a natural fit. Bilas stated that it was only natural to teach nonfiction reading skills inside of the science or social studies content you were already teaching. Donner equally felt it was counterproductive to force a combination that was not naturally there.

Grounded in Content: Four of the five participants described integration that was grounded in science or social studies. This was not the only way to integrate (as I discuss in the next section). Still, it was the method that was described most frequently. Cullen and Donner planned and taught this way because of their love for science. Each referred to the fact that it was how they saw the world. Bilas regularly builds her integrated units around science or social studies in order to maximize instructional time and cover all of her ELA standards. Havel integrates based upon science and social studies because she sees literacy as being the one commonality throughout her day. Regardless of their reasoning, all four of these educators find themselves planning for integration by bringing English Language Arts into their science and social studies content. The only participant who did not directly discuss planning in this way was Knox. Yet, she does plan this way, at least some of the time, because the lesson I observed was a social studies based lesson that had integrated other subjects into it.

This pattern of integration through content areas was strengthened by my observations; four of the five participants taught lessons built around science or social studies. Cullen’s lesson was an inquiry science lesson and integrated ELA, math, social studies, and art. Havel’s lesson was also an inquiry science lesson integrating ELA,
Knox’s lesson was social studies based and integrated ELA, math, and art. Donner’s lesson was an inquiry science lesson integrating, IEFA, social studies, ELA, and math. The only lesson I observed that was not formed from science or social studies was Bilas’s lesson. Her lesson was founded upon reading skills and integrated IEFA, social studies, science, and art. This though, was not as common for Bilas as integrating with the content areas as her base for planning. Integrating other subjects through science or social studies was a typical strategy for all five participants.

**Range of Options:** Each of the five teachers recognized a range of options for integration. Four of them quickly acknowledged that their methods of integrating were not the only ways to do it. Cullen and Donner, who most routinely integrated through science only, discussed how their teaching peers had different strengths and passions. Each teacher integrates from a place of comfort and knowledge. Havel, Bilas, and Donner all discussed a range of levels for integration. Havel most frequently termed these as “levels”. Bilas discussed the range in terms of “complexity” of integration. Donner, referred to the highest level as “best practice”—discussing all other integration as less than fully integrated.

Even though Knox never directly discussed a range of integrated options, she and the other educators all believe in such a range because each of them quickly grasped the integration matrix (see Figure 2) and discussed the range of options it presents. In fact, it was Knox who suggested that her own practice changed in the “amount” of integration throughout the year. None of the participants described these levels in terms of a continuum; however, all five recognized that moving up and right on the matrix involved
“more” integration or a higher “level” of integration. Four of the five viewed a move in that direction as “better” integration—at least to a point. Cullen was reluctant to describe any level as better than another; though, she personally desired to integrate at a high level.

**Perfect World versus Reality:** These educators all placed their current practice at low levels on the integration matrix and their desired practice at very high levels (see Figure 8). The uniformity in their desire to integrate at or near the “full” level of the upper right hand corner of the matrix is very telling data. Not only does this further demonstrate the range and levels in integration these teachers believe exist, it also shows that, while teachers see the value of integration, something is keeping them from integrating to the degree that they would like. Figure 8 shows that if possible, each of these five educators would like to be integrating at a full or nearly full level. Cullen and Donner did not hesitate in placing their perfect world marks in the upper right hand corner. They described this as completely integrating and fully integrating. Havel, Knox, and Bilas each identified the same location near the upper corner (without knowing that the others had marked that spot). Havel felt like she already did a fairly high level of integrating of subject areas—reflected by how far right her current practice mark is located (see Figure 5). What she wanted to increase was the blending in her delivery. Knox, placed her mark down from the upper corner because she stated that there’s always room for improvement. Bilas, felt that she couldn’t go up to the corner because there are a few things that need to be taught in isolation.
There was not complete agreement on the challenges to integrating at desired levels, but three of the five educators did discuss various aspects of the day’s schedule. Donner, Havel, and Bilas all emphasized the challenge of students trading classrooms for the leveled reading program. Havel and Bilas also discussed the challenges of structured breaks in the day (i.e. reading block and math block). Knox, Donner, and Bilas stated that an added difficulty was the planning time required for integrated curriculum. For Knox, the challenges to integration extended to district expectations and limitations in teaming. Cullen saw the main limitation to her level of integration as her own expertise and level of comfort; she emphasized her personal abilities and preferences.
Best Practices: These educators believe that integration is part of the profession’s best practices. Two elements were discussed that support this idea. First, integration creates meaningful learning. All five of the teachers stated that subject area integration creates meaningful learning experiences. Second, integration allows teachers to make the best use of limited time. Havel, Knox, and Bilas all specifically spoke of integration as a tool to maximize instructional time. Cullen indicated the same thing by referring to integration as “getting to most bang for your buck.”

Contrasting Features

Understandings of Common Core: For these educators there was no consensus on the expectations for integration in the new Common Core Standards. As Figure 9 demonstrates, the participants’ understandings of the expectations are all over the map. While Bilas and Knox basically agree that the new standards expect a very high level of integration, the other three participants view Common Core totally different. Donner sees an expectation for some simultaneous delivery of content; however, she believes that no emphasis has been placed on the actual integration of subjects. Cullen believes that the expectation is for a balanced but low level approach to integration. Havel felt like her current practice represented the expectations for the Common Core because her team had already adopted the standards and were using them as expected. Such a practice involves the integration of many subjects yet not a high level of blended delivery.
Whole versus Part: In her discussion of integration, Cullen described integration as teaching the “whole” instead of the parts. She emphasized the need for students to see the whole so that it makes sense. This idea was unique to Cullen’s description. None of the other teachers referenced this view of whole versus parts, but Knox discussed a different idea dealing with whole versus parts. She described integration as something that extended through the whole year. Because of this view, Knox did not see a single lesson taught in isolation to be part of the domain of integration.

Collaborative Teams: Four of the five participants discussed using a team approach to integration; however, while three of them viewed this as an option in
integration, Knox saw collaborative teaming as a defining feature of integration. While she herself clearly integrated on her own, Knox always discussed integration in terms of her grade level team. This was unique to Knox’s view of integration; no other participant mentioned teaming as a critical feature to the practice.

**Themes:** Only two educators discussed themes in describing how they integrated, and neither explained them in the same way. Havel brought up themes in reference to conceptual ideas that cross disciplinary boundaries. Her example was the concept of patterns. Her first graders were reviewing mathematical patterns at the same time that they were exploring word patterns in reading. Knox, did not directly state the word “theme”; however, her description of the integrated units taught by her grade level team match the descriptions of thematic units—as described in the literature. Where other participants’ descriptions of integrated units clearly emphasized a science or social studies foundation, Knox’s descriptions were much more thematic. For example, she spent a fair amount of time discussing the “Polar Express” unit her team was currently teaching.

**Standards:** In describing the range of options in the practice of integration, there was general consensus about amounts of integration. At the same time, educators were split over the details. Two teachers, Havel and Donner, believed that true integration required lesson objectives or standards for each subject area in the lesson. In other words, reading an article in science class would not be considered to integrate reading unless specific standards or lesson objectives were being met. The other three participants did not state such an expectation.
**Organic Process:** While planning for integration was clearly performed by all participants, it was not as important to Cullen. She described her planning for integration as an organic process. She integrated subjects as the opportunity arose and felt like she never really set out to integrate certain subjects or certain skills. Her focus was on the science inquiry process and allowed the integration of other subject areas to occur in a natural manner. None of the other four educators spoke of their practice in this way.

**Chapter Summary**

This chapter presented the results of the study. Five participants were studied as cases through data gathered by interview and observation. Each case was presented in the chapter by reporting the teacher’s general description of integration, planning for integration, and a discussion associated with the integration matrix. After the five case studies, a cross-case analysis depicted the common themes within the cases and the discrepancies between the cases.
CHAPTER FIVE

DISCUSSION

This chapter presents the conclusions drawn from the data. First, the findings are summarized by associating the conclusions with the appropriate research question. Next, the findings are related to the framework in the literature further demonstrating the fluid nature of integration. Then, the findings are interpreted to describe the domain of integration through the delineation of four variables. After this, the implications of this study are described for targeted entities: educators, OPI, Common Core Leadership Teams, districts and administrators, and teacher training programs. Finally, the chapter concludes with a discussion of directions for future research.

Summary of the Findings

The purpose of this study was to explore elementary teachers’ descriptions and practices of subject area integration. An emphasis was placed on how these educators describe and practice the integration of science and English language arts. A gap in the literature leaves an unclear picture of what elementary educators mean when they say that they are integrating. Another purpose of this study was to discover how elementary educators’ descriptions and practice of integration match with their stated understandings of the new Common Core Standards. To determine teachers’ descriptions and practice of integration, five elementary educators were identified and studied as cases. In this chapter, conclusions are drawn from these cases.
Teachers’ Descriptions of Integration

One question this study answers is: How do elementary educators map the domain of English language arts integration with science and other subjects? As the teachers in the study described their practice of integration, a number of commonalities were found; however, with nearly as many unique features in the data, it still remains challenging to establish a concise definition. In simple terms these elementary educators described subject area integration as combining two or more subjects into a lesson, lesson sequence, or unit. Such combinations are planned yet natural; teachers who desire to integrate regularly look for such opportunities, but their planning involves identifying natural fits. They don’t combine subjects by force. This study’s participants frequently began with the standards they are teaching in a science or social studies unit and plan for ways to integration reading, writing, and/or speaking and listening skills into the content area unit. The same could be said for integrating math or art.

This description of integration is by no means the only way to accomplish the task. In fact a wide range of options for integration exist. This range of options no doubt adds to the confusion in defining integration; yet, it is this very characteristic that allows educators to integrate with success. The teachers in the study stated that they work best from positions of passion and expertise. The flexibility in the range of options for integration makes this possible. Teachers who are passionate about science (like Ms. Cullen, and Ms. Donner) are able to use their science knowledge and passion for science to develop dynamic units that integrate ELA and other subject areas. Teachers with a
love for social studies, art, music, or reading can build their integrated plans around those subject areas.

The educators in the study also discussed a range of levels in integration. However, close consideration of the data demonstrates that the levels and ranges discussed by these educators are not merely options within the same variable. For example, Bilas spoke of an increasing the number of subjects being integrated as a higher level of integration while Havel described high levels of integration as requiring lesson objectives for each subject being integrated. Obviously, these two descriptions of high and low levels of integration are not referring to the same features of the domain.

Both of the teachers, Cullen and Donner, who placed their desired practice in the upper right-hand corner of the matrix, stated that they wanted to “fully” integrate. They described this as a classroom where every subject area was combined all of the time. On the other hand, a careful examination reveals that only part of that statement is found on the matrix, “every subject”. Frequency (“all of the time”) is noticeably absent from the matrix. Clearly, description of the domain of subject area integration requires a system of categorization for meaning to be established.

Based on the descriptions and practices of teachers in this study, it is apparent that the domain of subject area integration can be described by at least four variables: the subjects in integration, the frequency of integration, the delivery of integration, and the depth of integration.

- The number of subjects integrated can vary. From a baseline of combining only two subjects, the level of integration increases with the addition of other subject
areas. At a high level for this variable, curriculum is developed around real-world problems that require knowledge and skill from all or nearly all grade-level subject areas.

- The frequency of the integration would begin with a single isolated lesson. The high end of this variable would be a full day, full year level of integration. This variable clearly has the largest range of options.

- The manner in which the integration is delivered also has a range in practice. The lower level of this category would be where all subject areas being integrated are still taught in isolation. At a high level, delivery of instruction would be such that knowledge and skill are delivered as needed with no regard to subject area.

- Finally, there is a range to the depth of the integration. At the lowest level, knowledge or skill from one subject area is used to facilitate learning within a second subject area. At a high level, standards from multiple disciplines are being met through curriculum developed around real-world problems. At such a level no discipline is the “primary” or organizing subject matter.

The integration matrix developed in a pilot study (Nollmeyer, 2012), used in the interviews (see Figure 2), and displayed throughout chapter 4 (see Figures 3-9) displays just two of these four variables. The x axis of the matrix depicts the number of subjects integrated; however, in the new model the range on this variable extends beyond the integration of all subjects. The y axis represents the amount of integration occurring according to instructional delivery and accurately depicts the variable. Participants in the study interpreted the x axis as including the frequency of the integration, yet these
variables are not the same thing—further demonstrating the need for a more complete model.

The elementary educators who participated in this study believe in subject area integration and desire to practice it at high levels. However, they describe their current practice as having a low level of integration. Several of the struggles they face are caused by things they cannot control. The constraints of a school day schedule make high levels of integration difficult. Leveled reading programs and individualized education programs that remove students from the classroom are also a challenge. Finally, planning time, materials, and administrative support are barriers beyond teacher control. Added to these constraints, the practitioners in this study came to no consensus about the Common Core Standards’ expectations for integration. Some believe that the new standards expect a high level of integration while others do not think there is much expectation for integration at all.

Teachers’ Practice of Integration

Another question this study answers is: how do elementary educators’ practices fit within their map of the domain of English language arts integration with science and other subjects? Teachers who desire and plan to integrate tend to do so by bringing one or more subject areas into another main subject area. This frequently occurs within science and social studies content. Four of the five lessons I observed for this study were so designed. Lessons and units were constructed by starting with the science or social studies standards. Then, participants looked to the ELA standards and determined ways to bring reading, writing, and speaking and listening into their content area units. Beyond
ELA, some teachers also brought math and art, as well as, the opposite content area (science or social studies) into the units.

For the teachers in this study, their practice of integration was typically at a higher level on one of the domain’s variables than the other three. It seems that increasing the number of subjects integrated involves the least complications. The lessons observed involved higher levels on the subject area variable—each combining three or more subject areas. The other variables (frequency, depth, and delivery) prove to be more challenging. In a perfect world, the teachers would like to mediate these challenges and be integrating at high levels on all four of these variables.

Compatibility of the Findings and the Literature Framework

The two consistent threads that run through the framework of integration’s literature are the ideas that integration is in some way about combining knowledge and skill from two or more disciplines and that it produces meaningful learning. These two foundational principles are verified by the findings in this study. Beyond these foundational principles, there are a number of commonalities between the finding of this study and the literature base. Before getting to those, it is important to consider the similar studies previously conducted.

Two studies in the literature closely align with my research by design and participants. Collier and Nolan (1996) studied elementary pre-service and in-service teacher understandings of integration. DeCorse (1996) studied how elementary teachers were prepared for the task of integrating by pre-service training. A number of the responses quoted in DeCorse’s research could well have come from the lips of my
participants. Unfortunately, DeCorse’s focus was on implications for teacher training programs, so her conclusions do not discuss teacher descriptions. On the other hand, several of Collier’s and Nolan’s (1996) findings are echoed in my own research. They found that educators integrate because they can maximize instructional time and increase student interest; nevertheless, such integration requires more planning time. The educators in my study report the same things.

A number of similarities can be found between the literature framework and my current study. The educators in this study attribute meaningful learning to integration. They see it as application and real-world oriented providing a context for students to see the value in the knowledge and skill. These teachers believe integrated curriculum creates meaningful learning because it allows students to use knowledge and skill learned in one subject to facilitate their learning in another subject. This finding is supported in the literature. Meaningful learning has long been a foundational element to integrated practice (DeCorse, 1996), and students make more sense of learning when they see an application or purpose (Beane, 1991; Erlandson & McVittie, 2001; Fogarty, 1991; Jacobs, 1989).

The descriptions and practices of the educators in my study line up with some of the descriptions and definitions in the literature. Nissani’s (1995) broad definition of integration as a bringing together of two or more disciplines fits well with elementary educators’ general description of the practice. Case (1991) divides integration into the categories of “content” and “skill”. His description of “skill” integration closely matches the descriptions and practices of the teachers in the study. According to Case, “skill”
integration is bringing skills like reading or writing into content areas like science or social studies. This “skill” integration is a form of integration occurring in elementary classrooms. Several teachers in this study emphasized the point of “connections” in describing integration. This is similar to Hartzler’s (2000) description of integration as an issue of relationships—relationships between subject areas, between content, and between skills.

While the previously mentioned definitions from the literature base demonstrate agreement with the views of educators in the study, most definitions in the literature do not align with how these teachers spoke of their own practice. No support was found for Beane’s (1992) assertion that an interdisciplinary curriculum is thematic. Nor did educators speak of essential involvement of students in the planning for integration as suggested by Brown (2011). The participants’ descriptions do not agree with Harter and Gehrke (1989) who stated that integrated curriculum presents unified knowledge. Finally, though Applebee et al. (2007) claim that predisciplinary (elementary) curriculum is automatically integrated; the elementary educators felt that their current practice was mostly nonintegrated.

The lack of consensus between the descriptions and practices of elementary practitioners and definitions found in the literature further demonstrate the fluid nature of subject area integration. The literature was missing elementary teachers’ descriptions of integration; the findings of this study present the descriptions of five educators. Comparing these cases to the literature base, individual differences are advanced;
however, a combination of the four variables can be seen in the data as a way to describe the domain of subject area integration.

A major theme in the literature is a continuum of integrated practice. The principle in this idea, that there is a range of integration, is readily agreed upon by the elementary educators who were a part of my study. Most continuum models in the literature move from no integration of subjects at one end to the integration of all subjects at the other end (Mathison & Freeman, 1997). The practice of teachers supports this notion of leveling integration based on the number of subject areas combined. In fact, while elementary educators do not use the term “continuum” when discussing these levels, they do refer to the continuum as a “range” of approaches which is a phrasing that can be found in the literature (Jacobs, 1989).

The similarities between continuums found in the literature and teachers’ descriptions of a range of options are outweighed by the many differences. As these teachers discussed ways of integrating, they did not describe approaches that align with Applebee et al.’s (2007) categories: disciplinary, correlated, shared, and reconstructed, nor Jacobs’ (1989) categories: crossdisciplinary, multidisciplinary, pluridisciplinary, and transdisciplinary (see Table 1). The continuums presented in the literature describe the domain of integration in linear terms; conversely, the range of options, as seen by the elementary educators in this study, do not fit within this simple view of less to more. Even the dual axes of the integration matrix (see Figure 2) used to collect data failed to fully capture what educators described as the domain of integration. Instead, the data
points to a model consisting of at least four variables: subjects in integration, frequency of integration, depth of integration, and delivery of integration.

Describing the Domain of Integration

Based on the analysis of data in this study, I propose a model of the domain of subject area integration comprised of four variables. Table 2 organizes a description and an example of a low, medium, and high level for each variable. Evidence from the study, by means of participant quotes, is presented for most variable levels. Connections are also made to the literature by the inclusion of insights from researchers. The first variable, subject areas in the integration, aligns with the directionality of continuums in the literature. At a low level only two subjects are combined. The range of options within this variable was presented on the integration matrix used in the study and discussed by each participant. The second variable, frequency of integration, was one of the most conversed aspects of the practice. The educators in the study all desired to integrate more often and gave detailed explanations about the challenges that make an increase in frequency difficult. The third variable, delivery of integration, was also on the integration matrix used in the study. The range of options within this variable are strongly challenged by things out of teachers’ control including district mandates, various programs, and building schedules. Four of the five teachers in the study pointed to these issues and others as hurdles to an integrated delivery. The final variable, depth of integration, was discussed by four of the five educators. This variable has a limited range, but according to some of the teachers in the study, the depth of the combination can create distinct differences in integration.
Table 2

*Modeling the Domain of Integration: Descriptions and Evidence*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Low Level</th>
<th>Medium Level</th>
<th>High Level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subject Areas in Integration</strong></td>
<td>Lessons combine two subject areas.</td>
<td>Lessons combine most or all subjects taught at the grade level.</td>
<td>Lessons are developed around real-world problems that require knowledge and skill from all or nearly all grade level subjects.</td>
</tr>
<tr>
<td></td>
<td>“I think teachers would normally think about it as just two [subjects] because you don’t—you kind of think in pairs I think, naturally.” Havel</td>
<td>“I hope the tactile, using the water with the lids, I hope that that was math and science. What else did we do? We did some writing which is always good . . . . Then, they read it to each other or they read it to the group later.” Cullen</td>
<td>“So, let’s say you’re studying the environments. Well somehow you would take your math standards and your science standards and your ELA standards and all of that would kind of be in harmony.” Donner</td>
</tr>
<tr>
<td></td>
<td>“Moving toward the middle of the continuum represents an increased infusion of one discipline (mathematics or science) into the teaching and learning of the other discipline” (Huntley, 1998, p. 321).</td>
<td>“Interventions, for example, leads to the study of simple machines in science, to reading and writing about inventors in language arts . . . to drawing and studying Rube Goldberg contraptions in math” (Fogarty, 1991, p. 63).</td>
<td>“[It starts with] a problem, idea, or concept, and builds knowledge from a variety of areas without regard to disciplinary boundaries” (Adler &amp; Flihan, 1997, p. 7).</td>
</tr>
<tr>
<td><strong>Frequency of Integration</strong></td>
<td>Integrating only a few lessons in the year.</td>
<td>Integrating on a regular basis like one day a week.</td>
<td>Every all of the time, every lesson, every day, all year long.</td>
</tr>
<tr>
<td></td>
<td>“Well, I get a [few] more teachers involved, and we plan more science days.” Knox</td>
<td>“I would [like to teach] where you would integrate fully all day and the curriculum was completely integrated.” Donner</td>
<td></td>
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<td></td>
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<tr>
<td><strong>Table 2 - Continued</strong></td>
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</tr>
<tr>
<td><strong>Delivery of Integration</strong></td>
<td>Knowledge and skill for each subject area is delivered separately.</td>
<td>Around half of the knowledge and skill content is delivered separately and about half is delivered as needed regardless of subject area.</td>
<td>Knowledge and skill is delivered as needed regardless of subject area.</td>
</tr>
<tr>
<td><strong>Delivery of Integration</strong></td>
<td>“If I had complete control over my classroom, I would probably be reading science content during my reading block.” Bilas</td>
<td>“I think honestly if you had the perfect scenario [you would] teach a lesson, a unit, where you couldn’t really distinguish between [subjects]. Okay, ‘this is math and this is the science part.’” Donner</td>
<td>“The integrated day is a natural day. Time is structured according to the needs of the students, and the needs of the curriculum are planned around them, rather than institutional demands” (Jacobs, 1989, p. 17).</td>
</tr>
<tr>
<td><strong>Depth of Integration</strong></td>
<td>Knowledge or skill from one subject area is used as a tool to enhance learning in another subject area.</td>
<td>Standards and objectives are being met for each subject area being integrated.</td>
<td>Standards from multiple subjects are being met through curriculum developed around real-world problems. No discipline is the “primary” or organizing subject matter.</td>
</tr>
<tr>
<td><strong>Depth of Integration</strong></td>
<td>“You just have to think about how can one subject be used, if it’s math and science, how can math be used as a tool?” Havel</td>
<td>“I think whenever you can integrate the standards from any subject matter whether it be math or reading or whatever it is, I think it makes the integration that much more rich because you’re touching on all of the things standard wise.” Donner</td>
<td>“Curriculum integration begins with the identification of organizing themes . . . . drawn from real-life concerns . . . . [it] transcends subject-area and disciplinary identifications; the goal is integrative activities that use knowledge without regard for subject or discipline lines” (Beane, 1995, p. 619).</td>
</tr>
<tr>
<td><strong>Depth of Integration</strong></td>
<td>“They combined literature and science to make the science content more interesting and meaningful. The literature, they said, had educational value, but the primary emphasis was the science” (Mathison &amp; Freeman, 1997, p. 14)</td>
<td>“At the center of the continuum are those activities meeting the curricular objectives for both science and mathematics” (Lonning et al., 1998, p. 313)</td>
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</tr>
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</table>
Table 2 - Continued

*Note.* There are two types of information found in the cells for each variable. At the top is a short description of the level for the variable. Below the description, most cells have one or two quotations that support the description. These quotations come from either the participants of the study or from the literature on integration.
The interaction of these four variables provides clarity in describing a particular integrated practice. By utilizing a bubble chart, this interaction can be visually displayed. First, the frequency of the integration and the subjects in integration are associated with the $x$ and $y$ axes. Figure 10 shows the positions along these axes. As the frequency of the integration increases, the position of the plot moves to the right. Since the range in this variable moves from a single lesson to every lesson in the year, half way across the axis would describe half of the lessons in the year being integrated.

Figure 10. Variables Associated with the $x$ and $y$ Axes on the Bubble Chart.

The number of subjects being integrated is displayed on the $y$ axis. At the bottom of the axis only two subjects would be integrated. The further up the axis the greater the number of subjects involved. With an increase in both frequency and the number of subjects being integrated, the position plotted would move toward the upper right hand corner of the chart.
The third and fourth variables are associated with bubbles used to plot the position on the chart (Figure 11). The depth of the integration is displayed by the size of the bubble—the smaller the bubble the lower the level of depth. A small bubble, then, would display a practice that uses one or more supporting subjects to facilitate the learning in an emphasized subject. An increase in the level of this variable is displayed by an increase in the size of the bubble.

![Diagram of bubble chart with depth and delivery of integration notations]

**Figure 11. Variables Associated with the Circles in the Bubble Chart.**

Similarly, the delivery of the integration is depicted by the shading in the bubble. A light shade represents a low level of integrated delivery, indicating the integration is in the structure of the content but knowledge and skill are delivered in isolation. For example, a teacher may have students write about their science content, but the science work and the writing take place at separate times in the day. As the shading darkens, the
level of the delivery increases. A dark shade indicates that content is being delivered as needed regardless of the subject area or a set schedule of classes.

Figure 12 displays the interaction of the four variables in this model of the domain of subject area integration. Plotting a practice on the figure, involves the consideration of each variable. Moving from left to right represents an increase in the frequency of the integration. Moving from bottom to top represents an increase in the subject areas involved in the integration. Increasing the circle’s diameter represents a deeper integration. Finally, a darkening of the color indicates an increase in the integrated delivery.

Each circle on the model represents an individual integrated practice; three plots have been labeled for the purpose of describing the associated practice of integration. Teachers “A”, “B”, and “C” have been labeled.

- Teacher A integrates frequently. Over half of the lessons she teaches are integrated. These lessons have a high level of subject area integration as well as a high level of depth in integration. Her curriculum is constructed around real world problems that are not driven by any one discipline but require the knowledge and skills from most subject areas. Teacher A delivers this integrated curriculum as knowledge and skill are needed without regard for subject area.
Figure 12. A Model of Subject Area Integration. The $x$ axis presents the range for the frequency of the integration. The $y$ axis presents the range for the number of subjects in the integration. The size of the circle presents the range for the depth of the integration. The shade of the circle presents the range for the delivery of the integration.

- Teacher B integrates English language arts into her science curriculum. These are the only two subjects she integrates; however, her frequency of the integration is high. Teacher B integrates with virtually every science lesson she teaches throughout the year because she uses a science notebook as a central piece to her program. The depth of this integration is at a medium level. She has both science and ELA standards in mind as students write in their science notebooks. Nevertheless, she has a set schedule for her day and does not attempt to do any of the actual writing instruction during her science block. This means that her delivery of integration is at a low level.

- Teacher C teaches integrated lessons rarely throughout the year. She usually builds these integrated lessons around her social studies content. When she
teaches these lessons, all or nearly all of the subjects are part of the integration; however, there is a low level of depth. Teacher C is focused only on students understanding the social studies content. The ELA, math, science, and art knowledge and skills that are brought into the integration are only used as tools to support and add meaning to the social studies content. Some of the time, the typical schedule of the day is removed and knowledge and skill are used in the flow of the curriculum. At other times, Teacher C keeps the schedule in place and just uses those blocks of the day to work on those pieces of the integration.

**Implications**

The findings from this study have implications for many stake holders in education. Educators seeking to enhance their practice of integration will find the variables lifted from the data a helpful framework. The Office of Public Instruction and Common Core Leadership Teams can compare integrated practice and current teacher understandings of integrated expectations with actual expectations and desired practice. Districts and administrators can use these findings to plan for professional development. Finally, teacher training programs, in concert with OPI, can use these findings to update pre-service teacher education.

The findings of this study are encouraging to today’s elementary educators. The five teachers in this study, all desiring to integrate at high levels, placed their current practice of integration low on the integration matrix. This data should encourage other educators struggling to integrate. The challenges discussed by the participants will also inform teachers who are contemplating their options for integration. These educators
desiring to enhance their practice with an increased level of integration will find the variables in the domain of integration helpful. These four variables will allow educators to consider the ways in which they could increase their level of integration. Finally, the disparity in the participants’ understandings of the expectations for integration in the Common Core Standards should provoke elementary educators to look into this aspect of the new standards.

Several conclusions from this study should encourage action from OPI and Common Core Leadership Teams. First, the disparity in understandings of the expectations for integration clearly demonstrates a need for additional instruction on this facet of the standards. Still, a more basic challenge for OPI and the leadership teams is answering the questions for themselves. What is the expectation for integration from the standards and what is meant by that level of integration? With these answers, policy makers and leaders can evaluate the reported practices of these educators and determine the best ways to mediate any differences between practice and expectations.

In similar fashion, districts and administrators should glean actionable information from the findings of this study. A district or administrator who desires to see an increase in integrated practice by elementary educators is provided with a window into teacher practice, the challenges to integration, and four variables that can assist in professional development. These districts should be encouraged by the report that at least these five educators speak highly of integration, see its value, and desire to integrate more fully. The data in this study point to ways that administrators can facilitate increased levels of integration. A number of the challenges described by the participants involve
building-wide or district-wide decisions. Finally, districts can make use of the four variables in the model for the domain of integration in professional development.

Suggestions for Future Research

The data in this study help to map the domain of subject area integration. A model consisting of four variables is supported by the descriptions and practices of the five cases. This model provides a thorough framework for describing the various options in the range of integrated practice. However, the results from this study also indicate a number of directions in future research including challenges to integration, measuring integrated practice, and attributing value to the variables in the proposed model.

With all five educators in this study describing their current practice as having a low level of integration, it is clear that research is needed into the challenges faced by elementary teachers desiring to integrate. Several difficulties can be drawn from the data in this study, yet these were not explored in detail since it was not the purpose of the research. While McBee (2000) delineates a list of these barriers to integration gathered from a number of researchers, updated research needs to be done. Since at least two of the four variables in the model of integration are impacted by these challenges, new research exploring these barriers is needed.

While the results of this study allows curriculum leaders, administrators, and other teachers a window into the current practice of elementary educators, research is needed in developing a way for measuring current practice. Since it appears unlikely that a simple definition for integration will be agreed upon anytime soon, a tool for
measuring integrated practice would be extremely helpful in monitoring teacher practice and planning for professional development.

The model of the domain of integration interpreted from the data in this study remains untested. Further research on the variables of the model would help to refine the model. One aspect of this research should be to attribute value to the levels of each variable. The purpose behind such a model of the domain is to describe teacher practice and promote professional development. However, without additional research it remains unclear if each variable is equal in value. Should educators focus on increasing their level of integration on one variable more than another? With four variables to choose from, this question and others are important to answer.

Summary

This study was designed to reveal elementary teachers’ descriptions and practices of subject area integration. The focus was to explore how these teachers thought about their integration of English language arts in science as well as other subject areas. The study asked two overarching questions. How do elementary educators map the domain of English language arts integration with science and other subjects, and how do elementary educators’ practices fit within their map of the domain of English language arts integration with science and other subjects?

The data collected from the five participants through interviews and observations was analyzed using case study analysis. Themes emerged from this analysis and were further explored during a cross-case analysis. The case studies were returned to the
participants for member checking, and each participant was pleased with the results and no changes were requested.

While interpreting the data to answer the research questions, it became apparent that what educators described and practiced did not fit into a simple linear continuum. Nor was the integration matrix developed during a pilot study (Nollmeyer, 2012) sufficient in capturing the full domain of subject area integration. In mapping the range of integrated options, I developed a model consisting of four variables. These variables capture all of the aspects the participants discussed in describing the options and range of subject area integration.
REFERENCES CITED
REFERENCES CITED


BSCS, Biological Sciences Curriculum Study, & IBM, International Business Machines. (1989). *New designs for elementary science and health: A cooperative project between biological sciences curriculum study (BSCS) and international business machines (IBM)*. Dubuque, IA: Kendall/Hunt.


Harp, B. (1989). When the principal asks: "How are we using what we know about literacy processes in the content areas?". The Reading Teacher, 42(9), 726-727. doi: 10.2307/20200286


APPENDICES
APPENDIX A

INFORMED CONSENT
SUBJECT CONSENT FORM FOR PARTICIPATION IN HUMAN RESEARCH
AT MONTANA STATE UNIVERSITY

The Integration of Science and English Language Arts: Elementary Educators’ Descriptions and Practice

Purpose: You are being asked to participate in a research study of elementary educators’ descriptions and practices concerning subject area integration.

Rationale: Authors and researchers have proposed a variety of models for integrating subject areas. With your help, this study will explain how educators think about integration and how they plan for real-world application. This may help us better understand the similarities and differences between how researchers view integration and how in-the-field experts (that’s you) practice.

Participation & Procedures: Your participation is possible due to your employment as an elementary teacher in the Gallatin Valley. Your participation is voluntary. If you agree to participate you will be asked to complete a short questionnaire. If you are willing, your participating may also include: sitting for a couple interviews and teaching one observed lesson. Answering questions on the questionnaire or in the interviews is completely voluntary, and you can choose to not answer any questions you do not want to answer and/or you can stop at anytime. Participation in this study will involve approximately between two and three hours of your time. The questionnaire should take only about ½ hour to complete. If you are selected for further participation, the researcher will come to you, at your convenience for interviews and an observation. Each interview will also only last for a ½ hour, and the observation will last the length of a lesson. Your part in the study will be completed in approximately a two week period.

Risks: There are no foreseen risks to participating in this study.

Benefits: As an educator, participating in this study may give you opportunity to reflect upon your practice.

Funding: NA

Cost to subject: None

Confidentiality: Your demographic information (including: years of experience, grade levels taught, and training in integration) will be used in writing up the results from this study; however, all other identifying information will be kept confidential. Your completed questionnaire, the audio files from the interviews, and the researcher’s notes from the observation will all be kept in a secure location. The location of the research will be referred to as the Northwestern US, and all school and educator references will be made using pseudonyms.

More Information: If you have questions about the research, you can contact Gus Nollmeyer at (406) 539-2367 [gus.nollmeyer@q.com]. If you have additional questions about the rights of human subjects you can contact the Chair of the Institutional Review Board, Mark Quinn (406) 994-4707 [mquinn@montana.edu].

AUTHORIZATION: I have read the above and understand the discomforts, inconvenience, and risk of this study. I, __________________________ (name of subject), agree to participate in this research. I understand that I may later refuse to participate and that I may withdraw from the study at any time. I have received a copy of this consent form for my own records.

Signed: _______________________________ Date: ________________

Investigator: __________________________ Date: ________________
APPENDIX B

YEARLONG THEME
APPENDIX C

PRE-OBSERVATION INTERVIEW GUIDE
The Integration of English Language Arts, Science and Other Subjects: Learning from Elementary Educators’ Knowledge and Practice
PRE-OBSERVATION INTERVIEW PROTOCOL & GUIDE

Interview Guide:

1. I want to begin by getting a sense for what a typical school day looks like for your class. Could you please describe the schedule and events for a regular school day, like maybe today, [say week day].

2. Before we move onto other questions, I wanted to clarify a few things from the questionnaire you completed (possible points include):
   a. Classroom description of subject-area integration.
   b. Other ways to integrate subjects.
   c. Understanding of Common Core Expectations regarding integration.

3. Can we narrow our focus for a few minutes to the integration of science and English language arts?
   a. Do you normally integrate these two subjects?
      If “yes”:
   b. How do you go about integrating them?
   c. When you do this, do you think both subjects get equal time or is one emphasized over the other? Do you think it is better if both get equal time or not; could you explain why you see it that way?

4. We’ve talked about integration from a number of angles; however, I want to step outside of reality for a minute and asked about the perfect lesson. In your mind, what would the perfect integrated ELA and science lesson look like?

5. Integration has been a well discussed topic in education for a number of years now; however, there doesn’t seem to be a consensus on what the term actually means. It sounds like you would agree that integration is a hard thing to pin down, yet I’d like to try if we could. How would you define it?

6. I have just one final thing for us today. Take a look at this matrix. As you move from left to right across the bottom the amount of content integration increases. By content integration I mean using content and skills from multiple subject areas to support the discipline being taught. Up the side the amount of integrated instruction increases. By integrated instruction I mean the blending of content and skill during instructional delivery so that I no longer have a set time for each subject area.
   a. Place a mark where you think your current practice of integrating science and ELA would fit. Could you explain how you came to that conclusion?
   b. Place a mark where you think the Common Core’s expectations for integration would fit. Could you explain how you came to that conclusion?
   c. Now imagine a “perfect” world situation. Where do you think your practice would move to if it would move? Could you explain your thinking?
APPENDIX D

POST-OBSERVATION INTERVIEW GUIDE
The Integration of English Language Arts, Science and Other Subjects: Learning from Elementary Educators’ Knowledge and Practice
POST-OBSERVATION INTERVIEW PROTOCOL & GUIDE

Interview Guide:

1. I want to begin by having you talk me through the lesson I observed. Just give me your general thoughts on it.

2. Let’s talk now about how the integration of science and ELA went for you in that lesson:
   a. Describe for me the integration that you planned for.
   b. How about integration that you hadn’t planned for?
   c. What changes did you make mid-stride that impacted the integration?
   d. In reflecting on this lesson, what might you want to do differently next time to make the integration more effective or more complete?

3. So, this lesson is one you would have taught regardless of my observation, and we have discussed a number of other ways you integrate. I’d like to get your thoughts on why you put in the effort to do these things.
   a. Why is integrating subject-areas important?
   b. You’ve mentioned [list reasons], does that sum it up or can you think of other reasons to integrate?
   c. Which of these do you think is the most important reason to integrate?
   d. How do you think these reasons were addressed in the lesson I observed?

4. I think you probably remember this matrix. You can see the marks you put on here from our first interview. You marked where your current practice is, where you feel the Common Core expectation is, and where you would like to be in a perfect world.
   a. This time I want you to add a new mark that shows where you feel the lesson you just taught would go. Could you describe your thought in placing it there?
   b. That’s not the same place [or it’s close to or far from] your thoughts on Common Core expectations. How do you feel about that?

5. I want to pursue just one final thought. Based on our discussion of integration, the lesson I observed illustrates just one of several alternative strategies you choose among when you implement integration. Does that sound right?
   a. What do you think of all of these options? Are some better than others?
   b. Would you describe the different integration strategies you use as involving distinctly different types of integration, or just greater or lesser degrees of integration?
   c. What influences your choice of one option over the others?
APPENDIX E

INTEGRATION MATRIX
APPENDIX F

INTERVIEW TRANSCRIPTS
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</thead>
<tbody>
<tr>
<td><strong>Pre-Observational Interview</strong></td>
<td><strong>Interviewer:</strong> Nollmeyer</td>
<td><strong>Interviewee:</strong> Cullen</td>
</tr>
<tr>
<td>N</td>
<td>Again, I appreciate you doing this. I look forward to watching you any chance I get to watch you anyway. This first interview isn’t going to need to be very long for us because I’ve got a lot of what you think about it from last spring. Unless your thinking about it has completely changed (laugh)</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Well, I’m sure, I would hope that it’s evolving. And of course the new thing that I’m thinking about all the time is how do kids make connections because I think that’s so important. So, integration to me over the long term helps them make connections better and that’s really critical stuff I think. So, if they see that water interacts with paper, which we did a lot of yesterday. Today we’ll be interacting with some other materials and then hopefully that will connect to how it interacts with fabrics and wood.</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>Yeah, sure and you and I had that discussion last time about all these connections and how while we’re talking subject area integration and the connections there, we had the discussion how valuable all of these connections are.</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Yeah, and I still believe that.</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>And you still believe that, that’s good. I appreciate that.</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>I guess to me I was just you know with this common core math the kindergarten team is doing CC this year we’re piloting it. So, I’m really focusing really heavily on counting a lot of course. So, we did the penny experiment the other day with the drops of water. Our question was How many drops of water can the head or tail penny hold. Well, I heard more counting during that half hour than I could have gotten doing anything else. So, to me I think that’s a perfect example of how integrating science and math sparked their interest enough that there was counting. And I heard things like. This time I got 30 that’s more than last time. Last time I only got 22. Somebody over there got 40 that was more than my 30. I’m going to try to get more this time. And I just thought, what great stuffy, at least in my opinion.</td>
<td></td>
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<tr>
<td>N</td>
<td>Yeah, and so would it be fair to say in that situation then, the . . . the science activity the concept all that was taking place with your science inquiry that created the need drove the application of that math skill. They needed to be able to do this and so it was the motivation it was the practice.</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>I think so, and they have a question. I always think that’s important the challenge or question. Rather than, today we’re going to count. Count as high as you can. I mean that’s . . . a lot of kids will respond and they’ll do beautifully but that’s not very exciting.</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>They’ll be compliant.</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Yeah, exactly.</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>Okay, good. Well, tell me a little bit more about what I’m going to see today. Where you came from Monday and T, what this is all about.</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Great. Big questions are up on the board. And the big one for this week is What makes water unique? And the forms. I always like to have some kind of a gesture like retract and repel [while showing actions] for magnets. And something that can really relate to. So we have solid, liquid, gas. The three forms and I’ll go over that again because that’s really new. But, mainly we’ve just</td>
<td></td>
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been interacting with water this week. To see what makes it unique. How’s it different than wood, how’s it different than plastic. We did water coloring for art, we’ve done some reading about water. We’ve had ice observations, we did melting, we did heating nails with our hand heat and boring holes in it. We used color, we’ve done a lot of liquid experiments. We’ve done interactions.

Yesterday we did a lot with papers I had 5 different kinds, cardboard. And then today they’ll do some things that repel more. Just to get that language about absorbing and repelling and water proof and water resistant. Those kinds of words. Let’s see what else we’ve done . . . we just did a lot of observations of ice and they were really into that. That it was dry and cold at first and it was kind of tacky. And then about an hour later when we observed again it was slippery and wet and liquidity. So, just getting used to that water changes. And so then we wrote a little sentence, “Water changes, it can be solid, liquid, or gas” and they were really excited that it took the shape of the container cause I had round frozen objects, and rectangle and square. And they were excited that the ice was the shape of the container. And I said, oh that’s because water is fluid. And we did a lot with the globe and talked about how most of the globe is water. They did a tally with stopping and they would tally water, land and they came to the conclusion if you wanted to sail a lot you should be in the southern hemisphere as opposed to the north. And then I said, well that’s funny I wonder if you could sail from anywhere you wanted to to anywhere else. And I just said, I wonder . . . a lot of times the same thing you do I just throw out something like I wonder if you could sail from China to Australia and then they’re over here and finally somebody said, you can sail anywhere you want to the water is all connected. Well, beautiful. So, then we got into the water cycle and how the water travels it could travel all over the world. And I have just some beautiful books and I know you know a lot of these but there is some wonderful ones. This is a beautiful book about . . . it goes month by month through the year which is a cycle and that’s how we started the week, I should have told you. We talked about what do we know that’s a cycle. Well they know the year and the week and the moon, they know a lot of cycles . . . . I don’t know what else. Oh a lot of our stories have been cycle stories. Somebody starts out and they come back to where they were. So, I said, well that’s interesting. So, now they’re into the idea that water is a cycle too. And . . . just a lot of these books. This is the one I used yesterday to introduce water coloring, it’s a Frank Ash—beautiful. So, and then of course one of my favorites is Thomas Locker The Water Dance. And the language in this book is so beautiful. And we talked about clouds and fog and mist but it’s vapor, it’s steam its gas. So, Gosh what else. We started a water book, we did and ice page already yesterday and we’ll do a liquid page today. I didn’t even look at these . . . . Full of ice, frozen, water, and we’ll do liquid today.

N So, tell me just briefly. The water book, they’re obviously doing some writing, we have the books that they are accessing in the stations and you’re using them as read alouds.

C Yes.

N And then when you create a sentence like this up there on your pad and your kids are with you. What’s that interaction like? How much to they play in putting that up there.

C Great question. They tell me what to write. I go over a lot, Oh it’s the beginning of a sentence; I need to use that capital. What do I do, I need a new word here, changes, what do I do? Finger, space. And I just elicit a lot of that as were writing so I can . . . it’s just modeled writing. Water changes, that’s the end of our sentence, what do I do? Put a period.

N So, would you say that then . . . okay let’s pretend that instead of doing that you said okay what should we write and they tell you some of the things that they know and you modify it, put your commas in there but you don’t spend the time to talk about, now we have a capital and we need a finger space and all of these types of things. Do you feel like doing the way I suggested would still be integration but it would be less, it would be different, it would be not as powerful? What do you think on that?
C I guess, we’ll refer back to it and we’ll read it every day and so we are doing exactly what you said the second or third time, but the first time I like to go through the process of writing and how we get to it. But I guess either one would be fine . . . I just like to put in the process because there are kids that get real excited because they remember, oh we need to put in a period!

N Yeah, and so in your opinion both would be integration?

C Sure, I think so. The way I do it is more process integration maybe but then like today we’ll read that together. And I’m well aware that there were kids tuning in on Tuesday when we wrote it and kids that had an idea that I was doing something up there but they weren’t really sure what. And then some that have no clue that there’s anything up there. So they need repeat visits.

N Sure. Well I think the way you’re doing it is much more powerful integration, but I’m trying to keep my opinion out of it. I think what you’re doing is fabulous. (laugh)

C Well, they do get really excited when they remember that we need finger space. And I say, ahhhh if we didn’t have a finger space how would we know. We’d just be reading a bunch of letters. And of course previously I’ve done that. I’ve written a sentence without finger spaces and we read it and they thought that was hilarious.

N Yeah, of course. Of course . . . . Let me go ahead and try to pin you down on this and I’ll have you look at the matrix and we’ll stop. What do you think now after our discussion last spring, and your ruminations over the summer, what do I really believe? However that’s happened for you personally. Could you give me just a succinct simple definition of integration?

C You know I have thought about it and I guess I’m always aware of how valuable our time is. We need to get a lot of bang for our buck, we also need to differentiate at all times. We can’t have student A counting to ten when he’s already doubling 80 in his verbal math with me. So, integration gives me a way to differentiate better because I can use this book that has very little text with one student and I can get a much more complex book to use with another student and they’re both looking at books about a subject. Counting, I gave one child a Euro instead of a penny because a Euro is much smaller and I thought that was where he was. I don’t think kids very aware of those subtle things that we put in for differentiation. They’re thrilled because they’re doing the same activity at different levels. I had one student doing two pennies because he counts that high [meaning he can count the drops on two pennies]. Or I said to him, why don’t you see if the head or tail will hold more. If a rusty penny or a clean penny will hold more—just gave him a little bit more of an extension. So, I think integration gives me more latitude for differentiation.

N Don’t look so hesitant with that answer (laugh)

C I guess that’s one thing that I enjoy and I also just think. I don’t always know how a child will learn best. I know that you like soccer and that she likes her American girl dolls and I of course use those things. If you have 4 American doll girls and you got 3 more how many dolls do you have is going to work better for her than soccer goals and soccer goals is going to work for you. But, I don’t always know what’s going to work and if you’re integrating things you’re presenting more and kids can choose or they’ll find something that works for them easier. The offering is more diverse and richer and hits more kids is my hope.

N Okay, and so . . . the bang for the buck.

C Yes, absolutely!
And I assume by that you mean because I am bringing into my content area, I am spending time on the content. Is that what you mean?

I want them counting, but I also want them counting but I also want them to know about water molecules and cohesion and how it forms a dome and how water molecules like to stick together until a critical . . .

Yeah, so more bang for your buck and opportunities for differentiation.

Yeah, I guess those are the two big things to me and I just think it’s more fun and of course I’m always thinking, if I’m having fun chances are good that they are. If I’m not having fun I know they’re not. And if I just say, let’s count—I’m not very excited about that.

(laugh) I’m not either.

But, if I am trying to find out how many drops I can put on a penny, I’m pretty excited about that. And if I realize that it makes Lincoln’s head a little bigger, magnifies along the way and that I see it’s forming a dome and I see that dropping it from lower is better than from higher, those are all great things to learn too.

Mmmm Hmmm, yeah they are! . . . CC, what do you think cc’s expectations are for integration?

Well, exactly the same thing. We’ve got a lot to put in. We’re supposed to be going deep into counting and measurement and geometry and those kinds of things. If I have them playing with pattern blocks, which they love and they do a lot. Well, I have some kids that are ready to be counting the sides of the pattern blocks and sorting which pattern blocks have the same number of sides. Which ones are symmetrical, you know the orange triangle is symmetrical, so is the blue one but it’s only symmetrical one way. It just allows for more integration, more differentiation. I can go deeper with those kids that are ready. I still have kids that are just figuring out that two reds will make a yellow. If you put two on top. And then others that are ready to see that . . . that’s a half and that they can also do it with the triangle and they need three green triangles to make a red. How many do you need for a yellow? As you know they are all over the map and I can’t have the same question for all of them. That’s not fun and it’s not fair.

So, if you’re going deep. CC expects you to go deep into counting in math or whatever the topic area might be, but is there an expectation that you would not just use the pattern block and do that but that you would be bringing it into your science like you did with the penny or not?

You know I haven’t heard a lot about that, but of course that would be my hope and I would—

You’re going to do it anyways. (laugh)

I’m going to do it anyways because I see it work and I see that if you give them a challenge, What are the most number of pattern blocks that you can use to build a yellow? Will be a better challenge than you just build.

Okay, yeah. Excellent

Especially for some kids.
N Just real quickly here and we’ll be done. You might remember this.

C Oh yes.

N I don’t want to put you on the spot to remember where you put yourself last time, I can show you where it was at. [explanation] If it’s kind of balanced were on that line.

C And I would hope that it would be balanced and that’s hard in kindergarten because we’re always leading up to something else. My hope is that we’re always moving toward living and not living. Or as I phrase it, living and never was living. Because water is such a critical thing for that, my hope is that in the spring when we get to living and not living they’ll remember that water was critical for every living thing and they’ll know why and they’ll remember some of the things we did. I don’t know I’m never good with things like this. I guess I’d like it to be up here and be using both of these. But I’m probably somewhere along here.

N Well, go ahead and put yourself a little dot up here where you’d like to be.

C Where I’d like to be.

N And what you told me . . . well last spring I ended up putting you on here because you refused (laugh)

C (laugh) oh I was noncompliant!

N No, no, no (laugh) What I did was I put a triangle right here because you said I’m somewhere over here because your feeling was that you did more of integration in the moment at a time—

C Process.

N Than separated throughout the day, coming back to it at different times.

C Oh I see, I understand, yeah.

N You felt like, no when I do it, it’s all together—was your feeling last spring.

C yes, I guess I still like that idea too.

N Okay, well we can keep your triangle down there, that’s just fine.

C Okay!

N One more dot, then. Where do you see cc’s expectation for integration? And just base it just off what you said to me before.

C I’ve only seen one thing that addressed that specifically and it’s was in science and children and it was integrating the math and the science which of course is one of the easier things to integrate. But also a very important thing to integrate. So I know that the Next Generation has taken that into account. So, I know that they are working on that. I would like to see art kept in and SS brought in more because as I said the bang for the buck. It’s our tendency as teachers to get to that critical stuff first and then . . .

N Make that judgment call.
| C | Some of the very best teachers I know are saying things in the hallways not out loud like, I don’t have time to do art anymore because I have to get reading and math. And that breaks my heart because maybe the water coloring is the thing that will make a child understand water a little better. |
| N | Yeah, you bring out that book on water color, you have the literature and its beautiful literature. |
| C | Yes, the language! |
| N | And you’re having them do the art work as well— |
| C | Spiraling, plunging! Just listen, the words in this book, they’re beautiful, white silver veils. I mean, where do you get language like that. It’s wonderful. And of course, Thomas Locker has Mountain Dance, Water Dance, he’s got several. And it’s language and art. He’s done both so I guess I’m happy that the Next Generation science have addressed that. |
| N | Yeah, okay. What about the ELA cc standards? |
| C | Yeah, there are a few. I know they . . . I saw an appendix that addressed some language arts, storytelling, the story of how water travels around the world would be a good example of integrating those two. |
| N | Okay could we— |
| C | I think they’re working on it. |
| N | It’s in there but it’s . . . okay. |
| C | Yeah, they’re working on it but a lot of people are still just getting to the idea of teaching by standards as opposed to teaching by curriculum and everybody’s at a different place. |
| N | Okay, well, thank you so much! |

**Post-Observational Interview**

**Interviewer:** Nollmeyer  
**Interviewee:** Cullen

| N | So, I guess I just wanted to begin by having you talk me through how you thought that went yesterday. If that was you were hoping would take place and then maybe how you’ve proceeded with it today because again as it has been with the other teachers I’ve observed. Your lesson is a multi day, over the week lesson and I’m just getting to see a piece of it. |
| C | Yes, and it will be next week as well. |
| N | Even into next week, okay. So, how did that go and how is it going today. |
| C | You know I always figure you get what you get and every group is different and that’s one of the things I like best about the small group approach, the stations. Because we change the dynamics by changing the kids and by which group goes first which is second. Obviously by the third time I have a group of kids I’m a little bit more on my game and maybe can elicit a little bit better and that kind of thing. So, I think it is dynamic in that it’s changing every time that we do that. But, I like the small groups because you can get some conversation and you can piggyback ideas and what we
often do is half way through or almost the end we’ll regroup and talk about what people discovered and the that last group really gets a lot and that last group is different every time so it works for the group. I think. I just enjoy the small group situation. And it’s amazing to me how every group is different.

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<th>N</th>
<th>Mmm Hmm. Yep, it is.</th>
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<td>B</td>
<td>So, they’re not little repeats each time. One group may come and I randomly sort kids so it isn’t like a high group and low group but one group may come and someone will say something or see something and it sparks something wonderful and that’s always fun. The one little girl was writing evaporation and she was just so excited about writing it herself. That was really exciting for me to see.</td>
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<td>N</td>
<td>Yeah, I saw some invented spelling and then I heard you supplying some or using a lot of sign language.</td>
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<td>B</td>
<td>The visual phonics.</td>
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<td>N</td>
<td>Oh, the visual phonics. Was there a conscious choice there on your part, which to do with which student.</td>
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<td>C</td>
<td>Yes, I usually offer them three things. They can either copy out of a book, or they can try to invent it themselves, or I’ll give them parts. And a lot of them I’ll just give them parts of words but depending on where that child is. And you know I always feel like, keep your hands in your pocket until you see a little bit of frustration and then you bring them out. And when you see a little bit of frustration you need to give them a little kick start. Often if you just give them a little jump start they’re off and running. And it’s exciting to see them write. Yeah, it’s a conscious decision just to interest them in writing. It’s frustrating if you can’t spell anything. And I’ve seen kids as you have, they write “the frog” and then they can’t get past that and then we never get to the good stuff. Where did the frog go, who did it meet, what did it have for lunch? We never get to the good stuff just because they can’t write past frog. What I want in writing and what we all want is the good stuff, the story so if they need some help—especially at this level.</td>
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<tr>
<td>N</td>
<td>Okay, so . . . no, no, no don’t cover your face. I love all of the rabbit trails.</td>
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<td>C</td>
<td>Don’t ever get me started.</td>
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<td>N</td>
<td>Okay, let’s get back to where we were at then. So, yesterday things went as they did. Which, are you on the five E’s still?</td>
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<td>C</td>
<td>Yes.</td>
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<td>N</td>
<td>So, where was that at?</td>
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<td>C</td>
<td>We’re probably in explain but we’re into explore and of course those five Es are very fluid. I think we’ll still explore, we’re still measuring with water, feeling water, all of that. And then, my evaluation and I do have one planned is to have them draw the water cycle at the end. And if they understand that with precipitation and evaporation and condensation and that some of the water will be under the ground. They can do it with a picture or telling me or writing about it. Then, I’ll know which kids really understand the major thing which is the water cycle.</td>
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<td>N</td>
<td>Mmmm Hmm sure. So, yesterday when I observed you were moving into explain or you did that today?</td>
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I think every time we read a book we’re doing a little bit of explaining. So, I explain a little on the first day after they had explore time. And then we explore some more and a little bit more explain. It’s a little bit different than when you just give the vital piece of information in explain in an upper level. I think that the explain is ongoing and the books are a great way of doing it.

Sure, so then today was there more stations or the same stations? How did you do that?

No, we did completely different ones. But we also did some different books and we were focusing more on the circle. We had these circles and we had them drawing the stages. You know like there would be a rain cloud and rain, and . . .

Okay.

So just kind of getting them used to that cycle. And we talked a lot about weather—how the storms might cause a flood and that would put more ground water, just kind of let them explain to each other through their drawings.

Okay, very good. So let’s talk about the integration that occurred. And let’s just focus for a minute on the science and ELA. What did I see yesterday in those stations in your group work? What do you feel like you were integrating or where were you integrating?

Well, I hope the literature. We have fiction and nonfiction. I hope that both of those support the science. Especially in this area that’s a little bit more abstract. Up until this point we’ve had something we could hold in our hands—pinecones, wood, shells. Water and the water cycle is a little bit more abstract. So, I really count on the literature to give them a better mental picture. I mean, they can’t hold a cloud. For the beginning of the year, everything we do is very tangible and material. They can touch it and hold it and feel it and smell it. But the water cycle were starting now to get a little more abstract which is great because they’re ready for it. I hope the tactile, using the water with the lids. I hope that was math and science. What else did we do, we did some writing which is always good because the writing is where a lot of the explaining comes out in my opinion with the younger kids. They start explaining and the more that they work at it they start saying Ohhhhh! I see a lot of light bulbs when they start to write about things and then when they read it to each other or they read it to the group later. And we almost always have a chance to read those little books to the group if they want to at show and tell time. And especially the kids that have discovered something really cool, love to share that.

Mmmm Hmm so you mentioned also the ELA both in the writing and the reading in the literature piece. Over at this table, where we’re at. There was math integration also in the counting correct?

Yes.

Okay, What’s your thought on the art work on the water color?

I think that fits right in with the new ELA standards because anyone that wanted to share about their artwork later could tell about it and that getting up and speaking and explaining about something you’ve done and something you’ve created is really difficult for some kids and it’s very rich. So, I love that they can explain, here’s my sail boat and it was headed to Australia or whatever they were saying about their picture. That fits right in with the ELA because they’re listening and speaking and sharing. That verbalizing is great prewriting at this level.

Yeah, absolutely. So, the artwork piece. Would it be true in your opinion to say that it not only was integrating an art medium in the watercolor, the subject area was dealing with water and boats or
clouds, but it also integrated the language arts piece as they had opportunity to share.

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<th>C</th>
<th>Yes, certainly that was the plan.</th>
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<td>N</td>
<td>Oh, good, I’m glad that was the plan that’s fabulous. . . . You know this lesson it’s something you do every year as you modify and change and continue to do it but you’re doing this every year, you’re doing this regardless of whether I come in and observe or not?</td>
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<tr>
<td>C</td>
<td>Oh, yes absolutely!</td>
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<td>N</td>
<td>So, why? Why is it important to do it this way?</td>
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C: I just want kids to love learning and I think if you have a big topic with a question they’re going to be curious. And I’ve had child after child the rest of this week I asked if I could have a hot H2O bath tonight. And you know they’re using the language and I know they don’t understand two hydrogens and one oxygen except that that’s why they want to be together. And we’ve talked about that kind of soil will hold water, this kind of soil will be more like sand and it will let the water through. So, if they remember any little gestures and I really think it’s important to use gestures like solid, liquid, gas because I think kids at this age remember those things. And if they’re excited, if they do anything at home about water, I call that a win. They’re taking learning outside of the classroom and sharing it with their parents.

N: And so do you think, bringing in the ELA through the literature through the writing, bringing in the art and I know you shared before bringing in the art not only in the art they do but also in books and different things I remember you talking to me about that. Do you feel like those things help to provide that meaningful learning, that motivation however you want to phrase that. Or are you bringing them more in for the sake of time. Or . . . I don’t know, why integrate?

C: I think it enriches the learning and I it hits more kids in different ways. And I’m a big believer in it might be settling down here and a year later it will say, ah that’s a water color. That’s what Winslow Homer was doing and he was doing water colors. We learned about that! And it may not happen this year and it may happen. I hear kids in the halls a lot of times saying, I did some art today, it was abstract. And I think how wonderful for kids to know the different between abstract and realistic art. Tiny minor thing but I’m a believer in connections. I don’t really care what the connection is. Its firing a synapse its growing brains it’s growing curiosity and questions and interest. And those are all good things.

N: Okay.

B: So, I guess I don’t feel like I purposely set out to integrate like this will be a math table, this will be a ss table but as you are just doing experiences you can relegate them that way. Anything that they are studying with a globe and a map is ss and certainly that they discovered that they could trace the water all around the world is an important thing to know. And the day, I told you the child said, if I was a sailor I’d want to live in the southern hemisphere because there’s more water. You know, I act surprised, you might be right! How exciting! Anytime they get an enthusiastic or encouraging response to a discovery, I think it’s more likely for them to want to discover more—is my hope. And what’s learning? Uncovering and discovering what their interested in particularly.

N: Yeah . . . and so . . . I watched last year and we talked about this last year also and now I’ve seen you do this again and you’re building this. Would it be fair to say that you build all of this around that science concept? You know of . . . topic, concept, unit, however you want to say that. Would that be a fair?
C: I think that that’s just me. I don’t think that it’s necessary. I know some fabulous teachers that do it around art of ss. But, I just have a really hard time seeing any children’s book and not say, oh that’s science. That’s what I see when I look at it. And I know kids like mucking around and they like science. I don’t know a kid that doesn’t. But I think that they learn important things through science. I don’t think that that’s the only venue, but it’s the one that seems to make the most sense to me.

N: Okay, so in your way of thinking then, I could take a history unit—

C: Yes.

N: Or I could take an art unit or concept and build around those things?

C: Absolutely. And see I would think immediately about how history impacts science and I would think of Galileo what happened, but a history buff would see it another way and I don’t think that there’s a difference and I think that that’s perfectly fine. And of course along the way our kids are going to get a little bit of everything. One year they will get a teacher that’s enthusiastic and passionate about art and the next year math, whatever.

N: Sure, and I remember you saying that last year also. The differences that we bring to the table.

C: Yes.

N: So, in what I saw and what we’ve talked. We had ELA, we had math, we have art being integrated into the science together. Are there other content areas or lesser content areas, music or something else that you will integrate into this over the course of the next week.

C: Well, certainly the ss I mean we talk a lot about careers that have to do with water. What happens when there are floods in the countries and there was a flood in in Bangladesh you know where ever that was and it was like ¾ of the country under water. What did those people do? Where did they go? All of that cultural awareness and how people in the desert have to use water very judiciously and people next to a waterfall, maybe not so much. All of that is ss I think. Music is an area I do not feel strong or competent in but I would definitely see a link there and a musician of course see that. And maybe next week we’ll bring out cups with water and hear the different way that they sound. We have a brand new music teacher. If it was one that I knew well like J I would probably ask her to do some water music—

N: I was wondering about that, if you have opportunity to collaborate.

C: Oh, yes and S our PE teacher is fabulous. She does a lot of things like that for us often. If we’re talking about rocks. She’ll have an igneous station and a metamorphic and have those words on the wall and have them go to them and so it’s enriched and supplemented easily. She could do that easily with water, have a glacier and a river and lake and all of that. There’s a wonders of wetland activity that’s just about that too.

N: Okay.

C: And that would probably be something especially if I was teaching first or second grade because they could read the words so well.

N: Sure, excellent. Let me ask you to place this lesson on here. I know this is the hardest part.

C: It is! Because I don’t really set out planning, it just kind of happens. It’s the way that I see things or the way that I—
But, now that it’s kind of happened or at least part way through.

I guess if I could look at the whole more than one lesson it would be easier for me because when you get to the end is where the really fun stuff happens. And when we get to plants in the spring and they say, oh those are part of the water cycle. In fact I had O, one of my really sharp little observant kids. I’ve always told them that the water is sucked up by trees by the xylem and it goes up and it’s in the leaves and it’s turned into food and it flows down through the floam. And he remember that from October maybe or November and what a great thing and he said, well the water that goes through the trees is a cycle too. And I said, you’re exactly right! Xylem and floam. I mean, isn’t that a great connection for kids to make?

That’s a very good connection!

But they learn because we built trees with is a Joseph Cornell activity, I don’t do anything original; I steal everything. It’s easy for kids to remember if it’s xylem [with sucking sound and gesture] floam [long drawn out & gesture]. It’s cool to think about but it is true and I talked to O about that’s part of the cleaning cycle that how we can drink dinosaur spit.

(laugh)

And the book we read today was a drop of water that travels all around the world and one of them, on the front of the book. It’s a really pretty beautiful book but it has the drop that’s like a tear drop and yesterday we read a book that tear drops are really how water is it’s a sphere, it’s a ball. And I thought how cool somebody remember that. If there’s one kid that remember! So, anyway I guess if I looked at the whole thing——

Well, let me talk you through this.

Thank you.

What I saw and what we’ve talked about and how you’re using the 5 Es , we have the subject area involved here and we’re not talking about your whole day, we’re talking about this lesson, this time period. To me it’s got to be up here because, it’s happening at the same time, that’s this you know. I mean it’s that time period that hour or hour and 15 min however long you end up there. All of this is happening during that time and that’s this and like you said, it’s not a conscious okay they’re going to do the math it’s more of a cyclical entity that’s flexible and flowing. And here I mean as we talked this through, ELA, science, ss, math, music when the music teacher is there. I mean isn’t that all of them?

Yes, and certainly movement. I mean we even stood and we were fast moving water and slow moving water to get the idea of that. Sometimes water just sits for a long time. I said, you’re in a glacier and you just sit and wait and I said, now you’ve evaporated and you’re in a furious rainstorm. So I guess movement’s always important.

Mmm Hmmm. Doesn’t that?

I guess so, sure.

Seem like we’re up here somewhere.

I’d like to think so.
Okay, I’m putting you up here. I’ll put it underneath that other one.

(laugh) But every year is different. Some years I can do more and some years I can’t. That’s the beauty of teaching too; you coach the team you get.

(laugh) that’s true also!

And every year I try something different. There are lots of years I just do things differently.

Yeah, I mean you have to be flexible, as you said to coach the team that you have.

That’s exactly right.

Yeah, . . . . Let me just explore one more thing briefly . . . You talked about how for you it’s comfortable to built it around the science and to bring these others in.

Yes.

The music is not a place you are comfortable but sometimes you get a chance to collaborate.

Yes.

Have you seen, heard about, talked to other teachers. Is there a radically different way to do this? To integrate? Do you know teachers who just integrate one lesson on one day and it’s just something they do or do you think this is more kind of a way of life like it is for you? What do you know? What do you think?

Well, unfortunately I don’t get to see a lot of other teachers, I wish I could see more. I know that everybody’s in a different place and some people would start the day with a song and their rain stick and use that. I know there are lots of things to do, they don’t come naturally to me I wouldn’t use them every day. But, I know other teachers do that. So, I guess I’m hoping, the teachers I know are doing the best they can every day. I know by virtue of standards and pressures from above, people are being forced to look at disintegrating as I look at it. I’ve actually seen kindergarten teachers lately that do math and then they do reading and then they do science and even maybe they don’t do some things. And I just think that’s unfortunate, they’ve been pressured into that. And maybe it’s easier if you been around a while to do what you know is right or what you think is right. And maybe it’s easier for some people than others. We’re all different some of us are extremely sequential and some of us are more random. (laugh)

(laugh)

And I think random thinkers may integrate easier. I don’t know, but again I think kids get a little of something every year that’s different. I feel that this is the right way for me to teach, but I certainly would never tell anybody else. Except that you can get more bang for your buck this way—I know that. And, I think it’s better for kids, but I don’t have the market cornered on that at all. I know some great teachers that . . . kids graduate high school in spite of us don’t they (laugh).

I think that’s an accurate statement (laugh) Very good.

I think I’ve said this to you before, I know I have. The bottom line for me is if I know I’m having fun, I think they are. And if I’m learning they are and if I’m not. I actually tried once. I did this. I put on the board, 10:00 math. I couldn’t do it, I just couldn’t.
Nollmeyer: Nollmeyer
Interviewee: Knox

N: Well thank you for doing this. This has been a labor of love for me for the past three years or so, and I’ve been surprised by the lack of information in the literature about what we mean when we say that we integrate... You look like you want to jump in there.

K: No, go ahead.

N: Okay, well... actually, I’d love to get your initial impressions.

K: Okay, well I think I’m going to start with history if that’s okay.

N: Yeah, yeah, yeah!

B: When you say integration... I’m going to go on my past experience. After almost twenty-two years of teaching. Off and on, part time, full time, illness years off, coming and moving to another district and another state. Different view, personality, everything. I think when I first started teaching what was going out... with education they always say change, you have to go with the flow, go with the change go with the cutting edge. This is what we’re doing now. But the problem is every time there is a change there is never really follow through on why it didn’t work. Let’s go here, let’s do that. And my first experience teaching I was on the reservation and integration was the key to success because it was meaningful to the children. The children that were in the classroom that I was teaching, the environment, it was still a whole language approach. That whole language approach to me was always integration. What was meaningful to kids? So, for example their life was fishing at the time, and fishing was the industry at the time—not any longer but it was then. So, when a child came in at 10 o’clock at the morning you didn’t question it. They were out with their fathers, grandfathers, and uncles, fishing. So, when they came in at 10 O’clock you just picked up and you taught. And you integrated what was meaningful to them. So, we used science and reading. For example science was the life cycle of salmon, Northwest salmon. Five different salmon that we studied. We made it, you know you integrate adopting a stream, you use your resources. We had a fish hatchery just down the road. We had marine biologists; we had the study of the sea life. You know we integrated reading with the sea life. Everything was based on helping them understand why they do what they do at 10 o’clock, midnight when they got home with their fishing boats. And helping them be knowledgeable so if they stay on the rez they get jobs that would be marine biologists, working in the fish hatcheries with their auntsies uncles and relatives. So, that’s the life you learned. You were knowledgeable. You didn’t say I know everything about Native Americans. That’s not it. You learned what is meaningful to them and be knowledgeable to help them succeed.
change, cutting edge was you know. You have to show me how you're going to succeed if you want this money. And everything kind of fell apart, the school fell apart. And so I moved into town and there was no integration. It was, you will be here. If you want this, if you want your job, you will meet the common core standards. You will meet the district, you will do this this this— you will be on the cutting edge. You will have superintendents, you will have principals, you will have teachers walking through your school. You will have this this and this jammed down your throat. You will do this, so that’s what you do.

N That’s what you do.

B So, if you want your job. If you don’t want an involuntary transfer you accommodate, you do what you’re told. And the only thing that came out of that is that you get on a committee if your heart is into reading, which mine was, and we adopted a reading program called success for all. And being part of that, it was . . . I mean I have all of the thematic books for early learning. And you have to find the balance because everybody wants you to do this, everybody wants you to do that. And what are you supposed to do? What is it really for? Is it to look good in front of an administrator? I mean if you remember developmental 101 teaching and teaching. Who the best for? Best practices for who? Not the superintendent, not this person, but how about the child. So, you get around it, you find a reading program that meets the needs of this. Hopefully you get to. . . You know I was very big into success for all. It kind of had the whole package. It gave me all the integration and I’ve got the books that have every activity for you so you don’t have to, you know your time . . . that’s a big thing the nuts and bolts of it. So, those books were phenomenal. The thematic planning books we had them all. Plus we were meeting the needs of that administrator saying, your reading scores are low you have to improve or you will lose this funding. I mean I’m being straight forward. So, we had the reading program and the principal that was . . . not a very nice person, but she got the job done. She wanted her job too, she said, you will do success for all reading or you can leave my school. So, that was implemented. You’ve got to focus on the whole school improvement. So, we did and it was phenomenal. But then funds ran out. It’s not cheap even though you’re a title one teacher. There go your funds. So, you’re scrambling again. So, at that point . . . I’m kind of telling my perspective, my life story. But then at that point, you lose your funds you lose your program, you lose your support and you’re back to square one. It always feels like you’re back to square one. And, guess what, a whole new cutting edge rolls in. We want to be doing this this this this. This is the direction we want to you to go [c].

And so, here I am, and integration has always been the way for me to help with time, management, really understanding meaning, so you’re not just giving a bunch of junk and watching every hour go by. You know you’re really really learning. But, you know you have to buy into a team that’s for years and years and years of believing this and this and this and this and how can you make us better better better better. So, it’s you know it’s ongoing all the time balance. How do you really bring the true meaning of learning to children? That’s it in a nutshell. That’s a lot I don’t mean to go off.

N No, that is a lot, No, that’s great. That’s absolutely great. I wanted to ask you. On the questionnaire, I didn’t’ do a good job on this one. You were confused about what I meant here. I try not to prejudice the answers by the way I phrase these and I was so vague that you had no idea what I meant. So, all I was kind of getting at was. You know you’ve had these experiences that you went through and you said, this is what I did. But, have you heard about or seen other teachers do other things that you’re not doing but you look at it and you say, yeah that’s integration. It’s not the way I do it but that is integration.

K Sure, as far as what other teachers are doing?

N Yeah.
I think that, I see teachers instead of trying to do all of the subjects at once, they’re taking one or two and they’re starting to build it. Which you know that is kind of the collaborative effort. So, we have these reading blocks and you know what, whether you like it or not we’ve got to bring reading grades up. But, when it comes to, when we met on every Friday we have team meetings. How can we make this meaningful, fun, enjoyment for the kids like say with this polar express. I’ll do science, you do what you want to do so that the children are rotating—I’m just talking about my team. So, throughout that whole day they are getting one topic integrating all subjects. Do they get that every day? No, that would take like a year’s worth of planning. But if you have a team that you’re not telling, you will do this. But instead, it’s an invitation, I’ll do the science part but you know the science part could be baking cookies and explaining ingredients and how does it cook and going through that. Even though the kids look at it and go, oh! All of a sudden before they eat the cookie they’re going through the process of maybe the science . . . I always like to go through the science methods even blooms taxonomy when you’re doing any subject. Doing that checking real quick. And you invite the teachers to do it. But you can’t say, my way is the best way! You have to inviting. And as far as the whole school . . . there really isn’t an opportunity to say, hey what are you doing? We used to go into other rooms and watch each other teach. You know going back to what I said at the very beginning, I wasn’t very strong, it was my first year teaching on the rez and I wasn’t very comfortable with 27 4th graders because I had heard quite a few—there’s a lot of things that go on. So, it was like, hey does anybody want to come and join me teaching this science? For a while it was just my husband. He would come in because we both loved fishing. That was great, but he could take of work every time so you get another teacher to come in and team teach with you. And the other part of it, I did a 2/3 split so we had the open concept. It was great. He was really into it, but then he got sick of it and he went to the university level and taught computers. You know you have to be flexible. You can’t be rigid and close your door; you have to be open. Here I just find . . . this is only . . . you just kind of have to— I’m still observing. There almost ten years behind in a sense that you know what. The stuff that they’re starting to implement immediately. But, we were bigger we needed more funds. There was no such thing as a fun run. 46K would never show up in a community that was so dried up. So, you use that money for other things. What would I like to use that money for? Boy let me tell you what I’d like to use that money for; A to Z! I would love to use. To me getting into A to Z helps me—that’s a program but you know what a principal has to approve it. There’s a ton of integration. A ton of social studies, history, books, you’re meeting your. . .you can use it as a manual to meet all of your standards. You’re meeting the expectations of the nations. But, you know what, what are the kids learning? Everyone forgets that part. What are they really learning? Is it great? . . . You could go to the extreme. You can plaster your room with charts all over the place and that’s great. You can do that. I had a teacher that I taught with in WA. She looked great in front of an administrator, but you know what. Look at those kids that look like little walking tin soldiers. It wasn’t an inviting room. I don’t know if I’m helping you.

Well, you know at the beginning you started to say that you could see some teachers that will bring just a couple subjects together to teach. And so in your mind, you know you’re talking full on themes, full year long programs, you’re talking about teamwork. You’re talking about all of these, maybe loftier things. But in your mind you step in a classroom and you see a teacher who’s integrating their reading with their science and you say, that’s integration.

Well, that . . . any skill or anyway to . . . from management, you can integrate . . . I mean you just get stronger as a teacher if there is more than one person teaching it. I mean to me, having a group of teachers that are on board. It’s not how many subjects you can teach at the same time. It’s how well kids can relate to real life situations. Can they apply logical reasoning, not just in math but also . . . like today we’re going to—I use the . . . there’s kind of like the under the umbrella of logical reasoning. What tool would you use when we do our lesson today. They were sent home and they’re going to have a tool. Right now I’m teaching the tools which is the list, but you can apply that idea across any subject. Being able to help the children understand, okay we’re not just doing.
math right now, we not just doing ss right now. But, in this district that’s how . . .you know what we’re only focusing only on math this year, we’re focusing only on reading this year. And it like you know throwing all the thing you had out and pulling all the new things in and it’s hard.

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<th>N</th>
<th>So, maybe a strength to integration would be a teaming approach where you have multiple people involved</th>
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<tr>
<td>K</td>
<td>Mmmm Hmmm.</td>
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<tr>
<td>N</td>
<td>But, would you, if you had a teacher who was in a situation where they were doing it on their own essentially, are you seeing a range of possibilities to what it might look like from a full on theme to this one lesson?</td>
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<td>K</td>
<td>Honestly, you can’t tell. How can you see other teachers?</td>
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<td>N</td>
<td>(laugh) pretend for a moment that you could.</td>
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<td>K</td>
<td>Pretend, oh okay. I would. I would look for the integration. I think (long pause) it’s not here . . . I don’t know what you want.</td>
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<td>N</td>
<td>Well, I guess what I’m trying to do is identify what it is, okay—</td>
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<td>K</td>
<td>What it looks like to me is that you’re team teaching with a group of people that have the same grade level, at the same subjects that you teach, meet and you each exchange ideas, you know like I said earlier with the Friday that’s what we do. Try to pull together, make sure that, hey what’s working of you what’s not working for you. And you know I was really thinking you have to observe you have to see what works, talk, communicate. Communication is to me like the core of it. You’ve got to be able to not close your door, you have to have a open room concept. Integration is everything. Bringing in things that work.</td>
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<td>N</td>
<td>yeah, so if you had to pick one word that define that. Would you use the word weaving that you mentioned earlier.</td>
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<td>K</td>
<td>Yes, I like the word weaving because you can go in and out in and out. You can definitely pull in things that work. If it doesn’t work you find something else. It’s not, this is the way you do it! And then your gauge is, how are the children doing? Are they involved in it are they excited are they motivated, do they want to do this? If not hey, you know what you pull out and find something else.</td>
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<td>N</td>
<td>So, when you, I know you do these Fridays you’ve already mentioned and I was aware of before, but like when I came in before and was helping you were integrating the writing with the science and so when you do that do you feel like you’re giving an equal split of time to both of those subjects?</td>
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<tr>
<td>K</td>
<td>Oh, yeah. Yeah, Yeah, yeah! Totally!</td>
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<tr>
<td>N</td>
<td>Okay, and do you think that that’s important?</td>
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<tr>
<td>K</td>
<td>Oh, yeah! Yes, absolutely. Because you know, let me tell you, the kids that. They had to pick . . . you model you share, you model you share, writing or whatever it is. There were four kids that chose how to make a crayon. They wrote it for their own and they had the higher scores. It was meaningful they did the experiment. You know I found things that I thought would work like how to plant an apple tree. It didn’t’ really work it was too high, too many steps. I enjoyed it but other kids were like whoa . . . they had never planted obviously. You know, but they had hands on where they actually made the crayon chip because they had the experience, the prior experience. Some</td>
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kids played it safe, they had a fish at home and they did, how to feed a fish. And that’s okay.

N 
One of the things that comes out when you look at the history of integration is that nobody agrees on how to define it. And they will say that. So, how do you define it in a sentence or two?

K 
Integration is . . . communicating with others and understanding of what the outcome is ongoing learning experience to help teacher children and really find out what’s best for them in any subject. I’m not going to fancy it up.

N 
No, that’s fine. That’s an excellent definition I appreciate it. We have just a few minutes left and we’ll talk about a couple of these things as we look at this. [matrix] So the question is, where in here would you place your own practice, right now with the constraints of the district—

K 
I think looking at it, it’s not where I want it to be but it’s definitely right here.

N 
So, tell me how do you come to that conclusion?

K 
Well, we’re really working on one subject at a time. and understanding how to go deeper with understanding. So, as far as the subject and knowledge and skill. I feel like I’m learning that that’s beneficial but it’s not there’s no measurement. It’s too open ended. Everything is just kind of . . . you pilot and you decide how. There’s got to be some direction. There’s got to be some help or else you could flounder around forever. There’s got to be more than one person or two people. It’s got to be . . . you can’t buck the system either. You’ve got to have collaboration in integration. Wouldn’t it be awesome if we were all integrating? But we’re not.

N 
So, let’s talk about that awesome part. Perfect world, where would you be.

K 
Oh, if I had everybody, we’re all doing it together. It would be here, there’s always room for improvement, there’s always learning. Ongoing learning, that part doesn’t change it’s just the . . . stop doing this do that, stop doing this, do that— you know, you don’t really have the freedom.

N 
Final piece quickly, where on their do you think common core’s expectation is at?

B 
Common core did a nice job of delivering but they always, there’s no basic foundation. They said it, this is where you will be, this is how you’re going to do it, but they don’t give the tools to get there.

N 
I understand, I’m in total agreement. But where is that at? Where is that expectation?

K 
The expectation? Up here.

N 
Alright, thank you very much!

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Post-Observational Interview
Interviewer: Nollmeyer
Interviewee: Knox

N 
So, what I observed was just a piece of a larger lesson. What I observed was the actual drawing of their bedroom map and either something is lost or I’m sending someone to go get something and here’s the map

K 
Yeah, no and why do we use a map. That’s kind of—
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<th>N</th>
<th>Yeah, so you did a pretty thorough review with that book, Me on a map. Went through all of that and then you modeled what they were going to do—so that’s what I saw. Would it be true to say that that’s just part of a larger lesson or is it one lesson within a series of lessons?</th>
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<tr>
<td>K</td>
<td>No, it’s the beginning of definitely the bigger picture understanding the concept of the world map. Being able to start small and grow big. So, I guess if I threw a world map at a first grader they’d say, what?</td>
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<td>N</td>
<td>No idea of scale or—</td>
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<tr>
<td>B</td>
<td>Yeah because there’s going to be so many things built in.</td>
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<td>N</td>
<td>Sure okay, so maybe just . . . since I didn’t see the rest of what you did. Maybe just give me a rundown on the rest of what you did and kind of just and overall sense of how it went.</td>
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<td>B</td>
<td>Right, so then you do the sharing and they get up and get to share their picture and describe places in their room. And a lot of them realize that they have to speak and it has to make sense. Finding something in their room that was lost, so it could be nonfiction/fiction. And a lot of them, it kind of dawned on them, well I’ve never lost anything. Well, why do you think people use maps? Is it because they know their way all the time, can they get from place to place? Maybe parents look at a map, Oh. And then it’s, well if you find something on a map. I pull out a map to look for places and things . . . you know, this is not big, it’s first grade. Let’s move on (laugh)</td>
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<td>N</td>
<td>Oh okay, yeah I just wanted to know where you went from that—</td>
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<tr>
<td>K</td>
<td>Then we’ll move into the location again in Bozeman, then we’ll move into the state, and then we’ll move into the country. Then we’ll move into the bigger picture, the world map which is the SS common core question, draw a picture of the world map.</td>
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<tr>
<td>N</td>
<td>Okay, alright</td>
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<td>K</td>
<td>Yeah, that is the question they are asked three times a year.</td>
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<td>N</td>
<td>So, maybe talk me through, where in this process is the integration. From your perspective I don’t want to presume upon how you were—</td>
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<td>K</td>
<td>Oh, sure. How to, that’s the writing. How to draw a map, can you draw a map, can you tell someone? If you were too, First, Next, Then, and Finally. Being able to integrate those concepts and then taking a look at the writing part, being able to write out your thoughts, tells a person, being able to say, this is where you are. And then when we look at different countries they’ll do writing reports about different things in different contexts. Learning about you know population and age and understanding the united states. What are the things that you would want to know and tell someone about each content. That’s the ss part, that’s the writing part, that’s the reading part, that the integration. Science part, definitely the landforms understanding how the landforms broke up at the very beginning without getting to far into the different belief. But then with the science understanding the different landforms, what we have now, how do you study different landforms and that’s the science integration.</td>
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<td>N</td>
<td>Okay, yeah, and so in that, in just that small piece of that big picture where they are creating their map of their room, asking someone to find it and then presenting that to the class. What would integrated in just that little piece</td>
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<td>K</td>
<td>All of it, I mean I just said it. I don’t know what else to say</td>
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<tr>
<td>N</td>
<td>Okay</td>
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<td>K</td>
<td>Being able to bring in the literature explanations, step by step, first next then finally, looking at the map, detail, description. Does it make sense is there anything I can fix on this map? Is there anything I can add to this map is there anything I can fancy up on this map, add color. Like in that book . . . and that’s kind of the concepts and then you can bring in the math, logical reasoning. Hey, looking at this. Did I draw a picture, did I make it to scale, do I have my list of all the places you want to find. Being able to say guess and check. Is that the right location? I mean there is so many things just in one package. I mean you pull that in and that’s the reading part. Being about to use thinking, in their minds pulling in the strategies of writing pulling in the strategies of math. Being able to do the scientific process and hey, this continent has this landform and being able to question in their minds. Do they know what a map is?</td>
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<td>N</td>
<td>Okay, . . . um . . . is the use of a ruler</td>
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<td>K</td>
<td>a tool</td>
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<td>N</td>
<td>a tool, is that part of the, I don’t know the youngest standards is that part of</td>
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<td>K</td>
<td>Measurement, it’s one of the common core units that they teach at the very end of the year using different tools of measurement and they don’t get into cm but the ruler is in inches. You have to be able to read a ruler.</td>
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<td>N</td>
<td>Yeah,</td>
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<td>K</td>
<td>And a lot of the kids right now understanding too that it helps a straight line. I didn’t get into the inches, but we will, you introduce it; you teach it as a tool</td>
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<td>N</td>
<td>Right, you’re just introducing it as a tool we used it—</td>
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<td>K</td>
<td>Exploration,</td>
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<td>N</td>
<td>Yeah absolutely. I’m not trying to beat this</td>
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<td>K</td>
<td>Yeah, yeah, I know. I just feel like I’m repeating myself.</td>
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<td>N</td>
<td>Yeah, I apologize for making you repeat yourself. Let me ask you this, in the first interview you brought up the idea of teaming as an important part of integration.</td>
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<td>K</td>
<td>Mmm Hmm. And I think that, this week for example. The component that teachers—is the time component. But, once you—even with the simple Polar Express. We were able to integrate all subjects and have fun and teach like I’m doing transportation. The understanding of different engines. Passenger engines, freight engines, freight trains. And learning how a train would travel on a map. Different, Caleb will bring it home and you’ll see but there’s a picture. So many little skills build in to one little worksheet, but the thing of it is is that I teaching it over and over and I get better and better and that’s what the teachers are beginning to learn. That you know what, once we put this great energy and time into it. Then we can add you can build and then you know it’s more meaningful to the kids. It’s not just a one shot lesson, a one shot lesson it’s a continuation. You know this week—and it saves time—this is the busiest week why not integrate and take turns, you teach like Angie’s doing science with measurement of hot cocoa and you know marshmallows and scientific process of going though how many marshmallows is it going to take to fit on your cocoa.</td>
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And so there’s so many little things and she teaches it over and she gets better and I think that the communicating, the talking about it, we don’t have time. We don’t have time to sit down and say, how did this lesson go? But at the end we know ourselves, this kind of self evaluation, Oh, I could have added this part and I could have pulled in the North pole and South pole and looking at a map and then its, wow . . . that’s powerful. That’s the communication part without having to sit down and talk because we don’t have the time. Friday nobody’s going to sit down and talk about it, we’re going to go off on our way, but we can come back to it and adjust what we need to do, because the kids are engaged—totally engaged in this and that the communicating part.

Right, yeah. So, then. Let me go from that, what you guys did this week when you were working together to what I observed and what you were doing because as far as I understand that was your own unit that you were teaching, right. You didn’t have that teaming effect and so I guess what I’m wonder in your mind is there a difference between that—where you’re doing the integration on your own versus where—

Oh, yeah! Yeah, it’s huge. I mean when you’re doing it by yourself. You don’t get as much. I mean even though we’re not talking or stopping because we’re getting it done. We’re still knowing that our kids are getting such a menu of each other’s work in our expertise. If I’m doing it by myself, sure they’re getting it. I would have loved to say, okay, what I did, it would be great if they could go into A room now and build onto the city or town. Or go into C room and she would be building on-and that would be the time saver. I mean if we did that for a week, we could be done. Instead of me trying to . . . pulling it out. But, you know, it’s an invitation to teachers and I’m learning that you can’t demand it. But if its collaboration and you invite. I said, hey guys what do you think about this when we do the Polar Express. Treat it as novelty and then build with the team, yeah great! So, they’re getting only 45 min with each teacher this week but it’s probably two months or three months worth of work. And that’s the beauty of the integration when you work with teachers. That’s what I think integration is is when you really work with a group. Integrating in the classroom, you do the best you can.

Okay, so I mean you obviously have some expertise from years of experiences as well as time to think about what you’re just sharing. The invitation to be a part of this versus having to do it. So, there’s a time factor to this and an expertise factor—where other teachers have different expertise and all of that. And so would you say the integration is inherently better, or should be better when I’m working with a team or is it just different?

It’s ongoing and it gets better. It’s always ongoing learning always when you’re working with a team because the excitement is there. OH, next time I’ll pulling this or I’ll do this. Or I can still do this with the next lesson. It’s the finding out, and then all along it’s like, the kids don’t stop learning, they’re always learning. It’s just how well you deliver it.

Okay, good. This lesson that I observed is part of this big lesson and everything is integrated even if it wasn’t in that twenty minutes. But it really is all part of the package. What do you think about a teacher who watches you do that and says, Oh, yeah I really like that idea. And so they do that. They have the kids draw a picture of their room, a map. They have the kids share. They have the ruler so they have the math tool. They have all of that stuff you did, but they don’t do any more than that. Is that integration?

No, . . .

It’s not integration . . .

I mean it’s an integrated lesson.
<table>
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<th>N</th>
<th>It’s an integrated lesson, okay. But, that’s not integration?</th>
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<tr>
<td>K</td>
<td>No, because the thing that the district tried last year to implement is called the UBD lesson. That would be phenomenal if everybody was required to do it because it would really make you see the whole picture. You know you set this goal and you’re building on it until the end of the year. And they threw out the blooms taxonomy and also . . . um what’s the book . . . terminology. But it’s the understanding that you’re building the rigor and relevance. Being able to take parts of a lesson and deliver at high level, higher level—</td>
</tr>
<tr>
<td>N</td>
<td>Oh, the 4 quadrants</td>
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<tr>
<td>K</td>
<td>Quadrants, thank you, my minds—but that’s what you build in as your moving along. They just give you you know –if they could just show the dynamics of how it all works in a whole unit or lesson that would be phenomenal because that’s how kids you know you build the ongoing learning . If you throw one lesson like that. Then you know, that, even that isn’t a true UBD lesson that I did, well it was but, It’s an ongoing lesson it’s not just one shot. Its oooon going . Just like this unit. We could do this for the rest of this year if we wanted. We could take quality rather than quantity and just build on what we do this week. We could do it until the need of the year if we wanted to. But then we would also not be meeting the requirements. They think math is supposed to be […] But you are doing it, you really are.</td>
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<tr>
<td>N</td>
<td>(Laugh)</td>
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<tr>
<td>K</td>
<td>But you know the way they set it up now, 6 weeks of this cc, 6 weeks of this. When really you could be doing it, you’re not just, you don’t drop it—</td>
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<td>N</td>
<td>You’re back to your weaving.</td>
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<tr>
<td>K</td>
<td>Narrative started day one, and we only look at narrative once. If teachers realized narrative is all year long. That’s how you build on, and you know How To books, that’s how your […] how too books, that’s how you do it at the end of the year. You know they got all these skills built up to persuasive because you’re going to be. End of the year, persuasive, you’re going to really persuade someone. And I always do the rainforest because that’s the perfect time to do it. You know not to cut down the rainforest. I mean there’s so many things. So, you do the best you can.</td>
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<tr>
<td>N</td>
<td>Yeah.</td>
</tr>
<tr>
<td>K</td>
<td>With the time you have, in a nutshell.</td>
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<tr>
<td>N</td>
<td>Okay, so let’s go to this [matrix] Here’s where you put your practice and here’s where you placed cc expectations. Tell me where—</td>
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<tr>
<td>K</td>
<td>Where will I be at the end of the year?</td>
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<tr>
<td>N</td>
<td>(laugh) Well, no, but that’s good to know. Actually, tell me then. What happens, what are you?</td>
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<tr>
<td>K</td>
<td>Well, I get a little more teachers involved. And we plan more science days and we plan more . . . you can’t go, you have to invite them and say, Hey wouldn’t it be great to save time if we did it this way?</td>
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<td>N</td>
<td>So, part of the limitation here is not just your schedule and district expectations but it’s also building that team.</td>
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<td>K</td>
<td>Well, the team sees the same thing I do. A lot of us stay here because we’re . . . its like how do you get to here. How do you? You throw everything at us, but it’s like, okay, we don’t need one more thing on our plate. Take off our plate and just give us this to work on and we would be here.</td>
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<tr>
<td>N</td>
<td>Oh Okay, and so in that process you’re saying through the year . . .</td>
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<td>K</td>
<td>Mmm Hmm</td>
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<tr>
<td>N</td>
<td>How about this lesson then? And not just the little piece that I saw but the big—where does this lesson go on here . . . Do you understand what I’m saying?</td>
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<td>K</td>
<td>Oh, it can be anywhere . . . what do you mean . . . I mean, I think the lesson is definitely here [indicating upper right] But you could go even—I mean you could keep going with the lesson</td>
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<td>N</td>
<td>Okay, well we put a limitation on this to say that this is—</td>
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<tr>
<td>K</td>
<td>As far as you go.</td>
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<tr>
<td>N</td>
<td>Yeah</td>
</tr>
<tr>
<td>K</td>
<td>Perfect world, how did I think the lesson went? Is that what you’re saying?</td>
</tr>
<tr>
<td>N</td>
<td>Yeah, the lesson as you designed it and have been able to deliver it. What level of integration do you feel like it has. I mean is it fully integrating all subject areas</td>
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<tr>
<td>K</td>
<td>As much as I possibly can without someone else saying you could do this, this, and this inside a 45 minute lesson.</td>
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<tr>
<td>N</td>
<td>Yeah, it doesn’t have to be a perfect world situation, just as it is—so it’s up here</td>
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<tr>
<td>K</td>
<td>Yeah!</td>
</tr>
<tr>
<td>N</td>
<td>Alright good. As you described it, that’s what I thought to, I’m not trying to trick you here.</td>
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<tr>
<td>K</td>
<td>No, that’s alright. It’s just the perfect world—what concept is that?</td>
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<tr>
<td>N</td>
<td>Yeah, No I understand . . . we don’t live in that world do we (laugh) Well, thanks so much for your time.</td>
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Pre-Observational Interview  
Interviewer: Nollmeyer  
Interviewee: Havel

| H   | So like literacy you know speaking listening writing and reading, it’s in everything I teach. In math we’re doing story problems, writing our answers in full sentences, having to explain our answers believe it or not in first grade. And that’s really a push with the new core curriculum. With reading the big change is nonfiction. You know, writing so I’m trying to incorporate writing in science journals in ss unit journals where they are reflecting on how that feel about a topic. I flip-flop science and ss so like one for a couple weeks I do one, right now I’m doing earth and sky and then I’ll go back to ss so we just finished a ss unit and they had like a ss journal where they had to reflect |

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on what it would be like if they were on the mayflower and having to be on a ship that long and they had to tell how they would feel as a kid on the ship. And just reading strategies that we do in reading groups even though we do something called walk-to-read in first grade where kids go to the teacher that’s teaching at their level. So, even though that’s happening I’m still teaching my general population class like you know urging them to use reading skills when we’re reading an article or looking at a video and I’ll stop it and say, do you understand what that term is? So it’s constantly throughout the whole day apart of teaching. Not only do they have to be able to speak and understand vocabulary and be able to explain it to other students and to me, they also have to be good listeners and pick up on certain things. With writing, if they can write what they know, they obviously understand it so that wasn’t so much a part of first grade in the past but now it is. They have to explain their thinking in math, in science, in ss—diagramming things labeling it whether that’s a science thing or in writing we’re doing how tos. Not only do they have to tell the steps, they have to diagram the steps and label it, and then the push is then to explain it in different sentences. So, one realization that I just came to. I always understood that reading and writing were part of the whole day but it never really clicked for me until recently. Last year, and this year I’ve been going through National Board certification and one of the things is the literacy component. I’m doing early elementary and there’s a testing portion and there’s a portfolio portion and I didn’t pass, nobody in Bozeman past so that made me feel a little bit better. Out of the 12 of us nobody passed. So I’m in my second year and I’ve chosen to redo two portfolios again and one of them is the literacy and they do give you feedback and I noticed in my feedback that I didn’t talk about student goals. I also didn’t talk about how I integrate, how reading and writing and speaking and listening are part of my whole day. How am I teaching them in my different subjects? I didn’t explain that; I am doing it, but I didn’t talk about it. I didn’t present evidence of me doing it. And in science I did that and that entry I did. And that’s one of the lessons I thought might be good to observe me doing and I purposely didn’t teach it because you kind of got me right when I was planning it. And I thought, well maybe I’ll wait. It integrates math and science. And I have to show that math and science were integrated in a lesson and it had to be apparent. I used the lesson where they had to use a unit of measure, I think I used cm last time but since that’s going away from our cc focus I’ll probably use unifix cubes because they’re used to working with those. And they had to measure shadows to see what happens when they have a flashlight and they’re shining it at a figure. What happens depending on where the figure is in the box, where the light is and that is the connection to earth and sky with shadow and seasons and time of day—out shadow is taller in the morning and the afternoon than it is when it gets closer to noon. So they kind of make that connection but I wanted them to do it, and part of the reason I’m doing that lesson is that I had to come up with an integrated math and science lesson for this entry. And it kind of made me think, it’s kind of easy to do I should do this all the time. And I talk about it . . . a lot of teachers think that it’s so much work to be able to do that. But then if you really plan out the lesson and use that whole UBD, backwards by design, it’s not that difficult to do. You just have to think about how can one subject be used, if it’s math and science, how can math be used as a tool? Or how can math be used to present evidence about what you’re doing in science. So, the kids could do it in first grade and having taught 4th grade in the past, when I first came to do it I didn’t think 1st graders could do half of what actually they can do. So, they can do a lot more than you think you just have to scaffold and provide—they had task cards that told them question that, kind of guiding questions. Where in the upper grades I’d let them come up with the questions. So that kind of helped. But, math and science are definitely an easy thing to integrate. The same thing with ss and reading and writing and science too with science journals. Explaining their thinking writing down their observations, what’s going to come next? We’re kind of introducing the whole scientific principle at this stage. It’s still elementary, but it’s not as hard as you think to integrate things. You just have to plan it out, and think about it ahead of time. A lot of teachers who are so used to a curriculum, you know going with a book and teaching that way. And it’s just kind of getting away from that, getting away from the science kit. You know they give you this box this kit and a lot of teachers just teach the kit. It’s not the kit, the kit is the tool and they standards are what you’re supposed to be teaching towards. And that’s just one piece of information given to us to teach it. But, you have to integrate it with all the other subjects, first of
all because of time, time to do it and to make it more meaningful for the kids. I try and get a lot of books in my library, nonfiction has been the push for cc, I’m trying to get books that have to do with what we’re learning about in ss and their in the library the whole year. What we’re doing in earth and sky or in living organisms so they are in genre based tubs so kids will explore those even before I’m teaching it. So, they’re familiar with it, so I think there’s lots of way to integrate subjects it just takes a little bit of time in the planning stage to do it and be aware that it’s not as difficult as it seems. When you have to do it, like I was in the position where I had to do it. It made me see that it’s not that difficult to do. So, that’s kind of my stump speech on integration and how I integrate. It’s more fun for me too, I think in teaching because I can cover and recover topics over and over again and tie back to something they already learned so if we learned something about, I don’t think we’re learning about symmetry anymore in 1st grade because that’s kind of moved to 2nd grade now, but when we were learning about symmetry, I would tie it into art that I teach or I’d tie it into another topic in science later in the year—talking about living organisms and how symmetrical the leaves are. And so you’re kind of constantly feeding back to something they already learned and then they’re like, Oh yeah I remember that we did that in math. One common theme is patterns we learned our first unit which is cc, because our team has adopted cc math earlier than the district, we’re not required until next year. But, we just wanted to do it. So, patterns was the big theme and that’s a tie in to kindergarten because they are just coming back after the summer and that’s probably the last thing they learned or one of the big ideas is patterns. And then that also translates into reading because one of the strategies in reading is looking for patterns in words: word patterns, and word families, and rhyming, and learning how to look at sentence structure. Like I’m having them close read so I’ll read a book like “if you give a mouse a cookie” he will want more and they can just fill in the blanket by me leaving off “more” and reading the whole book and leaving out words. They know the patterns and making that connection like, oh what other subject were we learning patterns. Oh it’s just like 2,4,6,8 but it’s words, rhyming patterns. Sometimes it’s a stretch but yeah, they’re all connected. So, tying that much in together. I just think it makes it easier for kids to learn because they see that. Wow patterns are patterns no matter where. I know I see them, patterns in numbers patterns in words. You know music, in music they are learning about patterns as well. That would be the real key to share that with the specialist teachers so that they are teaching patterns as well and they’re hearing it in every—so that would be one step further to go to bring them into the loop. It’s just, I know they try and come to some of our grade level meetings but it’s hard to include everybody and every teacher may be doing something a little bit differently. The more kids hear it at this age the more they hear something. They have to hear something so many times before it sticks. That’s where I think integration comes in because the more they hear a concept the more they’re going to learn it and make those connections between subjects and their learning and apply what they learned in reading to math and vice versa if they can make that connection. Some kids can make it sooner depended I think on where they are developmentally [. . . .] So, I think that’s kind of interesting to see where different kids are in their learning and they all learn at different rates but you hope that the more times you hit something that those kids that take a little longer are eventually going to get it because they are hearing it across the board throughout the day in every subject. And tying it in which is part of the planning process and being aware as a teacher that you need to do that. So, I don’t know, I’m just rambling on.

N  Yeah, well let me jump in here. Let me start by saying thank you for doing this. I appreciate you having your stump speech ready, that was excellent.

H  I don’t have a problem talking.

N  I think we all have that problem as teachers don’t we. So, I think I’m just going to. I mean I have a few things here to specifically try to get to, but I think I’m going to use a lot of what you were talking about to explore this. You moved through two descriptions of integration in my opinion. You talked about the idea of using one subject area as more of a tool and so you specifically talked about that with the science lesson and how the math becomes the tool, but you kind of talked about it
in the reading and writing area as well. And yet maybe that’s not an accurate description of it—I don’t know, you can help me with that. And then you switched over and started talking about this idea of concepts that are the same like the patterns where it’s a pattern in reading and a pattern in math. And so I’m curious in your thought process. Are they both integration? Are they different? Is one more powerful than the other?

H Yeah, it’s integration by having a common theme. That’s one way of integration. So, that’s separate and then, integrating subjects by using one as a tool to support the other. Whether it’s writing because you’re explaining your thinking and that—I would say literacy though . . . to be literate you need to be able to read and to write. And literacy at this stage in 1st grade is so important. It’s so key; it’s foundational. The other subjects really can’t be understood or taught without that. Students that are poor in literacy or are struggling in literacy will have problems in other subjects and that’s what we see. So by constantly teaching those reading strategies and writing how to communication and speaking and listening, the four elements. By incorporating those in ever subject, if you want to call it integration. That I think is the foundation. So it’s kind of two separate things. I mean it’s kind of a tool to teach sc and ss by teaching reading and writing and speaking and listening in those other subjects at the same time. You kind of have to because those kids that don’t have it are struggling in the subjects because they can’t read or they can’t write or maybe the struggle to read and write. So, maybe they’re talking or speaking to you—oraly telling you that they understand the concept and your having to scaffold in that way. So, I think integration usually one subject, I think there’s one subject that is more, I’m trying to thin how to say it, not necessarily a tool but one is supporting the other. So, like ss, writing or reading a book, a chapter book on a topic is supporting ss, the concept in ss because you’re teaching it through a story that kids can relate to. So it kind of is a tool in a way. One is supporting the other. And I kind of look at it that way, it makes it easier to for me to teach. You know if I’m thinking about the ss lesson I think how can I support ss through writing and reading. I mean how can I bring in writing lessons and how can bring in reading and vocabulary and spelling and all that to support the learning of the concept I’m teaching. I don’t know it’s hard to explain.

N And that’s where my research comes in because this is exactly the issue in the literature. And so, is it one supporting the other because that’s the nature of integration or is it one supporting the other because that’s the choice in the way you integrate?

H I guess it could be look at as my choice. Another teacher may look at it differently. When I was becoming a teacher, I did this later in life. This is like a second career for me. And I was in graduate school. One of the things I was taught is that ss is really easy to integrate with writing and literature. And that sc is easy to integrate with math. I mean that was kind of the approach in all of my subject specific classes was that. That was the teaching approach that was presented. It’s really hard to cover every single concept in math or in sc alone during that block when you have it. The only way to cover each and every area is to integrate because of the time in the day. I keep telling my kids that I need you another hour in the day. [Anne K interruption] So that kind of brings up back to the whole pattern thing and the whole theme—when I was teaching it I kind of came across the fact that my readers workshop which I was kind of moving into and getting away from the basil. The lessons the whole first unit was patterns and that dawned on me and I taught that later. I guess this was the end of October when I started picking that up because I was looking for a way of changing the way I teach literacy. In going through this certification process I saw some gaps in what I was doing. So, I was trying to implement some of these changes and I came across these lessons. And I’m like, patterns that’s what we just did! And I presented it to the kids when I started teaching. And they were like oh yeah! Because all of us are doing the same math so even though they weren’t all in my math class they were like Oh yeah we’re doing patterns too. And I said, well that’s kind of neat because I could see them making the connections between math and reading. And I liked that from a thematic standpoint, but to go beyond that with the other subjects with ss or like I don’t know how I could . . . patterns in history maybe be we haven’t covered enough to even get
there. So, that was kind of a stretch. But, there are limitations and I kind of realized that. But I’m like it doesn’t hurt to point it out to them when I’m teaching. But that’s different to me.

N So the thematic stuff that you’ve been exposed to specifically this example. Almost like more happy accident type, teachable moment type, unplanned but here it is and I’m going to use it. Would that be accurate?

H Yes.

N Okay, sure.

H Definitely, and it just made me think. That would be neat to do more of that or look at maybe after this year, look at where else can I link themes in reading. I just never really thought about it that way from a thematic standpoint and it kind of reminded me of that Storyline. But that, I wasn’t necessarily looking at that as integration in the same way. You know, like I wasn’t thinking that that was integration. I was thinking of a common theme, but I guess it is in a way if you think about it you could argue that it is integration. But, from what I was taught, blending sc and math and ss and writing and literature is an easy way to integration subjects. But in delving into this certification stuff on how I teach literacy and giving and accurate picture on how I teach literacy. Literacy is integrated into everything. That’s the once common subject that’s in every subject, every day. I’m constantly repeating a word. Having them repeat it back, speaking and listening that covers that. Writing down their thoughts in each of those subjects so you have writing integrated with math and sc and ss. And, I’m sure I know the gym teachers integrate words and word study into some of their games so they’re trying to integrate there and music with math. Music and math are so related. So, when I think about integration now I’m thinking, you know I’m probably integrating more than I think I am that I’m even aware that I am. And that aha moment for me when I realized that literacy was such a huge part of my day. That was an aha moment, yeah of course, I’m teaching literacy the whole day in every subject. So, that is fully integrated at least in first grade it is. I can’t talk for other—all of us I would say, I would think that all of us in first grade are integrating. Now, when you get up into 4th grade if I think about when I taught 4th grade I was a newer teacher then, but I don’t know that it was a much because you kind of separate things out in older grades. And I don’t know if that was because I was new and didn’t really understand the whole reading/literacy connection as much as I do now. Now that I’ve taught first grade and I can see why those kids in 4th grade that were struggling. Now I know what they were missing because I’ve taught 1st grade and I know where the gaps are. But, I think as they get into upper grades things are more taught in isolation would be my view of just what I see when I go into the classes. I’m a tech mentor in this building too so sometimes I get to see upper grade classes just going in and teaching a tech lesson or something. So I can kind of see things in other grades. But, I wonder . . . I don’t think it would be any different. It’s just being aware that you can do it. I mean 1st grade is so foundational with literacy that you kind of have to constantly scaffold it in I think. But, I would think that teachers—it would be easier for them to forget that part in the upper grades you be my guess because you’re teaching more in isolation each subject.

N Okay, well let’s come back here to 1st grade for just a minute. It sounds like in your description that much of the time you integrate your focus is on the integration of two subjects. Would that be fair like do sc I’m bringing in the reading or I’m bringing in the writing or I’m going to bring in the math or . . . something like that. I’m going to teach symmetry so I’m going to bring symmetry or vice versa. Is that . . . ?

H Yeaaaahh, but with reading and writing if you consider those two separate, if you look at them together or if you look at them separate it would be more than one because those are both, that would be two things integrating with sc and ss. But if you look at it from language arts—
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<th>If we just called them ELA.</th>
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<td>H</td>
<td>Yeah ELA it would just be one. Yeah it’s usually one, two things at a time. I think it’s hard, it would be hard to integrate sc and ss together just the two of them just because of the nature of the content. I think that would be hard to do, but it would be easy to integrate math into ss probably. It would be more of a stretch but you could have math if you were looking at distance or a timeline. I mean that’s definitely doable. So, you know teaching, integrating a lesson with reading, writing, math, I think that’s doable in sc or ss. So, that would be more than one. I think teachers would normally think about it as just two because you don’t, you kind of think in pairs I think, naturally. Unless you’re tasked with having to do it. Because you’re doing something like I’m doing now where it says you have to integrate the arts and ss which I guess in kindergarten, first you do that a lot because you use art as a tool to teach the ss content and part of their instructions were, without the art piece they wouldn’t get the concept . . . oh my gosh that is — without the art piece they wouldn’t get the concept! That was hard for me to think about. It still is! I’m still working on it and I’m like, if they didn’t do that art piece would they not understand and I’m like, that’s hard for me to grasp.</td>
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<td>N</td>
<td>Well, that kind of gets to one of the things I’ve struggled with though this and that is, is integration when I’m writing about my science, explaining my understanding of sci etc. It’s a tool I’m using in the science or is integration when I’m writing about my sc explaining my understanding of the sc and working on specific writing objectives? Do you see the difference?</td>
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<td>H</td>
<td>Mmmm Hmmm . . . . . a certain type of writing because you’re doing nonfiction writing also . . . because it’s sc but you might also be doing personal narrative too explaining your feeling on the subject or reflecting on what you did I mean that’s a different type of writing. So, what are you focusing on the writing or the sc?</td>
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<tr>
<td>N</td>
<td>Yeah, and so, are both integration? If I just have my students write about their sc or speak about their sc or if I have them read a book is that integration? Or do I have to have an objective also for the reading or an objective also for the writing. Is there learning taking place in the mastery of their reading or the mastery of their writing as well? Or are they both integration? Is one better than the other?</td>
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<tr>
<td>H</td>
<td>I don’t think one is better than the other but I would think that you would need objectives for both because what’s the purpose for doing it. Like with writing . . . like writing, doing a how to. Okay, and the kids are doing something, they are going to explain something that they understand. Now at this level they’re not really researching a topic, but let’s say they were. They could go and research all about plants and learn the different processes of plants and what not and that would tie directly into some of the standards they need to understand for sc. So, the objective would be learning the standards in sc and then also in writing how all of the elements, what is required with a how to. So, cause otherwise, if you’re not doing both of those, meeting objectives in both subjects then one subject would just be a tool supporting the other.</td>
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<tr>
<td>N</td>
<td>But we said earlier that was okay (laugh)</td>
</tr>
<tr>
<td>H</td>
<td>It is okay, but I think you’re getting more bang for your buck as far as student learning goes if they understand why they are doing both. Some teachers would say that both of those are integration. Yeah that would be a good argument are you integrating both subjects fully if there aren’t objectives attached to both. I think you’d hear arguments for and against you know.</td>
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<tr>
<td>N</td>
<td>I have (laugh).</td>
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| H   | And teachers would say, that’s a tool supporting that but then, well is that full integration then. I
would say now it’s not. Because they’re not meeting the goals and objectives each subject. It’s just
the one and then what are you going to do? The reverse later so you can meet the other one? Why
not do them together.

N
Makes sense to me (laugh).

H
Yeah, I would argue that that’s it’s not integration. I guess you could say full integration or not true
integration if it’s not the objectives on both sides aren’t being met. I’ll stick to that! (laugh).

N
That’s what I wanted, an answer! I just need to get to two others things here. First of all. I’m
going to put you on the spot after all that great description. Researchers agree that nobody agrees on
a definition. So, in a simple couple sentences, what would you say subject areas integration is?

H
I would say subject area integration is teaching two subjects in the same lesson sequence.

N
Okay, great. I love it! I would agree (laugh).

H
You know not less equally so with the objectives in place for both like I said before but we’ll keep it
simple.

N
No, it’s good. Okay, now what other teachers have told me is the hardest task of the day. And that
is just this matrix [ . . . ] So the question is where is your practice now? Not where you want to be but
where are you now day to day, what you do with the districts constraints and scheduling.

H
I would say that . . . I’m thinking . . . like somewhere in like here.

N
Okay, very good.

H
Because I don’t feel like I integrate everything but I do feel like I try to bring in where ever I see.
Like with math and science I try to bring in math wherever I can. During the day, whatever subject
it is that I’m teaching even in reading I’ll stop and say, oh let’s figure this out, if it’s based on the
story. I’m always trying to bring in at least one. If I can bring in more try to do it. But I would . . .
and definitely on this side and not this. I don’t think of myself and since I do teach all the subjects I
don’t think of myself on this side. And there’s even talk, I’ve had discussions with my principal and
his vision in the future is seeing where we don’t have a reading or a math or a sc block it’s not even
called that anymore. So, you’re more here because there is no you’re not set to a block and that
would definitely be the definition of being up here. Yeah, like we do have blocks here still. So,
there’s like and I have it right up there. We do reading first and then we’re into spelling which I
consider to be part of ELA but it’s a separate time. But it’s in the nature of how it’s delivered it
kind of has to be a segment, separate from the rest but it’s all part of that. Then we’re also doing this
walk-to-read so I have those kids for a certain amount of time so I have to do what I can and that
whole walk to read model goes out the window when you get up to here because you wouldn’t be
teaching that way. And there would be no computer time when we’re just learning about computers.
In a perfect world I’d just have computers in my classroom all the time, but I can only have them for
an hour a week.

N
Right, oh my goodness a week!?

H
Yeah unless there’s a free time. There’s a cart and I have to share it with the whole. But I do have
some technology in here. I have two computers, I have two ipads, I have Kindles.

N
So, you have some options.
<table>
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<tr>
<th>H</th>
<th>I have some options. But, math it’s 12:05 to 1:50 every day and we’re doing these math stations and this is brand new this year. But if I think about the math stations themselves and the whole concept of how they’re put together. There’s reading and writing and inquiry built into just about all of them.</th>
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<tbody>
<tr>
<td>N</td>
<td>And so that’s probably a fair defense for why it’s this high. Even though you have those, you’re integrating when you can for example in that math time, yeah it’s math time on the board but there is all of these elements being brought it.</td>
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<tr>
<td>H</td>
<td>Yeah, and I have to teach it at that time because it’s based on the schedule.</td>
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<tr>
<td>N</td>
<td>Right, sure.</td>
</tr>
<tr>
<td>H</td>
<td>And I . . . unless I could change that.</td>
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<tr>
<td>N</td>
<td>So, you mentioned perfect world. So that’s what I want you to do next. Perfect world, none of these constraints.</td>
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<tr>
<td>H</td>
<td>(big pause) I think I’d want to be up here.</td>
</tr>
<tr>
<td>N</td>
<td>Okay.</td>
</tr>
<tr>
<td>H</td>
<td>Like this, but I still think there would have to be some subject areas that I teach that would have to be, like spelling, I don’t think I could teach it any other way just because of the structure involved. So, that would bring me over here, and I think I would still need to do that. But, I think in order to do—I feel to be up here like this or even to be up here if I could go up there, I don’t see the reality of that right now in the way things are structured in this district. I feel like I would need more time. More teaching time. Right now I don’t feel like I have enough time, but to really do this I would need a least another hour in my day.</td>
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<tr>
<td>N</td>
<td>Okay, earlier you said that one of the reasons to integrate is to save time so to explain that to me briefly. How do you suddenly need more time?</td>
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<td>H</td>
<td>Because I feel that . . . with the level of integration that I’m currently doing I’m already integrating yet it’s not it’s still not enough time. So even if it was fully integrated I don’t think I’d be saving any more time than I am now. I think that I’m actually getting more done now because of the integration that I do and if I wanted to teach more, and even if I integrated more, I still think I’d need more time. Because I think I cover a lot more because of the integration but I still feel like I don’t cover it to the point—</td>
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<tr>
<td>N</td>
<td>Maybe that tapers off, that advantage of the integration levels out.</td>
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<tr>
<td>H</td>
<td>It might, that would be interesting to see. If I didn’t have a set block and I taught differently. Would I end up with more time? I don’t think so, right now. I don’t think I would. I still think that kids aren’t in school enough to teach them what they need to know. I think the day needs to be longer especially with the new core curriculum that I’m looking at.</td>
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<tr>
<td>N</td>
<td>Alright so, the final dot is the cc. Where on there do you think the cc’s expectations are for integration ELA math either one. Where do you feel like that expectation is?</td>
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<tr>
<td>H</td>
<td>I would say, from what I know about the cc.</td>
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<tr>
<td>N</td>
<td>And that’s all I want.</td>
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**Post-Observational Interview**  
**Interviewer:** Nollmeyer  
**Interviewee:** Havel  

<table>
<thead>
<tr>
<th>N</th>
<th>Yeah, excellent that helps so much!</th>
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<tr>
<td>H</td>
<td>Yeah just one dot. I think that . . . I think that it’s kind of where I have my dot.</td>
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<tr>
<td>N</td>
<td>Okay, sounds good.</td>
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<tr>
<td>H</td>
<td>Because I’m teaching the cc and I’m trying to get—teach in a way that I can meet those things. And there is more integration from what I can tell, on the cc in the math and reading than there has been before in any other and I’ve seen the standards of a couple different states. And I see that integration more. And with the new Next Gen Sc standards—a lot of integration. I’m on the state committee for STEM, Science Tech, Engin, Math. That’s heavily integration. And that’s all kind of fallen under the sc area but what’s coming down the pike is that you’re going to be teaching all of those areas in sc and in reading and writing so, yeah.</td>
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<tr>
<td>N</td>
<td>That was awesome.</td>
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<tr>
<td>H</td>
<td>It was fun! Every time I do a lesson like this where I’m more in the facilitator role and not giving them a whole lot of information and letting them find the answers on their own. I just feel it’s so powerful. It’s that whole inquiry thing, and in first grade you have to give them a little more scaffolding. That’s why I did this—</td>
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<tr>
<td>N</td>
<td>The questions.</td>
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<td>H</td>
<td>Yeah the questions and let them share at the end. And then I asked them questions as I kind of went around to each of them to make sure they’re on the right track. I just love the enthusiasm that I saw. They just kept coming up to me: wait you’ve got to come look at our box! No, no you’ve got to look at our box! It’s fun; it’s fun to see their engagement. It makes learning fun; that’s one of the things I love. Like I’m actually looking forward to this afternoon. I’m doing another lesson similar to this with ice balloons, but it’s with 4th and 5th graders in a STEM club that I created. We meet once a month and today’s the lesson but it’s the same kind of thing. I could just do this all day long. I love it; it’s the best part of teaching.</td>
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<td>N</td>
<td>Yeah, that’s great. So, to talk me through the integration you had planned for—and I understand that this is a larger part of an inquiry here—</td>
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<td>H</td>
<td>Unit, Mmmm, Hmmm.</td>
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<td>N</td>
<td>Obviously, today was really focused on exploration if we’re looking at the 5 E’s. Not that you didn’t do some explanation, but you were doing a lot of inquiry type questions as opposed to declarative stuff.</td>
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<tr>
<td>H</td>
<td>Yeah, that was my intent.</td>
</tr>
<tr>
<td>N</td>
<td>Yeah, so . . . how about the integration just within this little piece. What did you plan for?</td>
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Well, I wanted them to use the unifix cubes as a measuring tool, a unit of measure to show the differences between the shadows. Like, depending on where they had the light, use the unifix cubes to prove that okay, this shadow when I have the light up here is seven unifix cubes long compared to when I have the light down here it’s only two. So I wanted them to make that connection and use measuring with the unit of measure being the unifix cube. Now, we hadn’t done anything with measuring because that’s actually moved to 2nd grade as far as cc. But I still wanted them—

All measuring is?

Mmmmm, pretty much. Yeah, other than like with graphing, it has. We’re not doing inches or cm. It’s moved and that’s why I didn’t do cm. Last year, cm was part of what I was teaching in Everyday math. So, we used rules and they measured it in cm, but since we hadn’t even talked about that, I thought that it would be easier for them to use unifix cubes since they’ve used unifix cubes in other stations—not as a measuring tool but for adding and doing different facts like 2+3 and 3+2. So, that’s why I picked that because I knew they were familiar with it. If I put rulers in the mix they’d be like, they’d have no background and it wouldn’t help them. So, that was—I wanted them to use math in that way. And then I wanted them to explain their understanding through writing and also verbally when I was walking around—and with pictures. So, I gave them the option to draw it as well because I knew some of them would have trouble with the words. But I wanted both if they could do both. And the questions obviously they had to read and some of them could read the questions that I wrote down perfectly well, and others needed help with me reading them. And, that’s why I went over them on the carpet and said, you could ask again for help from me or A as we were walking around. A asked to come in because she had time, and I said that’s great because I remembered from last year kids wanted to share so much with me that it’s great to have two adults in the room when you’re doing this lesson because they want to share their discoveries and when there’s only one teacher in here it’s hard. So, I knew if I had A in here is would help. So, that worked out perfectly. And I remembered that from the last time, last year when I did this. So, I kind of tweaked it a little bit with the cm thing and having the extra adult in the room. I added one other thing that she came up with and I kind of thought of this but I didn’t implement it and when she said, can we video tape the shadow dancing. I’m like sure I have an ipad let’s video tape it. So, we did video tape a little bit; so I want to share that with them; put that together and share that and share some of their pictures. Also, share that with parents.

So, science . . .

Mmm Hmmm, science, math, writing, and reading, and speaking and listening.

Okay, which is part of the ELA?

Yeah, so speaking and listening—working with a partner they’re speaking and listening and then on the carpet they had to listen to each other share out and talk.

Would you consider that technology integration?

The . . . speaking and listening?

No, no, no, I’m sorry.

Oh, the ipad?

Yeah.
Yeah and that was my next question, what integration didn’t you plan for that just happened?

And it was the technology, the ipad. The videotaping and taking pictures.

Okay, alright. At the beginning you said to the students, you also said art and ss.

Yeah, the drawing and the ss . . . I’m not sure where the new standards are going but I remember from the old ss were in ss is that social piece. Working in a group, being collaborative which kind of dovetails into the science too and communication with speaking and listening. So, I thought that in order to be successful in this they had to be able to share. They had to be able to communicate their ideas and take turns.

Sure. Is that something you regularly say to the students or were you saying that for my benefit. Saying, today we’re going to do math and sc and you know that—

Well, I remembered that you were wanting to know integration and I thought, you know when I talk about lessons I try to remember to talk about why we’re doing this—the objective. So, I wanted that to be part of it because I wanted them to get that we are doing everything in this one lesson. Part of it was for you, but I also thought when I usually explore and tell them what the goal of the lesson is, they should know that it’s beyond shadows that we’re doing all these things in one. Why not tell them? I thought that was a benefit actually, but the originally came because you were here, but I said you know what I think it’s good for them to know this.

Yeah, I agree. I think it is.

And they make that connection. And I think I should do that will all the subjects whenever I’m teaching math, well we’re not just doing math what else are we doing? And then let them tell me. I want to do that more.

Good. Did you make any changes midstride that maybe affected some of the integration either by decreasing what it was or increasing what is was beside the technology piece?

The technology . . . I don’t think so. I don’t think I did . . . oh the only other thing I did, the unifix cubes. I got more out. I saw they needed more.

I noticed at one point A, towards the end, when a group hadn’t figured out how to use their unifix cubes yet. I saw her say okay well let me show you how to do that. Did you do that?

I talked them through it but I didn’t show them how because I wanted them to figure it out. In the directions I held up the unifix cubes and marker and said, what am I doing. I try not to tell them anything. I want them answering it. And so when I went to E and H and they weren’t sure what to do with the unifix cubes and I think N to I said, well remember when we were on the carpet, what did we say we were using them for. I held up the marker. How might the unifix cubes show how the shadow changed? How could you use the unifix cubes? I just kept asking and they got it (laugh) but I don’t know if they had any more time to do it.

Sure, sure.

But I know that I’ve learned over time that it’s just more powerful if you don’t tell them. They can come up with the answer if you just ask the right question.

Mmm Hmmm, okay. So we talked about all the integration you planned for. How effective you do
I think the writing part was effective and the drawing for most groups. I knew some groups had trouble with the writing. I actually had to ask what they wrote because I can’t read what they wrote, but that was the intensive kids. The math I would probably want to do more follow up on measuring a little bit, but I don’t want to do too much since it’s not my standard. But, I would like to use it again even though—using unifix cubes as a unit of measure or using something as a unit of measure with something else. And I think there’s something coming up with 100 days. We do a celebration on the 100th day of school and I think there is some kind of activity that’s measuring with feet—walking and measuring with feet. So, I’d like to make that connection just because since we haven’t covered measurement I think some kids are a little still not quite that clear on it. So, I’m hoping that and any other way I can bring it in. That might not necessarily be a math station or part of my math mini lesson but I can tie it in somewhere else. I just don’t want them to be confused. So, when they do go to 2nd grade and start learning measurement . . .

So, not having them you know actually record any of their measurement, is that a choice based on the fact that it’s not really your standards and so you kind of just—or is it more of a time issue? I don’t want to put words in your mouth.

No, I don’t want to spend too much time on it just because it isn’t one of the standards and some of them did—I want to look through their papers and see, I think some of them did actually draw or write how many unifix cubes they had. I think some of them did that but I don’t expect all of them to have done that just because I haven’t covered it enough as a teacher. But, I do want them to be, I do want to follow up with some lessons just so they understand how a unit of measure works and how you can measure something—we’ll probably just use unifix cube or a foot and so many feet. Just so they understand that concept. I think most of them will understand it, but some of them weren’t so clear on it.

Okay, yeah. The writing and now I wasn’t obviously paying attention to all of the students, but it appeared in some of the groups, one of the partners was doing the majority of the writing. I don’t know if that was—

Yeah, I did notice that and some of them, I told them they should take turns with the writing. And since we only had 45 minutes to do that. I would reiterate that the next time we do this. I mean, some of them just took ownership of that and that’s fine. But, I wanted them to be working together and that’s when I made sure when they were sharing that they each had a chance to say something and the next time we do something like this when we’re partner writing I would ask or reiterate that they both take part in that. Because I do want them both to have exposure to that. So, just because of the time constraints it was more difficult. And they haven’t done too much partner writing other than in math stations where they’re both having a chance to write.

Okay, yeah. So, they have a picture on the back of this that they drew and so we have some art integration. Could you compare or talk about and I think we talked about this a little bit the first time and I feel comfortable challenging you so hopefully you don’t mind, but could you compare the art we have there with the lovely suns and sun storms we have hanging out—solar wind or whatever you’re imaging out there with those art pieces.

Compare the art part of it or the integration?

Yeah, I guess I’m asking for you—a value judgment on your part.

Well, the art that’s outside the art lesson was more I would say there was more art in that lesson because I was giving them instruction on how to make colors. We had to make orange because we
didn’t have orange. And that was part of the lesson on how to use your brush to make the lines. So, that part of it is more art and the concept was science with the suns. Whereas this was just drawing a representation of what they did. I wasn’t instructing them on how to make the lines or do anything. But I did have a lesson and they didn’t do this, I can see this particular person, for ss where—and I have to do this for my national boards. And one of the things I missed the first time was I didn’t have that art piece instruction wise. It was more like this where they drew what they did but there was no art lesson attached to it. So, art wasn’t it wasn’t as full of an integration with this as it is outside because I didn’t do the art instruction for this lesson. But, I wanted them to, to give them the opportunity to—the kids that are more visual—to draw what they did. And the kids who also have trouble writing. But, you know as far as the argument on was it full art integration? Not as much I would consider it as that outside.

So, you’ve used that “full” a couple times now.

This is more of a tool; go back to that tool again. This is more of a tool to show their thinking rather than applying art technique from a lesson that I taught them. Does that make sense?

It totally makes sense. This is what I’ve been working through for a long time and so I—

And some teachers would consider this; some teachers would say oh I am integrating art! I am but not to the level of what some people would interpret integration to be. And my interpretation has changed over the last year on what that is. I used to consider this; oh I am integrating art. And I am but not to the degree that I am outside.

Okay, now we have “full” and we have “level” and we have “degree”.

I’m trying to explain.

No, no you’re doing great. These words are important to me because this is what I can take and try to create for us a definition. And so the question then is. Is there a range, is there levels of integration?

Yes, yes.

I love that easy answer.

This would be like a 1 or a 2 and that would be—on a scale of 1 to 5—this would be a 2 and that would be a 4 or 5 outside because of the nature of how I did it. Of how I taught and developed the lesson. I wouldn’t say this isn’t integration though but maybe to a lesser degree.

So, I might argue or I might look at that and go back to your statements about tool and things and say, oh okay so you’re using the spatial intelligence. So, we’re processing information or explaining what we know through the multiple intelligences. We have linguistic, we have spatial. So, are the multiple intelligences a method or a part of integration?

Yes.

Okay (laugh) I love those easy straight-forward answers.

(laugh) I would say yes.

So, this is a lesson obviously you taught last year it was a lesson why you were going to teach whether I showed up or not. So, why? Why do this?
H Why? I do it because I think for 1 it’s a great introduction to inquiry for the kids to kind of get used to working in that format for them. And it gives them the kids a chance to work together. It gives them a chance to communicate. And that whole partner thing is so key in first grade. And this is a great way to do that. And it also allows them to share, allows them to learn from each other, and I think no matter what subject it just happens that this is sc. I’ve done something similar in ss as well and it hits the same areas. Maybe tech instead of drawing. I think it’s just powerful to do, regardless of the subject area—what was the question again?

N Why go to all this trouble to teacher—

H And it worked well, I thought it was successful. And I thought they really got a sense of what shadows are which it’s not a major area in the Earth and Sky unit, but I think the inquiry part is the strongest thing. The shadows, I want them to have an understanding of it and the seasons and things. But the shadow part is the lesser of the two; it’s more the inquiry part. And the reading and the writing, and the fact that that integration, and the fact that they have to work together with a partner. To come to some conclusions and record it somehow. That piece I think is why I do it because it’s a strong lesson.

N Okay, Excellent. You probably remember this. I’ve added a few words to help us remember what you were saying there. So, I want you to add a new mark and this mark is where you think the lesson you just did would be at on there.

H Okay, I would say it’s pretty close to this.

N Okay, go ahead and talk me through that. What are you thinking?

H Because . . . and I have to tell you that the first time I did this lesson I wasn’t cognoscente of the reading the writing the speaking and listening part. It was basically I started the lesson with math and sc. But just because I’m always integrating everything else I want to record that I just wasn’t cognoscente of that reading and writing and speaking and listening. And now that I get that, I think it’s closer to this perfect world because I have that understanding of what integration is and I probably knew it all along I just wasn’t aware of it. I mean I was doing it, I just didn’t understand as much as I do now about backwards design about literacy about integrating subjects together and the fact that an elementary teacher is doing it all day long. And I just never made that connection with how literacy is in everything that I do and now I get that. And I think it’s again it goes back to what I’m doing with the national boards. Some teachers might get that without ever doing that but for me I needed to go through that process.

N Okay, and so we’ve talked about trying to figure out levels, we talked about the art piece. You know last time we talked about, do I need a lesson objective for each of these subject areas. And we’ve kind of come to a bit of a decision that there’s levels to this integration.

H Mmmm Hmmm.

N And so, when we consider the reading and the writing piece that occurred today with the sc and the math. Put a value judgment on that. Where is that piece? We they simply using those elements as tool to facilitate this inquiry or was there really a focus on specific skills or something you’ve been working on?

H Well, I could have done more or I could have given them more instruction on what I was expecting as far as the writing and it didn’t. But had I done that, I would have done that more so in the beginning of the year if I had done this lesson. I would have put up a sentence frame up there and
had them . . . I would have started the sentence and here’s a couple of examples. When the light is up high and leave a blank. But I felt that it’s almost February, they should be able to do that by now and they should be able to apply what they’ve learned. Up in reading, whether I’m their reading teacher or not and what we’ve done in writing. So I felt that I didn’t need to explain that again. But, had I done that and taken the time like over like maybe the morning . . . reviewed sentence structure again. Then, maybe if you’re talking about levels, the level of the writing and the reading part would be more equal with the math and the science. But I didn’t do that. I didn’t have time it just didn’t work in my day. But had I done that, it would be more equal and it would be more here [upper right], but I would kind of have to have my day planned like all morning. We’re going to talk about sentence structure and we’re going to talk about how you read a sentence and this is the question and how do I answer the question. I want to put part of the question in my answer. I would have gone that much further. But because of the nature of the timing I couldn’t do that and I was hoping what they learned they could apply to this. But, in a perfect world, I would have done that.

N Okay, or we could say, maybe based on your description, we could say that the lesson objective could be written as students will practice students will continue to use skills that they’ve already learn as opposed to we’re learning a new skill of sentence structure.

H Right.

N The expectation is by February you’re going to do these things and so I mean we could argue—

H That that’s the objective, yeah. And I’m writing clear sentences with punctuation.

N Now, would you argue that you’re more inclined to do that or to be conscious to do that now that you are aware that you are integrating literacy all the time as opposed to before when you were doing it—

H Yes. For sure, yes.

N That’s what I would think too.

H Yeah, and I’m paying attention to it more. So, when I’m looking through these sheets later today, I’m going to see, oh you know I notice that they’re still not capitalizing that, they’re still not using punctuation. But I can tell you that what I see just by looking at this real closely is that it kind of goes along with what I have in my writing conference notebook and I can tell who’s work it is. But, because I didn’t put the parameters, this isn’t their best writing.

N Sure, okay final thing before the kids come it . . . well we’ve explored it, let’s see . . . we’ve talked about the levels, we talked about the different ways to integrate. This just happened to be a sc based lesson where you integrated but you’ve done a ss lesson. You’re doing this regularly.

H Mmmmm Hmmm.

N When we talk about those levels of, this is primarily sc based and I’m maybe using some of these more as tools that really focused on them as opposed to your perfect world scenario where there’s a lot more instruction in all the different areas. What influences your choice?

H On what level?

N Yeah, and maybe it’s not just a preference—

H Time, time in the day, the blocks that we have the schedule is one. And pacing also which is kind of
related to time as far as I need to finish this earth and sky unit because I’m going to be doing SS next. And my plan was to start next week with SS but I have a feeling that I’m going to be doing this a little longer. So, that’s why the focus mainly was shadows and inquiry with the other stuff being less.

N Okay, thank you so very much.

<table>
<thead>
<tr>
<th>Pre-Observational Interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviewer: Nollmeyer</td>
</tr>
<tr>
<td>Interviewee: Bilas</td>
</tr>
</tbody>
</table>

N What’s a typical day look like, like today I’m what kind of happened today—would be a good way to think of it unless today wasn’t typical

B No, no, today was typical. So, a typical Monday we do word study in the morning and then we do a writing assignment. And I know you’re focus is on integration. Sometimes that writing assignment is integrated sometimes it’s not. So, . . . previously we did a big animal studies project and so the writing assignment was writing about—an informational piece about your animal. So, directly connected with our SS or sorry with our SC. Right now we’re doing a thankful essay—trying to come back around and write a fully developed essay. So, we’re writing a 5 paragraph essay. The students got to choose a topic on something their thankful for. So, the introduction—

N And so remind me, third grade, right?

B Third grade, yeah. So, the five paragraph essay is what is the expectation now according to the CC. So, introduction, three supporting paragraphs, and the conclusion. So, we do that, then we do some math. And Mondays are usually math problem solving days. So, I try to choose an activity that will help them use strategies they already have or develop strategies they are not familiar with yet. And then, we have walk to read in the afternoon. And so, like I told you on the phone we doing—my walk to read right now is really integrated with SS. We just did pilgrim stations today so the students got to make candles, did candles. And corn jewelry, corn kernel jewelry. So they could make a bracelet and some kids wanted rings. So then, that’s what we did.

N So, how long is that walk to read time?

B It is . . . . 70 minutes. And then this afternoon we were working on some more SS with the American Indians. So, I usually am either doing a block of SS or a block of SC. I don’t do SC and SS at the same time because it’s too difficult. Although, in February I will kind of combine that when we talk about the Industrial Revolution and Simple Machines because those two things lend themselves nicely to being kind of integrated. And so we’ll talk about slavery and all of that and then move into the Industrial Revolution and that will overlap with our simple machines SC unit.

N Okay, sure. So, every morning there are doing a writing piece and sometimes it’s integrated and sometimes it’s not. And so when they were writing about the animals. That was something you were teaching in the afternoon—

B Yeah, so—

N Science part? And then you were using that same writing time you always have--

B Yes

N To continue to work on the science but in a--

B Yes. And I used the writing as incentive to working on their habitat. They made habitats. And so, they had to finish their writing. Go through the entire writing process and have a published piece before they could start building their habitat. And so some periods were . . . it would say, writing/science on my board because some students were working on the writing piece and some students had finished the writing piece and had moved onto the science piece. And then as students finished the science piece then they got to come up with the extras for our zoo, which could be games or maps or bookmarks for their habitat exhibit or whatever.
Okay, excellent. Looking back over the interview, there was the idea of connection is all over that and it kept coming up. And so, does that kind of wrap up integration for you I mean when you think of it do you think, connections?

Mmm Hmm.

Is that a fair--

Yeah, I think so

When we went through that you talked about different types of connections. You talked about teachable moment type things where something comes up—one of the specific ones an egg needing the energy to hatch.

Oh, yes, right

And you guys were talking simple machines and it kind of just went this direction

Yes

in making those connections and I asked you how do you distinguish between or do you distinguish between that kind of connection which is just this teachable moment and a lesson you planned like okay we’re going to write about this scientific thing and it’s a larger piece. How do you feel about that now?

Okay I was like—what did I say?

You know honestly I feel like they’re both integration. It’s not necessarily the direction—Like this just happened to me last week. We were talking about who were the first Americans to come, who discovered America. Of course the students say things like, pilgrims and Christopher Columbus and you’re like, no it was the American Indians. Then a student raised his hand and he said, I thought Adam and Eve were the first people. . . That’s not necessarily where I see that lesson going obviously.

I wasn’t planning on talking about creationism but it came up and I really feel like it’s important to honor student question like that. And so then that led to a discussion about creationism and aliens and evolution. Yes, I used the E word and I got in trouble for it. I wasn’t teaching evolution but I did use the word evolution because some people believe that. But then that led to a really great lesson on perspective and how we all have different perspectives and how all those perspectives can exist together. Which also ties directly into SS because history is a matter of perspective and everybody has these different perspectives on these different events that happened though history. And the Native American perspective is completely different than of course the European perspectives. And the same thing on things like world wars depending on what side you were on your perspective is a little different. And I feel like those connections are integrating kind of real life, like the bigger ideas, like the bigger . . . because the students may not remember all of the little things about the Native Americans or whatever, but I think the bigger idea is perspective, and they will remember, yeah we all have different perspectives and all of them can coexist together and you don’t have to agree with me. But, that’s what makes the world an interesting place because we all don’t have the same perspective on things. Is that what I said the last time?

Something very similar

Oh, okay (laugh) at least I’m consistent

(laugh), and you did describe it very similarly, and the idea that—I think you actually brought up levels. You said, maybe it’s not as full of an integration, as complete as maybe when I’m bringing in multiple disciplines for a project, that kind of a thing

Mmm Hmm

It sounds like you’re going ahead with it anyways . . . last year you expressed frustration over the walk to read--

Yes

as much as you liked the idea it inhibited your ability to integrate with the reading

Yes
And it sounds like you’re doing that right now and so are you feeling the same tension or—

You figured out how to make it work? Or where are you at on that . . . Or do you not want to go on record on that (laugh)

Yeah exactly, I plead the fifth on this one. So, there’s still lots of frustration but it didn’t really—and those frustrations were expressed both at my team level and kind of at the larger level. But, it seems like here at Emily Dickinson they’re moving more towards a . . . a more towards a grouping strategy than not. So, like the fourth grade this year is switching classes even more than they switched last year.

Even more middle-school

It’s even more compartmentalized. And so, that was a losing battle. So, yeah, I’m still just as frustrated with it. I mean I am integrating some SS but then that’s problematic too because then my walk to read students are getting a ton more than my regular classroom students and that’s difficult because they have a lot more background knowledge. I teach the higher level students and so it’s always that battle. I mean those kids are just getting higher and further ahead than the rest. And even with the writing. I try to do writing during my reading time too, but like. What’s that doing? That’s just making those kids even better writers.

Giving them more opportunities--

Yes, and even more of an advantage. And then of course when I do a writing whole class, then, yeah I do I have a whole group of kids who are done ages before the rest of the class. And so it creates a problem because then what am I doing with those kids. I’ve got to come up with extensions and keep them doing. And who is it typically? It’s my high kids the kids I’ve had in my reading class as well because they are just continuing to get—you know they get double dips of everything that way. So, I’m still not loving it. But, it was something that can’t be changed. At least, at this point. And with the CC you know some teachers feel like this is exactly what you need to reach the CC standards. Kids who are getting instruction at their level so that they can really start to develop all those things that the CC is asking for. I don’t necessarily agree with that.

(r) (laugh) okay. Alright, let’s focus here for just a minute on SC and ELA. I’m looking at integration as a whole, but my focus is kind of there.

Yes, okay

So, as you have opportunity to do this. You know you’ve given a few examples, but how do you go about integrating those two, when you plan for it or can make it happen?

So, it usually starts with the science content and then let that kind of lead. So, like even when I was thinking about this last writing assignment even though it’s not integrated, the first thing I thought about was my SS content so how can I build a writing assignment around what I’m going to be teaching in SS or how can I build a writing assignment around what I’m going to be teaching in SC. So, I start with the content and then I build my experiences around that. So, any sort of reading. But, reading doesn’t work very well because it’s walk to read time. So, I usually don’t, you know the reading will be integrated through the content piece during a SC lesson verse during a reading period. Where as if I had complete control over my classroom I would probably be reading science content during my reading block. Which would free up my writing block to write about SC and my SC block to focus on you know the experimenting or inquiry part of it. And then my reading block to read about SC. But since that doesn’t work--

So, starting with that science and building around it to bring these things in do you see that as ending up being a good balance between the disciplines or do you feel like it’s really science driven and the writing or the reading is just kind of brought to facilitate the SC?

I feel like that’s the only way you can fit in all of your writing projects for sure. If you’re not integrating your writing projects I don’t think you can, I don’t think you’ll do enough writing in a school year. So, if you’re teaching writing in isolation I don’t think you’ll ever meet what the district—I mean the district expect us to be writing 8-10 complete pieces taken to a published draft per trimester—that’s 30 pieces of writing a school year!

Mmm Hmmm

I mean that’s impossible unless you’re integrating it into some other content. So, yeah, I feel like . . .
I feel like it is a good balance because—and there’s still a lot of freedom. I know people say you know students are supposed to have freedom when they write. But there still is a lot of freedom. Like my animal project, students could choose whatever animal they wanted to focus on. And there were some requirements of what needed you know type of content that needed to be in that kind of writing but for the most part they could write, choose how they wanted to start their writing, they could choose how they organized their writing, they could choose the animal they wrote about so there’s still choice about that.

Mmm kay, you might have already done this, but stepping out of reality for a minute. If you had control, what would that perfect SC ELA lesson or maybe you need to go beyond lesson, unit or something—what would that look like?

I feel like it would look like... so like for my animal studies unit for example. That was, writing was focused on animal studies. When we were, during science time we were focused on animal studies. If, in my ideal world, if it was reading we would have been reading books about animals, probably fiction. Fiction animal stories. The students actually did another piece. They did a personal narrative about an animal experience. So, it would have been just completely animal focused. So, everything you would have been doing would have been animal focused. So everything you would have been doing would have been connected back to that animal, animal studies. So, yeah the fiction, the books, you know we would have been reading fiction about animals. We would have been writing animals even the nonfiction or the personal narrative piece. And then we would have been learning content and doing the inquiry experimenting stuff during the actual science time.

Okay, excellent. You mentioned CC a minute ago. This is a new piece that I’m adding to my research. So, what is your understanding of CC expectations for integration?

That’s a hard question. What is my understanding...?

Yeah, what do I make of it... Um... I think if you look at the units that they’re pushing. If you go online and start searching for things. They have a high level of integration. I think that they are expecting that if you’re a unit you’re teaching... you have the fiction piece, so maybe you’re reading a story out loud to your class that’s fiction. But, then you have to have these nonfiction pieces as well. And that shift has totally changed from being primarily fiction to being primarily nonfiction and informational texts. So, I think that in a way that’s encouraging integration. Telling you that if your students are supposed to be reading so much nonfiction then why wouldn’t you have them be reading nonfiction about the content in other areas like SC SS?

Yeah, excellent. Makes sense to me (laugh)

Okay, (laugh)

You probably recognize this

yes, I do

I don’t want to be unfair about this, but maybe I’ll ask you to do it all over again and then we can chat--

Yeah, where it was before. So, yeah, I actually remember this very well and it’s the math that holds you back I think. That holds you back from this “fully integrates all subjects and knowledge”. So, I don’t feel like I can be like, here (pointing upper right corner) because math has to be taught in isolation. Especially the last two years I’ve spent here—especially with these students because I think that they have in some ways really weak math stills. I mean even being taught in isolation I don’t think that students are thriving consistently--

Okay, so what I had you do last time was to put--

mark and X
**Post-Observational Interview**

| N | put a little X where you think your practice is right now. This isn’t this ideal situation—this is where it is right now with all of the realities of life |
| B | (pause) This is really unfair though because then you’re going to compare it (laugh) |
| N | (laugh) You don’t have to B, I can tell you where you were at |
| B | Well, I was going to say. I feel like I was probably right now, somewhere down here |
| N | Right on! |
| B | Okay |
| N | That’s right where you were |
| B | Right, okay, yes |
| N | You right in that area. And this is what you remember the best—then I asked you what is that ideal, where would you want to be in the perfect world situation and you put yourself here (upper left) and then you moved it back to here (slightly down from that). And I bet the math thing is what you were thinking. And so, would you still agree that’s that is kind of as much as we can understand this? |
| B | Yeah, |
| N | So, what would you say then, I put circles, put an X, where do you think CC expectation is? |
| B | (pause) Hmm . . . (big pause) |
| N | I mean you’re right there is only you know there’s only the few standards the ELA the Math standards from CC at this point. Yet you spoke of you know the units and things that they have so don’t over analyze this in saying well it’s not really applying to all these yet, that kind of thing. Based on what you explained to me before, just go with that. What do you think that means? |
| B | Well, . . . |
| N | I’ll be quiet and let you do your thing |
| B | No, no, no I was going to say . . . I think that when you look at the units that they’re trying to package and give to you. I think that they try to connect it to math. I don’t think that that would work in reality. But, that aside if it was like these ideal CC people. I think they want it up here. (pause) because I think they do want you seriously like not even thinking about different subjects. I think they want you—they want to completely integrate it where you really would be doing that—in reading you’re reading about the topic either fiction or nonfiction, in SC you’re or SS you’re getting the facts about the content through reading or inquiry based or activities, and the writing would be connected and then your math would be somehow connected to that real world . . . you know, how many pilgrims came over on the mayflower, how many pilgrims died that first winter—you know half of them died that first winter. How many were left at the end? You know I think that they would want those problems to all be based around that content. |
| N | Okay |
| B | Is that your understanding . . . or are you not giving and opinion? (laugh) |
| N | Yeah, I don’t know? |
| B | You’re the one asking the questions (laugh) |
| N | Yeah, I’m the one asking the questions (laugh) I hope this is what they want. |
| B | It seems like it, I mean they don’t really want you using curriculum for math. They want real world experiences so then your problems should be based on your content. I think that’s hard though. That requires the teacher to be doing a lot of work outside the classroom to develop those things because that’s not how a standard curriculum is set up. You know so writing up all those problems, creating those—you know, I can do that on my problem solving days because that’s what that day is for and that’s one problem. But can I like develop Pilgrim math? I can but it’s going to take me a long time for an entire unit. And then also integrate the you know content piece, the math content piece of that. It’s a lot of work, that’s asking teachers to do a lot |
| N | Mmm Hmm. I agree, I agree whole heartily on your last set of statements. The expectations seem to be asking for a lot of work. |
Interviewer: Nollmeyer
Interviewee: Bilas

N  I appreciate you doing this again and inviting me in. That was an enjoyable lesson to watch.

B  Sure

N  Maybe just talk me though—I know this is a bigger piece but—well actually let’s start there. Maybe talk me through the whole lesson here, the whole piece of how you’re doing over the multiple days whether you’re seeing it as a set of lessons or as a single lesson.

B  So, it started out last year I signed up for to pilot Indian Ed for All lesson so I could choose any lesson of a list that was appropriate for third grade. And so I choose reading because I really like that, my class, and I felt like that was the one area where they were all capable of reading and all capable of writing. So, I felt like I could of—I mean if there had been an interesting science lesson I would have also piloted that with my reading kids just because I would have already kind of know what I was starting with. So, they provide the lesson plans, but then of course they’re really at a pretty low level and do I went through and I said, okay I want to do this differently, I want to do that differently. So, the day you were in that was kind of the first—we talked about the day before, what is a traditional story? And tried to break down some of those misconceptions, a lot of kids said, a story about your Christmas tradition or the holidays you celebrate because of that word “tradition” And so trying to get them to move beyond that into the bigger understanding of traditional story. So we did that the first day and that’s when they started their posters and that’s what you saw them finish up. It was a creative way of representing that. Most impressed obviously with that orange tree over there. I thought that was like, I mean they came up with that all on their own—

N  Oh my goodness, yes

B  You know, about why do people tell stories aloud – to pass it on to other people

N  Very creative

B  So, I feel like they really internalized that whole idea of telling it over time from generation to generation

N  Almost like they have been doing factoring in math

B  Yeah, and no they haven’t they totally came up with that all on their own. We haven’t done any math that looks anything like that. So, that was you know just trying to get them to think about why stories are told aloud or how that traditional story gets created and then eventually recorded. But then we also talked the day before about variation. So, why are some stories—you know why do we get that variation. Is it 3 ugly step-sisters or 2 ugly step-sisters. 3 little pigs or 3 big bad wolves—or whatever and it’s because of that retelling over time. So, then we did the visualization so that they could hear it the way it would have been told. And I knew that that Salish was in there. So, then the next day, which I guess was yesterday, we talked about what did hearing that Salish do for you and a lot of kids said, my vision was blank or my vision was dark or my mind paused. And there were some kids who said, well I started listening to see if I could figure out some of the words because sometimes Foreign language has similar sounding words so you can pick up a word here or there maybe get the gist. And so there was kind of these two groups. Kids who were like, nothing was going on. I couldn’t figure out anything and then kids who kind of took it on as a challenge like, what were they saying during that time. But, just so they could get a sense. This is a traditional story it’s not told in English. So, then we moved onto yesterday talking about how we can ask questions before during and after to help us get a better understanding and then what those questions,
what categories those questions fall into and so those are up there. The explicit, implicit, opinion or feeling type questions and how those can lead to a deeper understanding of the story. And lead to good discussions and that you know questions don’t have to have an exact answer that it’s okay to have different thoughts on things because it’s just really extending our understanding of that. And today actually we continued that. So, we categorized our questions. They all wrote before during and after questions on sticky notes. Then we started grouping that yesterday and then today we did races in the book to find evidence that supports and answer to a question. So, I just had them, close your book, whoever can find that piece of evidence first raise your hand. Just to get them kind of going back in and then showing them too that there can be many different pieces of evidence that support a question. So, lots of correct answers not just one. But, then in some cases it is just one piece. And then, from there we’re going to move onto sequencing so we’ll sequence pictures from the story and see if they can use those to kind of retell the story. And then, at the very end we will read about fire and how native Americans used fire in their daily lives. And then we’ll go out and do an inquiry based fire building activity.

N Oh, right. Where you’re going to have them try to build it. Where you’re going to have them make fire!

B Yes, last year that was basically it. I said, we’re going to go out and you can use whatever in nature. And I did have some instruction I printed off line—certain techniques they could try: The string. I don’t know—

N The bow

B Yes, the bow technique and the two sticks together technique. And then I just said, I’m willing to give you each one match when you’re ready to test it. You can tell me exactly where you want me to light it. I’ll put the match there. And you can see what happens. Then, observe, take what you see and then see if you can improve. And what I was really surprised about was last year I had boy scouts and I thought that was something they taught in boy scouts and yet my boy scouts couldn’t even start to build a fire. Because I kept waiting to see the log-cabin you know this is how we learned, the log cabin or the teepee or you know any fire building technique. No, none.

N Maybe there’s new things they do in boy scouts.

B I guess so! But then that made it kind of interesting because then when we reflected some of the kids were really frustrated. And I was like, right but now you can understand 1) why they wrote stories about fire because it was so difficult to obtain that once it did come it did seem like it must have been from something up above. It had to be like magic. And then also they never let fires really go out because they were so difficult to restart. So, as a child you would have seen fires burning probably consistently your whole life. So, then, you know. Where does that fire come from? Well, it never goes out. It was stolen from the skyworld right. And now we’ve kept it burning this whole time. So, getting them to kind of think about that but then also realize the science behind it. And that it’s not just, yeah throw a bunch of stuff in a pile and light it up. I mean I had kids ask me to light pine cones. I’m like, well right. But if I just like put this inside a pine cone nothing going to happen. And of course the match just goes right out. Right, so how do you get it going. And of course this is a great time of year for it because last year there was snow on the ground and so they had to figure out—okay, start using your brain because if I take something that has been buried under snow it’s probably wet. And so then the kids would, we have to look under the trees—okay, good. But, no one was successful last year.

N Oh bummer!

B Yeah, but good! Because I think it drove home the point, and I told them if you want to go home
and continue trying you can tell your parents, they have to supervise you and I said, one match and I want to see it, videotaped or a series of pictures that show that success because you can keep trying. Anyway, and so that’s what we’ll culminate with. For this kind of part of the unit.

N Excellent. So, tell me then, let’s just be specific for a second to what I observed. What was the integration that happened during that day?

B Yeah, so I was trying to combine a traditional, the concept of traditional story with the SS piece. I mean I could have chosen anything to teach traditional story. I could have chose little red riding hood, or three pigs. I mean those are traditional stories. But, those are traditional stories our culture is already very aware of. So, I liked that I could combine that Native American piece because that connects with what we’re supposed to teach in SS. Then it helps me to get that content taught because I have very little time to teacher SC and SS in isolation. And so if I can combine that with something else then I am maximizing content and I can teach it with more depth. Unfortunately, my reading kids get more depth. Like they got an entire story about the Wampanog tribe and their first interaction with the Pilgrims and the rest of my class didn’t get that.

N Right, so back the walk-to-read issue.

B Yes, and they’re getting a lot, they get to read this traditional story whereas the rest of the third graders don’t get that. So, but it just allowed me to integrate some more of that SS piece and feel like I was doing my SS content a little more justice versus just kind of hitting on it in a shallow way.

N Okay, then as you said, it’s in the standards that we will integrate IEFA, it’s already there so you’re fitting that piece also.

B Yeah, and then today, I know this isn’t what you saw but today they were talking about, well is this really how we got fire. And I said, well, who do you think believe this. And they said the Salish people. And I said, right. This is how the Salish people believe we got fire, this may not be how you believe we got fire, but this is how this particularly tribe believes.

N You got to integrate religion! (laugh)

B Yeah right (laugh) I know let’s just keep coming back to the religious piece. I mean I’ve already gotten in trouble for it once. I feel like once you go down the path you might as well keep going (laugh) there’s no point in turning back now.

N (laugh)

B And so, but then I did read out of a separate book that is just a summary on all the different tribes and where they are located in the state. So, then I read out of there, just a piece from their creation story. So, then the students got to hear that as well. That this is, coyote is deeply embedded in the Salish belief. Even beyond you know just helping to get fire but he was the leader who came.

N Forgive my ignorance, Salish is a MT tribe?

B Yes, yeah I didn’t know any of this either. Yeah, so they’re in Western you know up in the Flathead region so North Western area. And so, coyote is there, coyote stories are like their set of—

N Yeah so you find him all over

B Yeah, so I kind of got to integrate more of that real life piece. Where it’s like we’re reading this story, that you know some people believe is true, but if you were just reading it at face value it’s
fiction. But it does connect back to like a bigger religious piece for the Salish people and so I was able to kind of pull that in today as well. And then we also connected to other stories because we were talking about this hole in the sky and why is there a hole in the sky and we talked about how it is kind of a pathway then between the skyworld and the earth and what other stories do we know what other traditional stories, jack and the bean stalk. A lot of other native American stories have that. So, kind of gave us the opportunity to make other connections as well back to our own culture our own traditional what we would consider our traditional stories.

N Our traditional, yeah. So, I want to explore this a little bit more, but let me back up just to the lesson that I observed and just ask—

B Yeah, sorry I keep getting off track.

N No, no I want to get the full picture too, but I want to make sure I don’t forget to ask this. How do you feel like that piece of the lesson specifically did integrating that SS piece into your reading? I mean do you feel like it was heavy on the reading side or heavy on the SS or do you feel like it was good—

B No, I think it was heavy on the reading side.

N Okay.

B For sure, because we didn’t, because they didn’t see the video it was difficult. Because in the video, if you see the video, it shows and actually Salish leader telling the story. It shows like real life Salish children, it shows them in a Teepee. So, there’s like a lot of their lifestyle piece that you don’t see unless you watch the video and I didn’t want them to see the video on that day and so—

N Because you were working the reading skill of visualization.

B Right, and so then it doesn’t work if you show them.

N Right, that makes sense.

B And so, that’s why it was heavier on the reading because and then once they see that that discuss that other more real life like who are the Salish people? What did you notice about where their story was being told? What do you think that tells me about their culture? You know more about the SS piece can come in once they have a little bit more background and they’ve seen that. So, I think that was a reading heavy lesson for sure.

N Okay

B The content was SS based but . . . it was a reading skill.

N The focus was on the skill, the reading skill.

B Yeah.

N Sure. So, now big picture now. Clearly this is all planned out, so in that big plan which, what are all the subject areas that you hope to end up integrating? Obviously the reading and the SS—

B Reading and SS. And then this year I need to see how it’s going to play out in terms of timing because I would like to do a writing piece with my reading students on that. Either having them try to develop their own traditional story . . . or, but then I feel like if I was going to ask them to do that
I feel like we need to read more traditional stories so that they get a better sense. Because they’ll know this one really well and we’ll be doing some comparing to a couple others next week. So, I would like to get like a narrative writing piece somewhere in there. I don’t know if it will work out with the way the timing is going. Especially so close to a break because it’s difficult to come back then after a long break it’s easier to just have some finality to it. But then also the SC in the end. So, it will be the reading, the SS, and the SC piece with the fire.

N And so the SC piece are you really looking at that as just the practice of inquiry or are you hoping to pass along some content on fire?

B yeah, so I have—

N Like the three elements of fire?

B Yes, yes, yeah so we’ll come back to that but that won’t be until the very end because then obvious there’s the inquiry piece, but then we’ll come back and we’ll make a list of, so then what do you need, and once you know these things, if we were to go out again what would you do differently and have that so that they actually do get the content in the end so that they could do, at least attempt it successfully. More successfully.

N Has there been anything so far, and obviously at the beginning end of this but has there been anything so far that has been another one of those unplanned integration opportunities? You know those teachable moments or whatever they are where you didn’t plan to integrate these things but it happened?

B Yeah I think the only thing so far was today when they were talking about that hole in the sky and I was like, okay what else could we—I mean it’s not really integrating a different subject area but integration something . . . common knowledge from within reading. So, then that kind of took us off on a little bit of a—but so far nor much. And I don’t think. I was looking up in our question “parking lot”. I don’t think we have anything in our question parking lot either.

N That’s right I remember you talking about this last year. That’s the place where when they come up with inquiry based questions basically that’s where they go?

B Yes, so there’s some up there still about Pilgrims that I need to address.

N (laugh) Deal with at some point.

B Yeah, and I tell them that’s why we leave it up there because I can’t promise them when. But, before the end of the year all their questions have been answered.

N We’re going to answer them. Stepping maybe slightly outside of the realities of the break coming up and some of that but not totally if you, you know we’re not talking pie in the sky. What other subjects do you see that you could integrate if you had a little more time or if—

B Writing. I mean, I think I would want to do a full piece a full narrative. I’ve done native American legends in the past and they’ve turned out really nicely. And so, just giving them that experience to go through the whole writing process again and to work on that, how do we write a narrative? And then also integrate that piece about explaining a natural phenomena or teaching a lesson in the end. I think that . . . I don’t know about the math because then that’s obviously the one subject that’s missing. I mean I think anything can be math related if you think hard enough about it or if you create those experiences you know. So, I don’t think I would do it during my reading time though, so I mean in reality, I just wouldn’t take a reading period to do a math related activity. Mostly because it’s not my regular class. And so, I like collecting data and that’s not—
| N | You can’t really do it during your math time because it’s not your reading group (laugh) |
| B | Right, and I think that collecting data from kids that I’m not evaluating in math . . . on a regular basis. It’s like I can give those things to P and S but I kind of feel like they’d be like, what do you want us to do with this? You know, we’re not going to record this in our grade book. You know what I’m saying? |
| N | Absolutely, I get the tension. |
| B | So, that’s probably why the math, yeah. Now, ideally, if it was my regular class, I would probably be a lot more open to creating some of those experiences. Because I do like that idea of— and even some of my independent reading projects that are for my reading group, they do talk about math. So, students can pick out one of those projects and then look for the math in the book that they read or write word story problems using the characters from their story. So, like I like that idea of having a math piece. |
| N | Mmm Hmm, yeah. How about our can we say this on record, our lesser content areas. How about bringing in the Arts or working with the music teacher or even the PE teacher. Do you see a value in that for the time it takes? What would you feel on this specific example with you know the native American story— |
| B | Well, they got to draw a picture they visualized (smile) |
| N | (laugh) Alright, so— |
| B | Isn’t that art? (laugh) |
| N | That is the question isn’t it? And you know joking aside, that is the question. Is that integrating art in your opinion? |
| B | Well, so I think . . . So I know I’m saying this on the record and hopefully this is not really going to be publicized because I would probably never be hired again (laugh) |
| N | (laugh) Don’t worry, your name’s not going to be attached to this in any way. (laugh) |
| B | To be honest, the district I came from in Washington, they had pretty much gotten rid of art all together. We were allowed to have— |
| N | In Washington? This is the same Washington State that I know of? |
| B | Yeah, well at least in my district. I mean I don’t think it was state wide, but in the district I was in they really wanted a big focus on the reading and the math and the writing. And then even the science was getting cut. The year I left, parents had to pay for the science curriculum . . . yeah. Okay, so this is the situation I’m coming out of and they had basically said, you don’t have time for art you don’t have time for crafts. So, coming here I was in that mindset because if I continued there that is what I would have had to do. And so, I really . . . art is not a strength of mine I really thing art should be taught by people who are artists who can teach the technique. I can teach certain things and that’s an area of growth for me I’ll just admit it now. I went to MEA and I took a lot of the art workshops because I know that’s an area I need to work on. And so at this point for me that visualization I consider that art integration. I know that other teachers would not consider that. They would teach full blown lessons on you know exactly how to draw an authentic looking teepee which I learned at MEA so I could do one of these types of lessons. You know, introduce special |
symbols from the tribes and then have the students create a piece of artwork around those symbols. If I’m being 100% honest, I don’t think that that’s a good use of my time.

<table>
<thead>
<tr>
<th>N</th>
<th>Okay, that’s what I wanted to hear because as I asked you about what integration you planned for, the picture never came up, which is why I’m asking.</th>
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<tbody>
<tr>
<td>B</td>
<td>Yeah, right. I mean I guess that’s . . . but I don’t think that that’s what other people would consider art integration. That’s what I consider art integration to justify that I’m doing some art. So, if a parent asks me, do you do art? I’d say, yeah, look right here, I’m doing art.</td>
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<tr>
<td>N</td>
<td>(laugh) okay, fair enough, we all have strengths and weaknesses.</td>
</tr>
<tr>
<td>B</td>
<td>Well and if you look at an art lesson first of all, if you walk up and down the hallway. The art lessons that are being taught are not integrating anything to be honest.</td>
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<tr>
<td>N</td>
<td>Right, they’re stand alone—</td>
</tr>
<tr>
<td>B</td>
<td>They’re holiday based. So, then that to me is like even further down the pointless scale of things.</td>
</tr>
<tr>
<td>N</td>
<td>Oh okay.</td>
</tr>
<tr>
<td>B</td>
<td>My personal opinion. People can do whatever they want. But I feel like that’s even like, what was the purpose of that? If I’m going to teach a lesson that’s going to take up an hour of my time. Because I’ve heard these teachers talk about how long it takes to do some of these full blown art lessons—hour two hours. If I’m going to spend hours of content time, because of course that’s what it’s coming out of—it better be integrated it better not be a cutesy little turkey or a cutesy little pumpkin.</td>
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<tr>
<td>N</td>
<td>I’ll never view those pumpkins the same (laugh)</td>
</tr>
<tr>
<td>B</td>
<td>I know, well, don’t you think! And then teach the art technique through that so you can teach shading or line probably when you’re making a teepee or a native American scene or whatever you know whatever you’re drawing. You can then teach contrast and color and texture. But, I’m like, I definitely do not have time for let’s get out the glue and start cutting things out. If you ever see me doing one of those it’s because it’s forced.</td>
</tr>
<tr>
<td>N</td>
<td>(laugh)</td>
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<tr>
<td>B</td>
<td>And I know, I do those evaluations at the end of the year, anonymous evaluations and a parent put on their evaluation and area that needs improvement is messy art projects. And I was like, messy art projects waste a lot of time and there’s not a lot of value in them over all. I mean honestly, keeping these things other than to say, my child made such a cute pumpkin. They’re not like, wow my kid learned so much when they made this pumpkin, they learned this about math and this about ss.</td>
</tr>
<tr>
<td>N</td>
<td>Yeah, fair enough.</td>
</tr>
<tr>
<td>B</td>
<td>Where as if someone looks at this, it may not be teaching any technique but then the kid can say when the parents says, what was this honey. Well, we did this lesson on the Salish tribe and this was what I visualized while I was listening to the story. They live in teepees and they have symbols on them.</td>
</tr>
<tr>
<td>N</td>
<td>Yeah. Alright, well let me get you off your soapbox.</td>
</tr>
</tbody>
</table>
B  |  Right, (laugh)
---|---
N  |  So, let me go ahead and move to this. What I want you to do and let’s say, let’s look at this whole lesson because that’s what it is it’s one piece. I mean it’s happening day by day but it’s on piece. So where on their do you think this lesson, this mini unit belongs.
---|---
B  |  (pause)
N  |  So, maybe on this side we’re only talking about just your reading time because that’s the only time you have. But inside of that time—
---|---
B  |  Yeah that’s what I was trying to figure out. (pause) I don’t . . . this is the one thing that stressed me out the most. (pause) Probably like (pause). Probably like here because I think it’s always going to be heavy on the reading it just is. So, I think that when the opportunities arise I try to integrate stronger ss content and then you know like when we’re doing the science lesson we’ll just be doing the science piece but I think if you look at the whole unit it’s going to be heavy on the reading throughout.
---|---
N  |  Okay.
B  |  Is that where that X would be then if it was heavy on the reading?
---|---
N  |  Yeah, I would think because as we move this way we’re talking about more equal blending. I think that that’s fair, and yeah. I think it has to be on this side of the line simply because we’re talking about . . . it’s not like within that time period you’re saying the first ten minutes is reading and the next ten minutes is ss—you’re not doing that.
---|---
B  |  Right
N  |  So, I think that that’s true. I would agree, yeah! Just one last thing and then we’ll be done. Would it be correct for me to interpret your—the things that I’ve heard you say about integration—that this set up we have here, what you’re doing with this lesson or mini unit is just one way that you could integrate or is this—
---|---
B  |  Mmm Hmm
N  |  So could you talk me though other ways that you could integrate
---|---
B  |  In reading you mean?
---|---
N  |  Anywhere
---|---
B  |  Well, I think you could start with a lot of different things. So I’m using a book, a traditional story to jumpstart this unit. But you could start—so in my animal studies unit we started with an inquiry based investigation and then that led us to writing letters to zoos and then collecting information that way. And that also led us to writing informational pieces about animals we had chosen. That also led us to writing narratives about animals that we’d had experiences with in our own lives. So we started with the science piece and then moved into the written piece. And then, I guess I don’t know if you would consider this art, but they made habitats that they created themselves. And so, then we moved into this more creative piece I guess you could say. And so I feel like you could start with anything that will spark motivation and excitement for learning in the kids and then once that get’s going that’s when you can start to bring in other pieces. You know other content areas.
Okay, so let me just clarify. That piece that you start with could be from a specific discipline or an idea.

Mmm Hmm or a video.

Or something, yeah—

Or a quote

or something that would grab attention.

it could be anything to get the kids thinking.

Almost like the hook of a lesson.

Yes! And then once it gets rolling. That’s when all those opportunities arise to kind of bring those things in. So, it might seem like isolation in the beginning but then once it gets rolling you realize well know we’re also teaching writing and science content. And now we’re doing an art piece and science.

So, would you agree then that those piece that end up coming in and being integrated in do so because they are needed like we need to write the letter—

Because we need the information.

So, we have to know how to write a letter.

Yes, and then once we get the responses to our letter. Well we have to be able to read a letter and take important information out of the letter. So we need to be able to discern between important and unimportant, that’s a reading skill. So, now we’re integrating that reading piece and talking about how do you know when something is important and when do we highlight and when don’t we highlight.

Okay.

And then in order to read the content that supports whatever hands-on thing we’re doing, you have to be able to read and so we’re integrating that reading piece again.

Okay, excellent! Thank you very much.

Oh yeah!

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Pre-Observational Interview
Interviewer: Nollmeyer
Interviewee: Donner

Thank you for doing this; it’s very kind of you. I’m anxious to visit with you about this after our conversations the other day. So, before we do anything else I just wanted to get a sense for your day, a typical day.
**Typical day.** It is relatively scheduled by nature but we start from 8 to 8:30 and do an independent self start. Typically it’s kind of math, sometimes its problem solving. Often it’s group work which for them morning is kind of a headache because you’re trying to get attendance done. But I just want kids to come in and start learning. So, I usually put math on the board and they work together to get it done. And then we do what is call MS T, it’s called Middle School in Training. And so for the 5th grade we compartmentalize and for 4 weeks for an hour a day they will go to sc with me. Then when their 4 weeks are done they’ll go to tech with W, and then to ss. Then they’ll come back to me for a new unit. The same for ss. I don’t know in tech if it’s a new unit; it’s just a continuation. So, that’s an hour and then we have walk-to-read in our building. So walk-to-read is basically a leveled reading program. So, that’s from 10 to 11. Then the kids go to lunch, recess. Then after that on a typical day I have the kids silent read while I work with small groups. Whether it be catching up on reading, writing, math and the other kids silent read or work on projects from other classes. And then our afternoons we have a lot of specials. On Monday we have band and orchestra but in-between that, after SSR, we do math, and then they go typically to a special. Then we do writing. And then just kind of variation between when our specials are. But, typically writing and math in the afternoon. Sc, SS, Tech, and reading in the morning.

Okay, very good. So, you said so me the other day, something to the effect, I don’t know what integration you’ll see based on the video we just watched, I don’t do that. So, what do you mean by that?

Well . . .

What did you seen in there that you thought, I don’t do that?

So what I saw or what I know of integration or maybe best practice of integration from the standpoint of what you would maybe read in a book or you see in those special schools is that you don’t have necessarily a schedule and so let’s say you’re studying the environments well somehow you would take your math standards and your sc standards and your ELA standards and all of that would kind of be in harmony. And you would not necessarily be able to say, it’s math time so take out your math or it’s reading time. Everything is just put together and the day just kind of flows and you’re teaching everything all the time. So, that’s what I noticed that’s what I saw and I think if you look at the word “integration” and if you do it probably appropriately and in best practice that’s maybe what would be ideal theoretically to me. But, the practicality with all the limitations that we have in a building I just don’t see that it is as possible in that you know we’re forced to do walk-to-reads. I don’t know how many teachers actually love that but we don’t have a choice around that. When we have, for example, I have 5 resource students in my room and they’re pulled at various times throughout the day. So, I feel in sc I feel like I integrate a lot, but even then I have some kids that are in a completely different math curriculum. They’re working on different standards at different times. So, when I introduce a topic where I know my non-resource students have been introduced to it. My resource students are like, phew I’m really confused Ms. Donner. Sometimes it’s hard given the constraints we have in a building. And if there was more inclusion with resource students, now I know that’s not always possible because they have to be given what they need and sometimes that’s pull out. And so, I know integration also if you’re teaching more than one subject at a time it’s integration, but when we look at the video that’s probably best practice and I think it’s really hard to do with what we’re given.

So, it’s interesting. I have yet to hear this best practice of integration. I kind of like that phrasing.

Yeah, we all wish, but best practice does not always . . . you know when I was getting my masters I realized when I was reading theory I was like Uhhh if I could only do that! But there are so many constraints so I just always coin it as if you could do best practice all the time our days would look different. But, we really can’t the practicality of things gets in the way (laugh).
(laugh). So, you’re use of that phrase, best practice of integration, and then you said, right here towards the end you said, anytime you’re bringing two subjects together you’re integrating. So would you say, just on face value, there’s level to integration or not?

Just like inquiry, you know you have guided inquiry, you have open inquiry and there’s building blocks in-between to get from guided to open. There’s all of these segments and steps but integration’s probably no different. You can have integration where you’re taking sc and putting a little IEFA and a little ss and a little math wrapped in that lesson, but the tip of the iceberg is the video where it’s seamless.

Okay, alright. So, how do you normally do it. Let’s just take the simple example then, two subjects, what do you do?

Okay, for me . . . my easiest way to integrate is in sc and I look at my standards in sc and well, okay this is kind of the big idea and this is what I have to teach so how do I push other subjects into that idea and on Wednesday we’re going to do an environmental—so we have to teach environments—and so we’re going to do environmental impact. And then I’m using thinking like okay how can I get IEFA in there, how can I get ss, how can I pull other ideas. If it’s a natural fit, I’ll do it. If I’m pushing, I’ll think eeh, maybe this isn’t the right thing. So, if it naturally, if I can think of good ways where I’m not just trying to push subjects in then I don’t do it. But if it seems like, yeah, industrial revolution, pollution, Native American touch, how can we use that today, social conscious were you’re using graphs in math. Perfect, we can look at industrial revolution and inventions and we can look at what happened during that time. So if it works, it works. If it doesn’t, I’m not going to push it. In ELA at this point, I think my biggest hang up I can’t always find the right lexile. And so, we only have, I mean when I say this there’s millions of books. To find reading material in math and in sc and in ss at their lexile is actually more difficult than I thought it would be. I actually, you’d think it would be easy, but I find it more difficult than most subjects because it’s not to find good solid literature. I can’t always find it. Good multicultural tie-in but not necessarily ss and everything else. So, if it’s a natural fit for me, I try really hard to do it, but if it’s not, I don’t always do it.

Okay, so this is a typical or a regular thought process for you?

Mmmm Hmmm, yeah. I try all the time to integrate. If it works, great. Some days it doesn’t.

And you’re really looking for that natural fit? Something that, sure.

Yeah.

Alright. Do you feel like, when you do this let’s go back because you brought up IEFA, and ss, and the possibility for math with this sc, but let’s just say it was a sc you see with a natural fit for mathematics. How does that actually work. Do each of those get equal time? Is one simply a tool to help the other be locked in better? How does that work?

I guess, I don’t necessarily use it off of a balance of time. It’s just the progression of a lesson. So, for example we were studying deer populations last week. We had to go out and do a simulation so that was basically a lot of sc time, but I felt like when I was trying to reach that standard I had to give X amount of minutes to have students simulate how does this progression of populations occur in environments. And then, we went in and we graphed it. So I gave them their points and we made line graphs and we studied the line graphs. So, I gave X amount of minutes to fulfill the simulation and I thought, you know I didn’t look at it as a time rather how long do I need until this progression is done and then we go in and we graph. And if it takes a shorter amount of time that’s okay. And
then we discuss it, but when we discuss it we’re discussing the math application as well as the sc application together. So sometimes they are in isolation but I try to have some sort of a tie-in at the end to kind of revisit the idea that they’re kind of one practice but I teach them in isolation at times throughout the lesson.

N So, let me rephrase this because I maybe made it sound like equal time to and maybe that not the way to think of this. When you do this, I mean obviously we know we’re not writing out all of our lesson objectives every day, I mean we get that. But if you did, do you see this as I have these sc objectives and I happened to be brining in ELA, I happen to be brining in math, I happen to be bringing in ss and they’re kind of getting a little bit of time here. Or do you see it as, I have sc objectives, I have math objectives, I have ELA objectives. All of those things I’m actually working on, want to see progress on now. Do you see the difference? Do you see what I mean?

D Yeah, and what I try to do, if I go back to the last question, if it’s a natural fit. So, when I look at my sc standards and I look at my math standards. If it’s what we’re working on, that’s what I try to, so I try to blend my standards. And actually, I just had a discussion with A on Friday we were at a conference and we were talking about these standards because the new cc math standards are coming out, the new sc standards are coming out so if integration is technically best practice then why are we creating these ideas together because everything is in isolation and they don’t necessarily go together. So, when I try to create lessons there’s this scope and sequence in math that they say you need to follow this in order for kids to build. There’s not necessarily a scope and sequence in sc but I have an environments kit now so I have to look where I’m at in the math standards and I have to look at what I have and so if I can find my objectives that meet my objectives in science. That’s when I put them together. But it seems like we’re going through all this work to have the cc put in and then there’s the sc standards and when I look at them I don’t see any sort of harmony and you would think there’d be more of that especially with STEM. It’s interesting.

N STEAM, right?

D STEAM, yeah.

N (laugh).

D (laugh) yes.

N Okay so we’ve talked about the constraints and everything else. So tell me about the perfect lesson or the perfect unit. What would be the perfect scenario to do this?

D I think honestly if you had the perfect scenario is if you were able to teach a lesson, a unit where you couldn’t really distinguish between, okay this is math and this is the sc part. It’s more like, this is how we solve this and we have to read to gain you know information, and we have to collect data from our environment, and we have to analyze that data. Well, funny, we’re doing ELA, we’re doing sc, we’re doing math. But rather, what we do now is okay, this is math, this is where we can apply it. Reading this is where we can apply it. In a perfect world we could just look at something in the world and solve a problem and say, hey how do we need to do that. Well, we have to collect our data from other people’s readings and their research and we have to collect our own data and have to analyze that. So, you’re doing it all but the kids don’t necessarily know. They just think that it takes a lot of subjects and a lot of disciplines to solve problems and to make your way through this world. Where we kind of break it down into, we have to do this and this is where you can apply these subjects. So, it would be more seamless and I don’t think the kids would really know. They would just see it as, it takes many subjects to solve many problems.

N Okay, and in that kind of seamless situation. As a teacher, where would your thoughts and your
attention be? Would it be on the project, would it be on making sure individual skills from the different areas are actually worked on? Or are you seeing all of these kind of as the tools to get at this content of the project whatever that is? Do you know what I mean?

D  Mmmm Hmmm. You know to be honest I think that while you are in the process of it and you’re doing formative assessments you would just have to kind of weigh your options as you were going. I think sometimes you know kids will pick up on the sc and you feel like through formative assessment of some kind okay well they have these standards but they’re not meeting my math standards and so you may have to spend time just with focusing with that and doing more of that and putting aside the sc because they’ve met those goals but they’re not meeting these goals. That’s where your professionalism kind of needs to push in.

N  Okay, good. So, integration’s not new. In the modern era we can easily go back to Dewey so it’s not new. But the reason I’m doing this study is because there’s no agreement on even what it means. Which I find incredibly intriguing why we can’t agree on what we mean by it. So, how do you define it? Simple, short. What’s your definition?

D  I would just say that integration is teaching multiple disciplines within any given lesson or unit.

N  I like it, short and sweet. See, that seems reasonable to me but that’s the first time I’ve got that kind of an answer so that proves a point. It’s hard, so I appreciate it. Good.

D  Yeah.

N  I want to look at this matrix for a minute. [explanation] So, the question is, where is your practice on there right now? And this is not maybe what you want, this is with all of those constraints—

D  Well, you know and I think and maybe just my own perception of it. Sometimes along the continuum this way of subject area. It’s completely, it fluctuates so much because in elementary we have to build foundations and sometimes you’re like in quad A and you’re just giving them the basics. Sometimes once they have it you can be in that unpredictable, giving them something to solve, real-world application. But it’s only dependent on whether you’ve made it here. So, I can’t say we’re here all the time.

N  Sure.

D  I mean that’s unrealistic so I’d probably say I’m hereish. And given the time. I don’t know barely anytime to integrate technically. So—

N  That’s fine. Put your mark there. Okay, so . . . you have those times where like in the sc you are bringing these other subjects in so they are kind of being delivered at the same time. But as you said it kind of works as the lesson goes. Like at the beginning part of the lesson I’m really focused on the math, I’m going to focus on it. So maybe there’s still a little bit of separation, but you’re doing some things at the same time.

D  Mmmm Hmmm yeah!

N  Okay, and then talk me through well I guess you were thinking of these as the quadrants because I compared it to that. But this is subject area integration—

D  Yeah, not happening. I mean I try. In writing in particular I desperately try to pull in nonfiction. There’s some great websites but again finding the lexile level that’s going to meet my students it’s really hard. So, sometimes you’re forced to be at the mercy of whatever an author off the book shelf
or out of the library. Going online and finding a lexile reading level and you’re trying to find in the industrial revolution . . . it’s pretty few and far between. So, part of the constraints of it not necessarily that when I’m planning I’m planning to fully integration, I just don’t have the tools and in that I don’t have a lot of time. You know you try to plan so much and you can only designate X amount of minutes to search for some sort of a ELA standard and I’m sure if I sat down and lived here I could pull it off, but I don’t and so you know. I think that it’s not necessarily just the function of the teacher I think sometimes our resources and be a bit limited.

Okay, good, yeah. I wanted , just before I have you put the next mark, and then next one’s a whole lot more enjoyable, but before I have you do that. I want to explore this thought for just a minute. And I’m kind of coming at it from different angles so bear with me. And that’s this idea that if I’m going to find that nonfiction piece of at the reading level or if I’m going to write in my sc lab notebook or is it only integrating when I’m working on you know expository writing or something and then we’re using it in the sc.

No, I think you’re integrating if you have multiple disciplines going at one time.

Okay, and then we’re back to that best practice levels.

Mmmm Hmm.

So, a much more enjoyable mark and that’s this. Perfect world, no constraints, nobody telling you what you have to do and no walk-to-read if you don’t want it.

Okay, I would be right here, where you would integrate fully all day and the curriculum was completely integrated there was no time constraints, if it was possible.

Okay, alright. I agree (laugh)

(laugh) it’s hard. But not only that, and I say this in full honesty, the dedication that it takes for a teacher to begin the practice of integration I think is really difficult. And so we’re given curriculum and some days you’re like okay next page. And so I think that this is, I mean, I’ve taught 8 years and I have a lot of years to go. It’s one of those evil evil jobs where it’s like, what? I’ve been in this 8 years and I don’t have it, you know and so it takes a lot of time and dedication and wherewithal and knowledge and continuing your education. This is hard. It’s a very hard peak to reach.

I don’t think you’re alone (laugh)

Yeah!

Okay final mark on here. Where do you think cc’s expectations are?

For integration?

Yeah.

Well, I think that the fact that they write them in isolation. To be honest, they don’t have any intention in integration. And the fact that they are just doing ELA and math and they’ve neglected to include ss and sc, there is no integration at all. You know the time in a given day? That’s kind of difficult, I mean it may be somewhere up here. You may have more time to do it because you’re going deeper into concepts but the idea that they’ve created it in isolation. When I say they—

The “they out there (laugh).
D There was no mindset for cc to be integrated and I don’t know if they looked at the 5th grade ELA standards and the 5th grade math standards. And the 5th grade sc standards aren’t even done and they’re by a completely different “they”.

N (laugh)

D I don’t think integration was the main idea.

N Okay, alright. I love how I get different answers from everybody.

D Yeah, I don’t know. I was just at a cc math conference Fri and Sat. It was kind of interesting and I asked A, what are we doing? You’re showing these great videos but everything is created in isolation, some isn’t even created, I don’t even know if ss is on the radar. So, how are we going to integrate? I don’t know, it’s a good question.

N Oh, very good . . . I think we’re good. Thank you so much!

Post-Observational Interview
Interviewer: Nollmeyer
Interviewee: Donner

N Okay, so thank you again.

D Sure.

N And I’m sorry I had to jet out.

D Oh not that’s fine.

N So, let’s maybe start there with you know with what did I miss? What did you do after I left? We were just starting to read the—

D River Ran Wild. I’ll go grab that stuff. So, I read I guess I didn’t read it word for word but we kind of read A River Ran Wild, which I don’t know if you’re familiar with the book but it’s an OPI book. It’s not a native tribe to MT, but OPI says, try to stay with tribes native to MT. But we read about how the Nashua people came to the Nashua valley and they found a place they wanted to live. It goes on to say how they took what then needed from the environment but they only took what they needed for themselves, nothing more. And when they hunted, they killed and they asked for forgiveness . . . to generalize it was relatively typical of native tribes. Then, there was never a date but they noticed a pale faced man. And then they began to trade for hatchets and things, muskets. Then it goes into when the people began to colonized they began to rip down the forests to build homes and to clear land and bring in animals for pasture and for feed and at this point nothing really major. But then they started telling the American Indians that they weren’t allowed on that land anymore. And then, industrial revolution time the paper mill. And this is a nonfiction book so this was in MA. They built a paper mill and were just dumping into the river here, the Nashua river here. So, obviously it became quite polluted here and we just talked about you know used in context we talked about schema and making inferences as I read it. And then I stopped after I read this page and everything died in the river. It was clogged; there was no life it was rotting. And we talked about inventions and obviously when, what can they do to the environment if it’s not addressed so
discussed that. And then I showed them this map, which in math we’re working on data collection and analysis and working on what type of graph would you use to represent a certain set of data. So, we talked about how a line graph you use to represent trends or changes over time. So, I just gave them this and asked them, what do you notice or what observations do you make. And they said, right around, shortly after the industrial revolution there was the most big inventions and so I said, make an inference about how do you think this impacted the environment at the time and for the next 100 years, how do you think the environment has it been impacted because of that? So, we made some predictions based off of this graph. Then I told them about this guy in china who is selling clean air. He’s worth like $750 million. He goes up to Tibet and collects compressed air in a can and sells it in Beijing because the air quality is so bad. And so on red flag days, people can go get fresh air. And so we started talking about what can be done. Is it ruined, is it destroyed? What can be done about the environment? And I said, you know would you rather live without those conveniences or would you rather have those conveniences and have some of the backlash of the environment. So, we wrote about that and it’s really hard for them because they all want to go back but then they’re like, but wait a minute—we can’t. So, what can be done? And then I finished this book and some American Indian, there was two people, one had a dream that the chief he dreamt that he cried into the river and the river became clear again and he spoke to a friend and she said the same thing. So, then they went around and started to inform people about the river, and I think this was in the 70s. And they wrote to their legislators and Senators. And people started joining the movement, and sure enough. They ended up getting the river back to an environment that was suitable for play and life. So, we finished that book and talked about how even though we have repercussion of the environment. We all live down stream and things have happened, we can change what we’ve done. And that’s the positive thing that can come out of moving forward and always having inventions. And I had the write about what can they do in their lives. And then today, they finished up and they went back into their cities and I made them think about what could you do to change it so it would be a little bit more environmentally friendly and they added some water, they copied the group that was organic gardens and things. Today they were pretty environmentally minded, but they didn’t get rid of anything—which I thought was neat. They just changed the infrastructure so that it was better. So that’s how the lesson proceeded.

N  So, about how long did you go yesterday?

D  About a half hour.

N  Oh wow! You moved quickly then in that last half hour.

D  Yeah, we moved quickly, and then today we spent about 25 minutes or so. So, two hours total.

N  Okay, yeah. And so, . . . when you plan this out, when you think about it. What specifically goes through your mind of okay I’m going to make sure I talk about this or do that so I’m integrating these pieces. I mean what in your mind were you going to integrate?

D  So, I start, I was thinking about looking at my sc standards. That’s where I started with this. And I thought, okay I need to talk about stewardship and I also need to talk about environments in general is the broad standard but then underneath that was this piece of stewardship and so I thought, okay I knew about this book which I like a lot. I think it speaks volumes in a small number of words so I thought, okay I want to use this book. And when I read through it, I thought. Oh that’d be kind of cool to do a little simulation about giving the kids a development or a piece of land and then they could develop it in anyway. I mean I know I’m not teaching any specific art standards but it gives the kids time to create and develop and design. That’s how I started. I thought, that’d be kind of cool to give them their land to develop, and I know that they’re going to develop and it’s not
going to be great. There’s going to be a lot of problems and that’s the whole point. Then we joined
the river and I thought, what other tie-ins can I think about. So then I started looking through the
book and there was a natural progressing into the industrial revolution, which is what we have to
teach, and I thought, well how can I bring that into my lesson. And I thought about pulling out the ss
book but it’s pretty laborious, dry so I thought, how else can I add this in there other than just touch
on it, or talk about it. So, I brought in a map that would bring in more of a math element and I found
this on the internet about a week ago or so. And so that was kind of a natural fit and then, writing’s
really easy to integrate into anything. So, that was easy for me. So, I just kind of thumbed through
the book and thought, what else can I add that would be kind of a natural fit. So, it just kind of
progressed from there and I changed ideas. And then actually the idea of having the kids go back
and change their development actually came when I was teaching yesterday. So, that wasn’t my
original planning but just kind of, oh yeah, we should probably do that after they think about that.

N So, you talked about the idea of having them go back. Where they’re any other opportunities that
came up or maybe other elements that actually turned into pieces of integration you hadn’t really
planned for?

D Yeah, I think for the most part it stayed within the bounds of what I was intending for other than
that kind of full circle end. But, I think for the most part it kind of stayed within what I was hoping
for.

N Okay, what about next year when you do it again. What are you thinking you might integrate
something else; you might not integrate a piece you did this year?

D To be honest I was thinking I would like to maybe spend more time on this whole idea. And I
thought it would be kind of interesting to do the first part, what you saw, to get them kind of, the
hook, to get them interested and read the book but then maybe have them do a little bit of research
skills and I found a website, but this was yesterday when I was reflecting. And I found a website
and it’s a really good lexile level for this group of kids. And there’s, I don’t know, 10 to 12 big
inventions that give some information about it. When was it invented? How has it impacted the
environment? How has it impacted human society? So they can read small maybe 3 or 4
paragraphs. So, I thought it would be fun to extend that into a week and have them do a little
research about industrial revolution. And how these things have really supported and aided in our
social progress as humans and then have them write a persuasive essay about should we continue to
have these inventions or are we impacting our earth too much? I thought about maybe tying in
because persuasive writing is a big thing in 5th grade that they haven’t touched on and so I thought
that that might kind of be a fun thing to do. And obviously there’s a lot more math that could be
done. I was looking at the number of patents so I thought it would be fun to compare. And right
around the industrial revolution there was the most patents that have ever been doled out. I found
another math tie-in that was talking about the wealthiest people in the entire history of the world. I
think like 7 out of 10 of them were born during that industrial revolution like the Rockefellers and
the Vanderbilts and those types of people. The only other one I recognized was Cleopatra which she
was way back when. But most of the people made their wealth—tying in those real world
applications to their math.

N Okay, good. You didn’t mention, IEFA. Do you feel like you integrated it?

D Mmm Hmm. I definitely feel like I integrated it. I feel like that’s a huge piece of it. I mean half of
the book is just how this tribe was very environmentally conscious and they were able to survive
with the minimal amounts. And so we have now become a materialistic society where we survive
with way more than we need. And the kids, they always say, wow that’s pretty phenomenal that the
Native people of our country were so conscientious and I wonder how they feel about it today? Do
you think they are still impacted by the way that we live? Yeah, I try to tie-in IEFA as much as I can
so that was definitely a big piece of it.

| N  | Okay, right sure. And so . . . I think I’m getting a picture of how you view this but correct me if I’m wrong. You would view using this book as integrating literacy in a way and clearly the content of the book integrates IEFA and a bit of the discussion in class leads to that as well. But then if you took like you were talking about that week, maybe that week, if you then took more time and they did a little bit more research into this type of scenario and they went into the culture of this particular people or other Native tribes. Now we’re simply increasing the level of integration or . . . ? |
| D | Well, I guess it would depend. You know I think the depth of integration changes the more you go into it. I think if I just stuck to this tribe maybe, but we can also look at other peoples and other cultures and I think that expands the idea of integration also and the problem solving, social conscious—which I think is really powerful. But, yeah, to a sense if you go longer it’s not necessarily expanding integration. It’s just going deeper into it. |
| N | Okay, alright. It sounds like in all of this, your big, the standards the real goals that you were after were the science ones . . . . |
| D | Yep. |
| N | You’re kind of smirking at me. |
| D | Because I’m a sc person. |
| N | So, I guess asking the same question from a different angle then. If I genuinely had all of these other standards lined up, for industrial revolution, for IEFA, specific things that I’m going to—does that change the integration? Or does that just change my intent? Or where am I at with that? |
| D | So, . . . I’m not sure what you’re saying. |
| N | Well, if my central goal in all of this to bring in these other elements but if really what I’m after are these sc standards. Does it change if suddenly what I’m after are these sc standards, these ss standards, these writing standards, these IEFA standards that are integrated within those? Do you see what I mean? |
| D | Yep. |
| N | Does that change the integration or does it just change the focus? |
| D | Well, I think it changes the integration because you know I think whenever you can integrate the standards from any subject matter whether it be math or reading or whatever it is, I think it makes the integration that much more rich because you’re touching on all of the things standard wise but then I start with the sc base, it’s because that’s my passion. And so when I start with sc I look specifically at math. Okay sweet I can talk about analyzing, data analysis, and graphs. And so I definitely—even though it starts with a sc base it’s because that’s where my passion is and so that’s where I start from often times. I think of, every domain, every subject matter to me is sc (laugh). |
| N | (Laugh). |
| D | And so I can twist it that way. Sc means to know it comes from Greek so if I want to, I can say everything is sc. But, I guess my heart’s where sc is and so. Often times I start with the sc standard and then say. Okay so I need to get these math standards, ELA standards. And so I do think it does make the integration a whole lot more rich and applicable for students. |
Okay, as opposed to . . .

Just throwing in a little of this a little of that, yeah we’re reading. Sure we’re doing some math. No, it’s very intent on what I choose to—

Okay, now that description you just gave just throwing in a little that and doing a little that, and oh yeah we writing in sc all the time, yeah we read a book. Is that integrating?

You know if I go back to what my original idea was to be teaching more than one domain in any subject matter lesson, yes. But is it the best way to do it, no. So, if you’re just reading in sc I wouldn’t really call that tackling your ELA standards. But if you’re teaching metacognition and inference and schema and using what I would do in a literacy block and inserting that into my sc block. Then yes, but just reading in sc eeh, probably not.

(laugh) You said, yes and then you said probably not.

Weeelll, you know I haven’t really thought about this.

And this is the issue, when. This is the point of the research—

Well, my original statement, I said yes. I guess when you, but then the word teaching is a very fine word so, I guess if I could rephrase it, it would actually—

You absolutely rephrase it.

You know actually teaching skills within different subject matters not just having reading in it but actually teaching some skills.

Okay, that is a great answer. I happen to agree with that answer, but that is why I’m doing the research. I’m trying to find what we think. As far as I understand, you do some rotation of kids. And so is there in your mind any tension any question when you’re devoting some or significant amounts to a ss piece or some ss standards since they go somewhere else for that? Do you understand what I mean?

Yeah, no I think it’s great. We have a new teacher this year who’s filling in for T on a sabbatical. Being a first year teacher is just like overwhelming and you feel like you’re sinking all the time so we pulled back a little bit. But, when T and L and I taught together we’d sit down and we tried to integrate everything we did. T instead of tech she did art. So, we would try to integrate all of our rotations, at least the mindset of it. So, L would teach a little art and sc in her ss. And I would teach art and ss in sc—where they were natural tie-ins. And so I would say, I have this great lesson that would be a great tie-in to the industrial revolution. What resources do you have? What can I put in? Do you mind if I take on a little bit of that. And she may, there may be some sort of a sc tie-in somewhere and she may say, hey what do you have for this, do you mind if I take some of that and teach . . . landforms or whatever it may be. We used to work really closely together and we never, I don’t ever care if anyone wants to teach sc it’s just the best thing for kids. The other thing is for reading, I know it’s not perfect, but we all try to teach a book. Like when I teach light, we think about, when in history was light prevalent. So we try to find a historical fiction book that was during that time. Try to tie in art so all three classes regardless of what level they’re at they’re reading a novel that has to do with the same topic. So that when they do go to ss or sc we can go back to that time or subject matter and every kid at least has some background knowledge about what we’re talking about.
So, it’s not necessarily an interdisciplinary team where you’re all on the same theme at the same
time. But it’s that trading off, hey I’m going to pull this sc piece, is that okay? Do you have an idea for
how I can bring the art into this?

Yep, that’s kind of more of what we do.

Alright, excellent. I think you remember this. So, the question now is, this—oh actually I meant to
ask one more thing before we did this. Was this a lesson inside of a larger piece on environments or
how does this fit into a unit or a topic of study?

So, the big think in 5th grade is adaptations and environmental factors and balance in an ecosystem
and biodiversity. So, they’re kind of loose standards and I can play with them a little bit. But we
spend some time building up to water adaptations and then did a lot of work on that. And then we
looked at what happens if just a key piece of an ecosystem disappears and then we looked at the food
web and how everything changes. And so this tie-in is if we just take one little piece of an
ecosystem and wreck it. What happens to the environment? Not just the Nashua river but the entire
ecosystem around it. That’s kind of what this is to get the kids thinking about how in balance the
ecosystems have to be. So that’s kind of what that bigger picture is.

Okay, sure. Right. So not, because of the way your standards are, not a real tight easy to describe
unit but it’s this pretty big, complex interaction of pieces because of the standards.

Right.

Okay, yeah, good. So, this lesson then, let’s not think of that bigger picture. This lesson and
obviously how you delivered the lesson, what was taking place. Where on there do you think that
lesson would go?

There was quite a bit of curriculum in there integrated . . . maybe hereish.

Okay, alright. And so quite a bit of curriculum integrated? What about your deliver of that made
you think it’s not very high up?

Because there was isolated moments. I mean we put the book away and we looked at math. And
then when we, there was times when the math was used to—I mean everything tied in but there was
definitely times where I said, here is the math (laugh). So, we looked at just math. The math helped
to do the writing so I don’t think there was a division I didn’t say put this way because we’re going
to write. I said, use this to formulate your ideas. So I wouldn’t say it was up here because there was
definitely divisions in what I was doing, but not entirely it wasn’t like put the map away now we’re
writing, put that away we’re doing this I wasn’t, there wasn’t divisions but everything wasn’t
divided.

Excellent, well defended. Great idea. Just one final thing. You said that sc is you see the world
through the eyes of a sc person. I understand that great bonus because I do to. But would you say
that’s just one way to go about this idea of integration?

Yeah.

You’re immediately nodding.

It is absolutely one way because I am one person who has a passion for a certain thing and if you
went next door it would be approached differently. Just because who we are, how we teach—our
philosophical beliefs. So this in my opinions, yeah, there are many different approaches and entry
Okay, and so it’s that preference to sc, philosophical understanding. Those are the things that motivate you to do it in this fashion.

Mmm Hmmm. I feel like math and sc are the two places I integrate the most. Writing, sometimes it’s just isolated. Reading is sometimes isolated, but I prefer math and sc so I think there is more passion put into it for me.

Okay, excellent! Thank you very much!
APPENDIX G

OBSERVATION NOTES
Ms. Cullen - Kindergarten
The room is full of things to explore—it’s hard to begin to even describe it. The whiteboards are filled with the calendar and associated materials.
Bulletin boards display artwork
Books can be found in various displays around the room
A large fish tank shares the sink counter with art and science supplies
Science supplies and math manipulatives fill the shelves
A place of exploration and fun!

Cullen begins with a review in her gathering area
She reviews the big question: “What is unique about water?”
She reviews the three states of matter using the actions that go with it

Then she reads a book “All the Water in the World” and continues to review as she reads (i.e. apples are mostly water, you are mostly water)
“Oh ‘flows’ that is a great word to use in your sentence.”
Calls the big words, first grade words “Temperature” “Evaporation”
Students participate with and without raising hands, they respond with hand signals (i.e. wiggling fingers when they hear a word they really like)

Then she brings all students to the first table (the first station) [I’ll call it table 1]
She reminds students that yesterday they created a watercolor picture—something that has to do with water
She shares how they will use colored pencils to continue their picture

C continues to move through all 5 stations and tells students how each station works and what they will do
Stations 2 & 3 have adults at them
At station 2, students will be reading some books about water with an adult
At station 3, and adult will help students conduct an experiment
At station 4, they will work with a partner to explore how much water different lids can hold
At station 5, they will add a page to their water book. They will add the liquid page

C brings the students back to the carpet to review the stations and remind them of important directions
She dismisses them to begin at their own tables by group
Students move quickly to their places and eagerly begin.

At table 1, students begin adding to their water color in colored pencil
C checks in with them from time to time
Their drawings are all about water
C gave some ideas, “You could add some clouds or a glacier.” “A, tell us about your picture.”
“Are you remembering that we can get water above ground and underground? That’s what your picture reminds me of”

At table 2, each student gets a copy of the same book, the adult (we’ll call her G) reads with the students. Each group goes through at least three books a mix of fiction and nonfiction
At table 3, the adult helper (We’ll call her M) discusses the different materials students are testing: marshmallow, penny, tin foil, sponge, chalk
What happens to the material when water touches it? What does it look like/feel like after water touches it?
M does a good job of asking questions, “Can we get it to disintegrate?” “How many drops have you put on the marshmallow?” “What do you guys think is going to happen to the chalk?”
“Yesterday, you guys did it with paper. What happened to the paper?
The chalk the students put into a Dixie cup of water and then after 5 minutes took it out to see what had happened

At table 4, students explored how much water different lids could hold. They took one lid and
used it to fill other lids with water.
- They made predictions before beginning each test
- They counted how many lid-fulls it took to fill the other lid.
- C checks in, “How many lid-fulls have you counted?”
- “My prediction was twenty-one”
- “I’ve counted to . . .”

- At table 5, C helps students write their words.
- The books have multiple pages, the first page was for ice, solid water, the second page they are working on today and is for liquid water.
- Students draw pictures of liquid water and write several words.
- Some spell with invented spelling. However, as students ask, C reviews some of the things they know about spelling, “What is that ending sound?” and writing, “Finger space”. And helps them to spell correctly.
- As C talks about the words and letters, she uses sign language frequently and constant encouragement, “Yes, just like at the end of liquid! Good” “R, I love the small letters you are using.” “Every sentence should have a good illustration just like that one!”
- C uses a book to show how the pages have words and pictures.

- All students are actively engaged—even those who do not have direct supervision.
- Students who finish at table 1, get other water books out to “read”
- After 10-15 minutes, students rotate clockwise to new stations
- Each time using a clapping signal to get attention.
- Students are very successful in rotating groups and being responsible for their own materials
- C checks in with each table lacking an adult (1, 4, 5) right at the beginning to make sure each group understands how to begin
- C constantly took advantage of teachable moments
- Spelling and writing skills
- Science content
- Previous experiences
- Where the lids could be from

- Mrs. Knox
- 12/06/12
- 1st grade (social studies, reading & writing, math)

- Desks are set up in 4 pods of 6 desks, only 4 or 5 students at most pods
- A green rug signifies one meeting area
- A colored-squares rug another meeting area
- The white board holds the schedule and important things being worked on (i.e. First, Next, Last writing)
- Books are found around the green rug space on three sides,
- A kidney table is next to the colored rug and off to the side of the pods
- Student work on “Friendship” is displayed on cabinets

- Students enter from recess and are seated on the green rug within 30 sec
- Knox begins with a review of the previous day’s lesson
- She reviews the book that she read “Me on a Map” by talking it and then looking back through the pages while reviewing and having students to help her remember what occurred on each page (then Knox read the last pages dealing with the world)
- The book starts with small maps and grows into bigger maps: a bedroom then the house, then the town, the state, the nation, the world
The review was very thorough with much more discussion: hands raise, calling out, questions, individual connections, discussion of homework list, vocabulary review, geography review, think time, pair-share, choral response

During the review Knox said over and over “get bigger” as the focus of the map grew

K shared things she heard after pair-share

Brain break before moving onto next part of lesson

Students made lists at home; K shared a couple lists after getting student’s permission

She asked for definitions of a couple things “shades” “vanity”

K then shared her list and gave the students the problem “you’ve lost something in your bedroom and you’re sending someone into the room to find it. You need to draw a map in your bedroom”

K then discussed the tools to use: ruler and pencil

She modeled the process on a large paper on the board having students discuss the shapes she was using

Used teachable moment to remind about “details” “when you think you’re done, you’ve just begun”

K checked items off her list as she drew items and discussed “checking”

Modeled the whole map assignment

Gives students their own directions: Decide what on your list will help find a missing item, five questions to ask yourself (does it make sense, can I fix it, can I add to it, Can I fancy it up)

Discussed the time that left (10 min) and let them know they would have more time during math

Pair-share what is an “item”?

Students help pass out tools/paper

K called out student names to get their lists

Students got busy at their spots as they had everything

K knelt down to help one student get started on his map even though he didn’t have a list

When everyone had what they needed, K counted down to get them quiet and working

K said, “Wow I like how group 4 is already working”

She turned the writing music on “okay the only thing I should hear is the music. No talk no walk” students still whispered and talked quietly without reprimand

One student moved with permission or by suggestion to a table in the back of the room

Students were very focused on figuring out how to best use their rulers

K moved around room discussion lists with individual students, discussing fiction or reality with lost object

There was confusion over the “lost” object so K stopped students to explained how to use the map to help someone find something you wanted instead of some thing lost

“wow those are interesting shapes, tell me about them”

“what else are you going to add from your list”

She had students sound out words on their lists

“those are interesting lines, tell me about them”

Mrs Havel

First grade, 20 students

Cardboard boxes are set up at each table, with unifix cubes, and Playmobile figures, and a flashlight

Curriculum coach is present to help
The room is completely used, word wall words cover the cupboards, the calendar & associated materials cover the whole wall next to the gathering carpet. The agenda is on the board, and the projector screen is down ready for use, a large bulletin board displays posters on space.

Students come in from recess and get settled on the carpet with their snack
H explains that she wasn’t able to get the book called, “Shadows” that she normally reads first on this lesson.
Then she begins describing what students will find at their spot and that they will work with their math partner
She doesn’t tell them exactly what they are supposed to do but instead encourages them to explore shaddows with the figure by placing him in the box and shining the flashlight on the figure.
She also describes the worksheet questions that students will answer after exploration.
She holds the unifix cubes up to measure a marker an asks the students what they might do with the unifix cubes. Students choral out, “to measure!” O doesn’t give them the answer but says, “oh, maybe you will use them to measure!”
Students ask questions
Finally, H tells the students that they will be doing, math, science, writing, art, and social studies. One girl says, “At the same time?”

Students are dismissed to get started and all find a box to work at with their partner in a matter of minutes.
H and K begin moving through the room checking in with different partners to see what they are observing
Students are very engaged in the exploration
A number of groups quickly figure out that they will need to put the unifix cubes standing up in the back of the box to measure the shadows produced.

After a few minutes H claps her hands to get attention and instructs students to begin working with the questions on their sheet.
The partners have only one worksheet to do together, questions include: What cases shadows, What happens when you move the figure back and forth in the box?, How can you use your unifix cubes to help you measure any changes you see?
Some groups move quickly through the questions, others move slowly
Most groups remain ontask throughout
The volume in the room is moderate. Students are talking and laughing, but it never gets too loud
Some groups need help reading the questions, others seem to handle it okay on their own
For the most part only one partner does the writing.
K showed one group how to use the cubes to measure when they hadn’t figured it out even after a bit of exploration.

H & K asked and said,
“How did you use your unifix cubes?”
“Can you write that down; use your words?”
“Ah, you can write that down!”
“14! Wow”
“How far away do you think you moved? How many steps back?”
“Oh! What happens when you move it back?”
“What happens when you shine you light and move it up?”

After a while, H says, “Okay boys and girls, 5 more minutes to get your writing down. Then I was to do a sharing time.”
On group figures out how to make their figure dance y moving the light in a arc back and forth over the figure. Soon everyone is making their shadows dance
H gets out her tablets and both H & K record the dancing at most groups while students sing songs
Soon all sort of other exploration is occurring. Students have unifix cubes stacked in different piles, pencils poking out of the top, the figure on top of the cube stack, and with each construction, the lights seem to be used to create shadows in the box.

- H gives the signal for writing the final answer and moving to the carpet for share time
- H starts the sharing even before all students have arrived—giving them time to complete if they need it
- The few stragglers work quickly, they are motivated to join the group.

Students share:
- “When you move the flashlight side to side, it looks like it’s dancing.”
- “We figured out that what causes shadows is light.”
- “What makes the shadows is the sun hitting the guy and behind him the sun doesn’t hit any of that because the guy I blocking that and so behind him is just the guy and all around him is the sun.”
- “We measured the guy.”
- “We found out that when we moved the flashlight up and down, the shadow got dimmer.”
- “All of the things we experimented with the guy, he got bigger and smaller.”
- “When we moved the flashlight to the right, the guy went the opposite way.”
- All groups shared, H asked questions as they shared to facilitate both members sharing
- All students sat respectfully during the share time
- Then, H promised to put the videos and pictures together
- She also promised to get the shadows book to read
- And finally started wondering out loud about tracing their own shadows outside with chalk
- “I wonder what will happen if we trace our shadows in the morning when the sun is low in the sky and then at luch time when it is straight up?”
- “What happened when you moved your flashlight high up?”
- Then students lined up for lunch.

Bilas classroom, Wednesday, November 28, 2012-1:00PM
- Students are transitioning to their walk to read groups
- Students entering from other classes move directly and quietly to their desks
- Desks arraigned in 6 pods of 5 desks (I number them 1-6 beginning with the pod closest to me then forward, then right, then back, then right, then up)

- B begins by reviewing yesterday’s poster—students will get a few minutes to finish posters
- They will be shared with the class—student choice on how to present
- When done students have individual choice
- When released there is a mad (safe) rush to retrieve posters and supplies
- One group (group 3) moves to a place on the floor—others go back to their spots
- Group 1 begins working on presenting their poster as it is done.
- Part way through, group 6 decides to move to the floor in a corner of the room

- B stays at her computer station preparing for the next part of the lesson
- She moves through the room from time to time checking in
- She reminds when there is 1 minute left
| The buzzer goes off and students settle down—with a little encouragement |
| She gives students two more minutes to prepare |
| Then B moves to cut paper (to be used in the next part of the lesson?) |

| When the buzzer goes off B raises her voice to encourage students to follow procedure |
| Students generally all follow directions—some keep working (B reminds them as she discusses the presentations) |
| B’s table 1 is my table 6 |
| She encourages the presenters to monitor their audiences attention—she reminds this to the second group—and from time to time throughout |
| There is quiet discussion in between each presentation, but students come right back to attention |
| B reminds students to all clap at the end of the presentation |
| B regularly steps in on the presentations to facilitate the delivery |
| Most students pay attention during presentations, a few do their own thing |
| At the end of each presentation, students presenting appear proud |
| B encourages students to look at other groups posters |

| (Example presentation) Group 4’s presentation: What makes a good story teller?—good fluency, strong voice, showing the pictures, good posture, reading slowly, juicy words, good voices, understand the story |

| Transition into a story of the Salish tribe |
| Opening question, “how would have natives heard this story the first time” – first student with hand up has the right answer |
| B reviews languages and how there will be some traditional native language in the story (the reading will switch back and forth) |
| She assures the students that they will get a second chance when all will read the story aloud together—all in English |

| B is going to have students do a visualization and she gives expectations for this activity: comfortable place of choice, lights off, eyes closed, attempt to imagine what is happening in the story |
| After story is over, students will draw one scene from the story |
| B points out an example visualization from a different story (posters up on the wall) |
| Students have some good questions before the activity begins |
| Students find a place to be (some are laying on the floor, some still at desks, some under tables) and B gives final directions |
• The story is presented on a DVD that the students will view later
• They only hear the audio this time
• Students do a good job of staying still and listening to the story (even through the Salish language parts)
• At the end students are asked to return to seats—there is a lot of talk about the story
• Some students get straight to work on their drawing (as B hands out half sheets)
• After some encouragement to be silent, student conversation dwindles and all begin work—some whispers persist
• B recommends beginning with pencil then moving to crayon or colored pencil
• Students at table one are whispering “oi” “quit” (a line from the story) and laughing (later I hear students at table 5 saying it also)
• All students are on task with drawing activity—they get up and find things that they need, slowly quiet conversations return—they are on-topic conversations and B seems fine with it
• At one point, B announces that she is setting the timer for 7 minutes which will allow her to check in with the students, she reminds them when there is 5 minutes left, and 2 minutes left
• Conversations continue to increase slightly—all that I hear are on-topic: “I’m making two pictures” “look at mine” “that’s it for me” “where’s the froggie?” “What color do you think my eagle should be?”
• I finally hear one off topic conversation about going to college
• B instructs students to put completed work in the “school inbox”—if done early they may read
• “Students show me with your fingers how many more minutes you need?” After seeing numbers she asks students to set their work aside, and complete the exit slip before going back to drawing
While students work, B is preparing materials for another activity (get prepares some paper, then writes directions on the board (this is an exit slip):

- “Name”
- “1. What is a traditional story?”
- “2. Why is the story “Beaver Steals Fire” a traditional story?”

A student asks about putting part of question in answer and B asks everyone’s thoughts –the chorus out, “Yes” Then she asks for students who can do it. One student says, “A traditional story is—” another says, “Beaver Steals Fire is a traditional story because—”

B reminds them of options when done (read or work on visualization drawing)

Students get straight to work silently on the writing

Someone is having a hard time seeing, B reminds all they can always move to where they can see better (get a clipboard and move closer)—only about 5 move, they quickly get right back to work

While students write, B begins to hang group posters on sink cupboards

As students finish they hand in writing in “inbox” B is there to periodically check the work—all quietly return to choice tasks

With a couple minutes left B gives expectations: Exit slip must be done it is the ticket to recess. Students not finished with drawing could stay in at recess or could finish at the beginning of class tomorrow

Class ends smoothly with students being responsible for their own duties
• One added a hotel
• One group had a sports focus and were filling their land with a sports complex
• One group was putting a mini-golf course on their land
• Most groups when with a bunch of pencil/marker drawings, one group was going straight to full color
• One group added a waterwheel and solar panels for power.
• A number of groups had all 2 to 4 pencils going at once.
• D gave 15 min, 4 min, and 2 min warnings

• D explains that often times developers work in phases and today’s work can qualify for day 1. She acknowledges that she too has a hard time stopping work when she’s into something. This seems to help students stop
• D lets them know that their section of land is part of a puzzle piece, each paper has a number on it and they are going to hand them on the board to form the completed puzzle
• Students break out in discussion again over what number they have as D calls students up with their piece and hangs them on the whiteboard
• Students settle down and watch the formation of the river
• D then explains that many cities are formed along rivers and they just formed crooked creek.
• D states that each group will get two minutes to explain their section
• She reminds students to be respectful listeners
• After each group, D discusses the potential pollution issues that their development creates, and she gives them some “pollution” signified by small items()
• D reminds them that all this pollution ends up in the river so as the next group comes up, students hand off their pollution to the next group, down river
• This passing off of pollution continues and the amount grows.
• Students are frustrated by the pollution they get assigned—side conversations break out in between groups
• A couple times D connected students to content covered last year (SS or SC)
• Student interest did not wane at all, if anything conversations grew in-between groups
• D noticed that the further they went along, the more pollution groups inherited, the more environmentally conscious their presentations became
• At the end, D collected the “pollution” and hung it up by the river community

• Quotes from development time
• “You two share this side and J and I will share this side”
• “Here’s a tire swing connected to the bridge”

• D’s questions/comments
• “Okay, what are your ideas?”
• “Hey that sounds cool!”
• “What’s your group thinking?”
• “We can maybe finish our ideas tomorrow”

• Next she shared a book with the students (not reading word for word)