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Teacher Definitions of Integration in Primary Grades

Jeanne S. Prestwich

A thesis submitted to the faculty of
Brigham Young University
in partial fulfillment of the requirements for the degree of

Master of Arts

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ABSTRACT

Teacher Definitions of Integration in Primary Grades

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One obstacle that challenges the implementation of effective curriculum integration practices is the confusion caused by the existence of numerous definitions of this construct in the literature. This concern is further compounded by the potential disconnect between the varied definitions proposed by scholars and classroom teachers' acceptance and use of curriculum integration. The purpose of this study was to analyze K-3 grade teachers' self-reported definitions of curriculum integration. Teachers responded to an Internet survey in which they provided their personal definition of curriculum integration, described integrated teaching examples from their own classroom, and rated six teaching scenarios for quality of integration. Results suggest that teachers may not share the wide variety of definitions of integration described in the literature. Teachers in this study seemed to generally share one definition of integration, as measured by their explanation of the term integration and by the teaching examples they provided. In addition, the majority of the teachers' definitions aligned with their teaching examples, suggesting that the teachers both define and practice integration in similar ways. Finally, when teachers ranked teaching scenarios written to illustrate different levels of quality of curriculum integration, the majority of the teachers again appeared to agree on a shared definition. There were no statistical differences based on grade level, years of experience and education level. In addition to presentation of results, implications for future research and practice are discussed.

Keywords: curriculum integration, definition, primary grades, teacher practice

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Chapter 1

Introduction

Teachers at every elementary grade level have a broad range of content they are expected to teach. Kendall and Marzano (2000) estimate an average of 200 standards and 3,093 benchmarks in 14 different content subjects that teachers are expected to teach during any given school year. These demands leave little time for teachers to address each subject area with the appropriate and expected breadth and depth during the course of a day or even a school year. Integrating content subjects is one way teachers can more efficiently teach all aspects of the curriculum given their instructional time constraints (Holloway & Chliodo, 2009; Howes, Lim, & Campos, 2009).

In addition to helping teachers address multiple content areas, integration of content subjects can assist students to learn how to think more critically and increase their knowledge and understanding of the curriculum (Carnegie Council on Adolescent Development, 1989). Integrating content subjects is an effective way for students to recognize connections and relationships in contexts that more closely mimic real-world learning (Hargreaves & Moore, 2000). Though the benefits of integration appear useful to teachers and students, effective implementation of integration can be difficult (Hinde, 2005).

Statement of the Problem

One obstacle that challenges effective integration of content subjects is the confusion caused by multiple definitions of integrated curriculum instruction (Czerniak, Weber, Sandmann, & Ahern, 1999). Curriculum integration has long been promoted in numerous forms, with different names, and by many high-profile individuals since the late 19th Century (Hinde, 2005; McBee, 2000; Vars, 1991). These multiple definitions create some challenge when studying and

practicing integration. However, there may be an additional challenge when considering the connection between scholars' definitions of integration and the ways actual classroom teachers understand and describe integration. The definitions currently described in professional literature all come from scholars. However, it is uncertain whether classroom teachers define curriculum integration in similar ways as described in the professional literature.

Purpose of the Study

The purpose of this survey research study was to analyze K-3 grade teachers' self-reported definitions of curriculum integration in four school districts. More specifically, this study addressed the following four research questions:

1. How do K-3 grade teachers define curriculum integration?
2. How do K-3 grade teachers describe teaching examples of curriculum integration?
3. Do K-3 grade teachers' teaching examples of integration match their definitions?
4. Do K-3 grade teachers with more experience, education level, or different grade level assignments define curriculum integration differently?

Limitations

The results of the survey cannot be generalized. The participants for this study included K-3 teachers from four purposefully selected school districts. The teachers volunteered and there was a low response rate. The sample size was limited because it included only those teachers who had a specific interest in the survey subject matter and chose to return the survey (Fowler, 2009; Groves, et al., 2006). Still, the study provided a small set of empirical data that suggests that teachers may have a more stable definition of curriculum integration than the professional literature states.

Self-reported data collection was the strongest method to discover how teachers personally defined curriculum integration. However, data such as teacher observation and interviews could help provide a more accurate picture of the way teachers practice curriculum integration by exploring what is actually occurring in classrooms. In an attempt to adjust for this limitation, teachers were asked to provide teaching examples and rate teaching scenarios for quality of integration.

Chapter 2

Review of Literature

In any area of study, common definitions of prominent ideas are useful in communicating. In the area of integration, a number of definitions are currently used in the literature. However, it is unclear whether teachers accept these definitions or define this construct differently. As background for this issue, what is currently accepted about the effectiveness of curriculum integration, how it is conceptualized in different core disciplines, and the role teacher beliefs play in their definitions of and practice with integration in the classroom will briefly be discussed. Finally, the wide variety of definitions currently found in the literature will be presented underscoring the need for this study.

Effectiveness of Integration

Scholars have long held integration as an important component of effective pedagogy. Dewey and his mentor, Parker, founded the progressive education movement in the 1890s and early 1900s and promoted the idea of an integrated curriculum as an essential part of effective instruction (Hinde, 2005). Several scholars have acknowledged that the eight-year study conducted by the Progressive Education Association in the 1930s was a landmark study that strengthened the case that integration is an effective method of teaching (Beane 1995; Hinde, 2005; Vars, 1991; Wraga, 1993). Results of the study showed that students who graduated from schools that used integrated methods in elementary through secondary grades performed better on traditional measures of school achievement than students who came from schools using conventional methods of content instruction.

Since the eight-year study was conducted, several studies have suggested that students who were instructed using different types of methods of integration outperformed or performed

as well on standardized tests as students enrolled in the traditional separate subject approach of teaching (Vars, 1991). For example, one study reported by Lounsbury (1993) involving 15,000 eighth-grade participants found that those who attended schools that used integrated methods scored higher on standardized tests than students from schools that used traditional methods of content instruction. Similarly, Greene (1991) reported that 78% of students who took part in year-long integrated thematic units improved achievement scores on the National Assessment of Educational Progress. These studies suggest that schools are more effective, especially on their performance of standardized tests, when they incorporate integrated teaching methods.

An important part of understanding integrated teaching methods and their effectiveness is to examine differences in how integration has been conceptualized across the curriculum. Specifically, the differences across the core content areas of math, science, social studies and literacy are important to consider. The differences in these core subjects may provide insight as to why there are many different definitions of integration in the literature.

Integration Across the Curriculum

According to Beane (1995), integration has generally been conceptualized as using the most significant and powerful ideas between subjects to help students make meaningful connections across the curriculum. Recognizing relationships between subjects, examining content, and applying knowledge (Holloway & Chiodo, 2009; Lawton, 1994) is another way integration has been understood. In order to comprehend how integration has been conceptualized across the curriculum it is important to look at some of the natural connections between particular content areas. Examining these connections may help in understanding the tendency to integrate across particular subjects and may also help clarify teachers' conceptions

of integration. Examples of integration from the core disciplines of math, science, social studies and language arts are examined in the following sections.

Math and science. One unique effort to improve science and mathematics education understanding is an approach that identifies the commonalities between science and mathematics and seeks to properly and effectively integrate these two disciplines in instruction and learning (Berlin & White, 1992).

The alliance between science and mathematics has a long history, dating back centuries. Science provides mathematics with interesting problems to investigate, and mathematics provides science with powerful tools to use in analyzing data. . . . Science and mathematics are both trying to discover general patterns and relationships, and in this sense they are part of the same endeavor. (Rutherford & Ahlgren, 1990, pp. 16-17)

Another example indicative of the emphasis on the understanding the concept of integration involving math and science follows:

Since mathematics is both the language of science and a science of patterns, the special links between mathematics and science are far more than just those between theory and applications. The methodology of mathematical inquiry share with the scientific method a focus on exploration, investigations, conjecture, evidence, and reasoning. Firmer school ties between science and mathematics should especially help students' grasp of both fields. (National Research Council, 1990, pp. 44-45)

Integration of math and science has been understood to bring together overlapping concepts and principles of the two content areas in a meaningful way to enhance learning (Furner & Kumar, 2007).

Social studies. The National Council for the Social Studies 2010 standards emphasize the usefulness of the concept of integration in order to make connections across the curriculum. One way integration has been conceptualized is by teaching social studies with other content areas of reading, math, and science. These content areas share many of the same basic principles of social studies (Farris, 2004). According to Brophy (1992),

In social studies, students are challenged to engage in higher-order thinking by interpreting, analyzing, or manipulating information in response to questions or problems that cannot be resolved through routine application of previously learned knowledge. Students focus on networks of connected content structured around powerful ideas rather than long lists of disconnected facts, and they consider the implications of what they are learning for social and civic decision making. (p.8)

The concept of integration has been viewed as a key solution for including social studies concepts within the core curriculum framework (Holloway & Chiodo, 2009).

Literacy in content areas. The concept of integration in content-area literacy has often been described as teaching reading and writing through the use of continuous, authentic, functional texts (McGee & Richgels, 2008). A study based on Guthrie's Concept-Oriented Reading Instruction program illustrates the concept of integrated literacy instruction as a means of creating more meaningful literacy by encouraging teachers to provide students with explicit literacy strategies for reading scientific texts in the context of real-world experience and reading (Guthrie, et al., 1998). This study, with third-grade students, reported that students performed literacy strategies within a meaningful context, which enabled them to learn and use the strategies with better effort, attention, and interest than a context devoid of deep, conceptual themes (Guthrie, et al., 2004). Reading and writing across the curriculum requires that students

are not just literate in the traditional sense but that they are literate in the target content area. For example, scientists talk about the importance of scientific literacy or “the knowledge and understanding of scientific concepts and processes required for personal decision making, participation in civic and cultural affairs, and economic productivity” (National Research Council, 1996, p.22). In this way, the definition of literacy, is broadened to include the ability to negotiate and create texts that are appropriate for uses in a specific discipline that participants of that discipline would recognize as true and practical (Draper & Siebert, 2010). Students that have profound knowledge of a discipline can use a variety of representational forms such as reading, writing, oral language, and music, to convey their understanding, integrate ideas, and dispute ideas held in the discipline and other fields (Moje, 2008). Providing literacy experiences through reading and writing in content-specific texts is one way content-area literacy integration has been understood.

The way integration has been conceptualized across the curriculum provides different perspectives that may be useful when examining teachers’ definitions of curriculum integration. Another significant factor to consider when studying teachers’ definitions of curriculum integration is the beliefs teachers hold about curriculum integration. The beliefs that teachers embrace may influence how they define and practice curriculum integration in their own classrooms.

Integration and Teacher Beliefs

Teacher beliefs and perceptions directly related to the educational process play a vital role in teachers’ decision making about curriculum and practices in their own classrooms (Pajares, 1992; Wilson, 1990). Several factors such as teaching experience, level of education, types of training, certification, and professional development influence the relationship between

teacher beliefs and classroom practice and how they change (Organization for Economic Co-operation and Development, 2009). Some studies have shown that teacher beliefs and perceptions have a significant connection with classroom practices (Beck, Czerniak, & Lumpe 2000; Roehrig, & Kruse, 2005). To understand teacher beliefs and their impact on how teachers implement curriculum integration, one must examine the strength of teacher beliefs and how they change overtime as well as the relationship between teacher beliefs and classroom practice.

Strength of teacher beliefs and change. Block and Hazelip (1995) described how teacher beliefs differ in strength and kind, and over time form a system or network. The ease with which a teacher can modify his or her beliefs is associated with the strength of those beliefs. The firmer the belief, the more resistant it becomes to change (Kane, Sandretto and Heath 2002). Results of studies by Hollingsworth (1989) and Munby (1984) imply that the way teachers adapt or adopt new practices in their classrooms is connected to whether their beliefs match the notions inherent in the new programs or methods. As such, teachers' beliefs and perceptions influence the way students are taught to make connections between subjects (Pajares, 1992).

Relationship between teacher beliefs and classroom practice. Educational researchers have advocated the need for closer examination and direct study of the relationship between teachers' beliefs and educational practices (Pajares, 1992; Pomeroy, 1993). The beliefs and perceptions held by teachers play an important role in the implementation of integration. According to Mcbee (2000), teachers perceive integration as an effective method for students to identify meaning and relevance of what they are learning into their own lives. Hargreaves and Moore (2000) surveyed 29 teachers who taught seventh grade and eighth grade and were committed to making changes regarding curriculum integration. They explained that to the teachers surveyed, relevance of the curriculum to students' lives was a powerful and consistent

principle in the integrated units teachers designed for their students. The survey found the integrated units that were most successful were the units that teachers taught what they considered meaningful and relevant in their students' lives.

In a similar study, McBee (2000) surveyed elementary school and middle school teachers who were considered expert curriculum integrators by their principals and district administrators. She observed and interviewed ten teachers from the survey. A common theme found was the belief that curriculum integration benefited students by helping them make meaningful connections between content and life, enjoy learning and improve behavior.

These two studies suggest that many teachers perceive integration as an effective method for students to find relevance and meaning. Teachers can help students discover the relevance of the curriculum when integrated instruction is used because it parallels real-world tasks and not those created exclusively for school (Gavelek, Raphael, Biondo, & Wang, 2000). Understanding teacher beliefs and perceptions is essential to improving teacher practice (Pajares, 1992).

Taking into consideration the beliefs teachers have about curriculum integration and how those beliefs impact teacher practice is one way to better understand how teachers define curriculum integration. However, it is still important to understand how teachers' definitions match (or do not match) the multiple ways scholars have defined curriculum integration. Examples of numerous ways curriculum integration has been portrayed in the professional literature are discussed below.

Definitions of Integration

A vast number of words are used to describe integration: *interdisciplinary*, *multidisciplinary*, *transdisciplinary*, *integrated*, *thematic*, *connected*, *sequenced*, *nested*, *shared*, *webbed*, *threaded*, *immersed*, *networked*, *blended*, *unified*, *coordinated*, and *fused* (Czerniak et

al., 1999). Lederman and Niess (1997) indicated that many teachers use the terms *integrated*, *interdisciplinary*, and *thematic* synonymously, which adds to the confusion. Perhaps educators are casual in their use of terms because little agreement exists regarding a common definition (Czerniak et al., 1999). Variation in how integration is conceptualized in content areas may be one reason for so many definitions of integration (Beane, 1995). The disagreement has been evident during the past two decades in the professional literature where multiple descriptions have been used to define integration. The following definitions of *Indistinct Subject Integration*, *Topic/Theme Integration*, and *Recognizable Subject Integration* illustrate this point.

Indistinct subject integration. One way integration has been defined is teaching subjects so that they are indistinguishable, or unclear as to where each subject begins and ends when combined together. Berlin and White (1992) described how 60 math and science educational professionals assembled at a conference funded by the National Science Foundation and after three days of discussion could not reach an agreement on the definition of integration of science and mathematics. One group did put forward a working definition, “Integration infuses mathematical methods in science and scientific methods into mathematics such that it becomes indistinguishable as to whether it is mathematics or science” (Berlin & White, 1992, p. 341).

Defining integration as indistinct subjects was expanded to include the element of using real-world problems for instruction in a study done by Lederman and Niess (1997). They also defined integration as two different subjects taught together to form a seamless whole. The subjects are combined together so that each discipline is not clearly defined. The integrated subjects are taught using applicable, real-world problems. The authors justified their definition stating that since daily experiences are not planned into a range of defined subject matters, neither should the curriculum in school.

Topic/theme integration. Another way integration has been defined is curriculum planned around topics or themes. This definition of integration differs from indistinct integration because the combined subjects are recognizable in the topics and themes being taught. Beane (1996) defined integration as having four characteristics: (a) curriculum that is organized around topics of personal and social importance in the real world, (b) use of applicable information in the context of topic without consideration for subject lines, (c) subjects that are used to study a current issue rather than for a test or grade, and (d) importance placed on assignments and activities with real-world application of knowledge and analysis. He explained that other descriptions of integrated curriculum focused too heavily on separate subject areas and were not actually integrated.

Integration defined as subjects organized by topics may also include theme teaching. Hurless and Gittings (2008) identified integrated curriculum as a method of teaching that combines multiple subject areas such as math, literacy, or the arts to a central theme. They explained that teachers apply this method of instruction through comprehensive planning. Teachers are then able to educate students using authentic, relevant learning experiences.

Recognizable subject integration. Additionally, integration has been defined as using several subjects in combinations that are recognizable when used to teach a central idea, solve a problem, or plan an event. This definition is unique from indistinct integration because the multiple subject areas are still obvious while exploring the new idea. This definition is different from *Topic/Theme Integration* because its focus is on central ideas, problems, or events. Parker (2005) defined integration as an approach that purposefully draws together knowledge, viewpoints, and methods of examination from several disciplines to develop a more powerful understanding of a central idea, problem, individual, or event.

Parker additionally identified two approaches of integration that teachers use most often based on this definition: fusion and infusion. The fusion design of curriculum integration is used when multiple subjects are merged together to form a new unified idea. The infusion design is used when multiple subject areas are used together to form a relevant curriculum. Parts of one subject area are inserted into another subject to help the learner gain deeper understanding of the second. This broad method is the most regularly used practice of curriculum integration at the elementary level (Hinde, 2005).

The definition of integration as using individual subjects in combination to teach a major idea was expanded to include indicating how the individual subjects reinforce each other in the lesson. Farris (2004) described integration as joining multiple subjects together in a lesson. He stressed the importance of pointing out related concepts, skills, and values of each subject so as to reinforce each other using interdisciplinary instruction. Farris further stressed the importance of learning being applicable and meaningful to students.

Hall-Kenyon and Smith (in review) furthermore described integration as, “instruction based on two or more objectives from two or more subject areas in one lesson” (p. xx). They also identified two essential components lessons should have to be integrated. The first component is to have a valid connection(s) made between skills and/or content knowledge of each individual content area. The second component is that each objective is directly taught and measured.

The Current Study

One possible hindrance that stands in the way of the implementation of effective integration is the uncertainty of whether teachers’ definitions of curriculum integration align with the wide variety of ways the professional literature describes. Though some teachers recognize

integration as an effective method to bring meaning and relevance of the curriculum into students lives, it is still unclear how it is defined and practiced by elementary school teachers when, “integration means different things to different educators” (Davison, Miller, & Metheny, 1995, p. 226). Teachers incorporating integration are only as effective as the definition of integration they understand and practice. Empirical data describing how teachers define and practice curriculum integration is lacking in the current professional literature (Beane, 1995; Czerniak et al., 1999; Davison, Miller & Metheny, 1995). In an effort to move towards the goal of improving the effectiveness of the use of curriculum integration, this study looked at how teachers define curriculum integration through personal definitions, teaching examples and rankings of integrated teaching scenarios.

Chapter 3

Methods

The purpose of this survey study was to examine primary grade teachers' self-reported definitions of curriculum integration. Specifically, how K-3 teachers personally defined curriculum integration, described teaching using integration in their own practice, ranked the quality of integration in teaching scenarios and how teaching experience, assigned grade level, and education level influenced teachers' definitions. The participants, design, data sources, procedures, and data analysis are discussed below.

Participants

The participants for this study were a convenience sampling that included all kindergarten, first-grade, second-grade, and third-grade elementary school teachers from four school districts in the Intermountain West. Districts were purposefully selected (Creswell, 2008) by the researcher because of the large number of K-3 teachers in each district and the district's flexibility with requirements for external research. Surveys were sent to 1,301 K-3 teachers (234 kindergarten teachers, 367 first-grade teachers, 359 second-grade teachers, and 341 third-grade teachers). Teachers were contacted through district email and asked to participate in the study by clicking on a link to the survey.

Design

The survey design was an appropriate method because the survey data that were collected reflected "current attitudes, opinions, or beliefs" (Creswell, 2008, p. 389) at one given point in time. The survey design allowed the researcher to immediately evaluate the definitions of curriculum integrations by the teachers sampled. The survey design provided participants time for thoughtful answers and had the potential of prompt returns (Fowler, 2009).

Data Sources

The data source was a survey administered through surveymonkey.com. The survey was divided into two sections: demographics and teacher definition of integration. See Appendix A for a copy of the survey. In the first section of the survey, the teachers were asked to provide information about the school districts in which they teach, educational level, assigned grade level, and years spent teaching. In the second section of the survey, the teachers were asked to provide their personal definition of integration. The survey then asked teachers to further define integration by ranking the quality of integration for six teaching scenarios using a five-point Likert-type scale (1 *poor integration* and 5 *excellent integration*). Following each scenario teachers were asked to briefly provide reasoning for their responses. The final question in this section of the survey was an open-choice question in which teachers were asked to write an example of an integrated curriculum lesson plan incorporating literacy, math, science, and/or social studies.

Procedures

The survey was first piloted with six volunteer elementary teachers currently teaching in grades K-3. The purpose of performing the pilot was to receive feedback on the clarity and content of the survey questions. Teachers who participated in the pilot survey received a hard copy of the survey along with the same instructions (minus the information about taking the survey electronically) as those who participated in the actual study. After completing the survey, the researcher met with the teachers and asked them to provide feedback on questions they felt were unclear or difficult to answer.

After pilot testing the survey and obtaining IRB approval from Brigham Young University, applications to the four school districts to perform research were submitted. Upon

receiving IRB approval and consent to distribute the surveys from the four school districts, the researcher sought for voluntary participants by emailing the survey through surveymonkey.com to 1,301 kindergarten, first-grade, second-grade, and third-grade teachers in the four school districts. The email included a hyperlink to the survey instrument. Attached to the survey instrument was the Implied Consent to Participate in the Research form. The teachers read the form which indicated that by proceeding with the survey, they were providing their permission to participate in the research study. The participants took the survey at their own leisure, but it was planned to take approximately 10-15 minutes to complete. An email reminder was sent one week later to participants who had not responded to encourage them to fill out a survey. A final email reminder was sent two weeks later to participants who had not responded. Survey data gathered within three weeks was analyzed.

Data Analysis

A total of 1,301 surveys were sent out and 100 surveys were returned, for a return rate of 8%. Survey research is best utilized when a large return rate is realized. The current study's return rate fell under the low extreme of Internet surveys, according to Fowler (2009). However, responses were obtained from a cross-section of teachers across grade levels, years of experience and education levels. See Table 2 for a breakdown of participants in each category. This justification is consistent with a study done by Rous, Hallam, McCormick and Cox (2010) that also had a low response rate. This study was regarded as acceptable because of a reliable cross-section.

The researcher reviewed the surveys and found that 83 of the surveys were complete. Of those complete, 13 participants selected the answer "NA" (Not Appropriate) for their reason as to why they ranked certain teaching scenarios as they did. Five of the 13 surveys were selected

to remain in the final study because they had at least 50% of the open-response questions answered without “NA,” leaving a total of 75 surveys. Out of the remaining 75 surveys there were four additional teachers dropped from the study because they did not include a definition of integration. When asked for a definition they instead gave a reason why they might choose to integrate (e.g., makes curriculum more meaningful, saves time, helps fit in all areas of the curriculum). Thus, all analyses were conducted with data from 71 teacher surveys representing 16 kindergarten teachers, 19 first-grade teachers, 20 second-grade teachers, and 16 third-grade teachers.

Survey responses were analyzed descriptively and qualitatively. The teachers’ definitions of integration and examples of integrated lesson plans were analyzed qualitatively looking for recurring themes (Creswell, 2008). The three most common definitions of integration described in the literature review *Indistinct Subject Integration, Topic/Theme Integration*, and *Recognizable Subject Integration* were used as *a priori* categories. However, the data for both the teachers’ definitions and teaching examples were also examined for other definitions or categories that emerged from the teachers’ responses. Teachers’ definitions and teachers’ teaching examples were then compared and examined for a connection or lack of connection between the two responses.

The classifications of the six teaching scenarios as integration or non-integration were analyzed descriptively. More specifically, the overall percentage of teachers who determined a scenario as integration or non-integration were calculated for each of the teaching scenarios. In addition, the teacher’s ranking of quality (1= *poor quality* and 5= *excellent quality*) was also counted and means and standard deviations were calculated for each of the scenarios. Descriptive comparisons were made across examples and then also between and among teachers

based on particular demographics (e.g., grade level taught, level of education, and years of experience).

Data were coded by the researcher and an additional coder. The additional coder currently teaches first grade and has taught in grades K-3 for 37 years. The coder holds a Master's Degree in Teacher Education, is National Board Certified in Early Childhood Education, has been IRA Reading Teacher of the Year and UCTM Math Teacher of the Year and holds the following endorsements: Gifted, ESL and Reading. The researcher and coder reviewed all 71 teachers' survey responses (i.e., definitions of integration, teaching examples and explanations of rankings for teaching scenarios). First, the coders discussed the three *a priori* definitions of curriculum integration to form a common understanding of each definition before coding the data. Then while coding the data, the researcher and coder would read aloud each response and determine its category. If the coders did not find that the response matched any of the *a priori* categories, they created new categories. All disagreements were negotiated until a mutual placement was agreed upon.

Chapter 4

Findings

The results from this study describe K-3 teachers' definitions of integration and teaching examples from their own practice. Teachers' definitions and teaching examples of integration were also compared to determine the consistency between teachers' definitions and teaching examples of integration. Results from the teachers' ranking of six teaching scenarios shed further light on their conceptions of integration.

Examining Teachers' Definitions of Integration

The three most common definitions of curriculum integration described in the literature review; *Indistinct Subject Integration*, *Topic/Theme Integration*, and *Recognizable Subject Integration*; were used as *a priori* categories to analyze teachers' definitions of integration. All of the teachers' definitions (n=71) that were analyzed fell under the three common definitions. No new definitions emerged, although one additional category was created, *Vague Categorization*, because some definitions were too vague to code.

A total of 96% of the teachers (68/71) defined integration using one of the three common definitions found in the literature. A total of 4% of the teachers (3/71) had definitions that were coded as *Vague Categorization*. These three teachers were kept in the study because though their definitions were vague, they provided good teaching examples of curriculum integration. Similarly, some teachers provided clear definitions but vague examples. It was important to keep the teachers who had vague definitions or examples to determine if it were more common for teachers to be vague in their definitions or examples. The three *a priori* integration definitions that were used to define curriculum integration (*Indistinct Subject Integration*, *Topic/Theme Integration*, and *Recognizable Subject Integration*) will be discussed in more detail

below using examples from the 71 teachers' survey responses to illustrate how the teachers' answers were categorized.

Indistinct Subject Integration. A total of 10% of the teachers (7/71) defined curriculum integration using *Indistinct Subject Integration*. These definitions all explained a need for subjects to be used together in combination without distinct subject lines represented. For example, one teacher stated, "Curriculum Integration is where teachers are helping kids see the 'big picture'. That everything [combines] together and builds off each other. Rather [than] teaching everything in a bunch of broken segments" (1st Grade Teacher). The previous example was placed as *Indistinct Subject Integration* because it explained how the subjects combine together and that subjects were not taught in different segments but it was not specific about distinct subject lines. Other teachers used references to holistic instruction in their definitions. References to this kind of instruction were also seen as a part of *Indistinct Subject Integration*. For example, one teacher defined curriculum integration as "putting a cluster of related curriculum content and teaching them together in a [holistic] approach" (3rd Grade Teacher).

Topic/Theme Integration. A total of 21% of the teachers (15/71) defined curriculum integration using *Topic/ Theme Integration*. In these definitions teachers commonly made reference to topics or units of study. One teacher described curriculum integration in the following way, "The ability the teacher has to interweave multiple curriculum or academic areas into a theme or unit" (2nd Grade Teacher). Similarly, another teacher portrayed curriculum integration by stating the following:

It means using the core standards in all different subjects. For example, if I have a science objective to teach, I can [include] shared readings on that topic, use books on that subject in guided reading, incorporate writing projects about the subject, etc. It brings a

more cohesive feel to the curriculum and gives the students a wider range of experience with the material needed. (1st Grade Teacher)

Recognizable Subject Integration. A total of 65% of the teachers (46/71) defined curriculum integration using *Recognizable Subject Integration*. The definitions the teachers supplied that were categorized as *Recognizable Subject Integration* frequently discussed the need for more than one subject to be taught together in one lesson. For example, one teacher defined curriculum integration as, “Teaching core subjects (science, social studies) during reading and/or math. For example, using an informational text in shared reading about changes in the night sky” (2nd Grade Teacher).

While majority of the teachers’ definitions in this category were similar to the example above, some definitions that were categorized as *Recognizable Subject Integration*, regularly described curriculum integration as one lesson in which one subject is used to teach another subject. The following example illustrates this point:

Integration of curriculum is taking ideas and academic principles from one area of study and inserting them into another area of study. For example, when one is teaching science principles, the teacher will teach those principles with the use of literature.... having the students compare various types of literature about the subject being taught, such as rocks...having them write about the subject, or share verbally their ideas. The teacher is satisfying core requirements for both the science standards at the same time as satisfying core requirements for literacy. (Kindergarten Teacher)

Other definitions that were categorized as *Recognizable Subject Integration* consistently described curriculum integration as a lesson where the subjects being integrated had to be taught and assessed in one lesson. The following example is illustrative of this point:

When the topic being studied incorporates more than one academic subject. The instruction, activities, and assessment must include the meaningful and intentional teaching and assessment of both/all the objectives. The primary purpose of integration is to make curriculum more meaningful for young children. (1st Grade Teacher)

Vague Categorization. A total of 4% of the teachers (3/71) had definitions that were coded as *Vague Categorization*. *Vague Categorization* meant the definitions that teachers provided were not relevant to the question being asked. It also meant that what teachers wrote for their definition of curriculum integration was unclear and did not fit into one of the *a priori* definitions. One teacher defined curriculum integration as, “all” (3rd Grade Teacher) which did not provide sufficient clarity and was coded as *Vague Categorization*.

Another teacher gave a definition that had the first part coded as *Recognizable Subject Integration*, followed by a reason for choosing to integrate and ending with the definition coded as *Topic/Theme Integration*. The following is the definition the teacher provided: “This is where content areas of the core curriculum are combined [with] other curriculum in teaching as to save time, and yet cover more areas. Sometimes it is driven by a theme” (3rd Grade Teacher). Although this definition made a reference to the notion of a “theme” this definition was categorized as vague because the teacher did not include specific details related to how integration was conceptualized beyond using more than one curriculum area that is sometimes driven by a theme.

Evaluating Teachers’ Examples of Integration

Teachers’ examples of integration were analyzed using the same *a priori* categories described above. This was done for two reasons: First, to understand how the teachers’ examples of integration fit within the common definitions of integration described in the

literature and second, to be able to connect teachers' examples of curriculum integration with their definitions of curriculum integration. Teachers' examples were first categorized based on the *a priori* categories and then compared to their definitions to determine the level of agreement or consistency between their reported practice and definitions.

Two of the three common definitions of curriculum integration were represented in the teachers' examples of *Recognizable Subject Integration* and *Topic/Theme Integration*. None of the teachers' examples were categorized as an example of *Indistinct Subject Integration*. However, an additional category was created, *Both Topic/Theme and Recognizable Subject Integration*, which included examples of integration that embodied both definitions. The category of *Vague Categorization* was also present in the teachers' teaching examples. It should be noted that there were no teachers whose definition and example were both categorized as *Vague Categorization*. A total of 77.5% of the teachers' teaching examples (55/71) of curriculum integration were categorized as either *Topic/Theme Integration* or *Recognizable Subject Integration* definitions of integration. A total of 14% of the teachers' teaching examples (10/71) were categorized using the additional category of *Both Topic/Theme and Recognizable Subject Integration*. A total of 8.5% of the teachers' teaching examples (6/71) were coded as *Vague Categorization*. Each of these categories will be discussed in greater detail below.

Topic/Theme Integration. A total of 25% of the teachers (18/71) provided teaching examples that matched the definition of *Topic/Theme Integration*. The teaching examples representing this category generally described teaching lessons on a specific topic or theme throughout all or many subject areas.

I have integrated Space into Language Arts. Their weekly vocabulary word from the Space unit. Writing is on different topics about Space. Social Studies we talked about

Nasa, astronauts, and astronomers. Art we have done phases of the moon, Constellations, Drawing the sun with different features such as flares and sunspots. (3rd Grade Teacher)

Recognizable Subject Integration. There were 51% of the teachers (36/71) who provided teaching examples that matched the definition of *Recognizable Subject Integration*. These teaching examples commonly portrayed lessons describing teaching one lesson using multiple subjects. One teacher explained,

During math we worked with adding simple addition to five. In social studies we have been talking about Seasons. We have made trees with different seasonal symbols on them such as: snowflakes for winter, blossoms for Spring, leaves for Summer, and Apples for Fall, that we then practice simple addition with. During writing my objective is to write opinion comments. We had pictures of different Spring/Easter items at each table. The students then wrote I like the (flower) or I don't like the (flower).

(Kindergarten Teacher)

Again, there were some variations of *Recognizable Subject Integration* in the teachers' examples of how they practice curriculum integration in their classroom. While the majority of the teachers' teaching examples in this category were similar to the examples above, some teaching examples categorized as *Recognizable Subject integration* regularly provided a teaching example in which one subject was used to teach another subject in one lesson. The following response illustrates this point: "Music and math-count by songs to learn times tables. We did art and math with ordered pairs and making a secret picture" (3rd Grade Teacher). Another teacher provided the following teaching example:

Science objective: observe and describe patterns in the night sky Art objective: Create works of art depicting depth (e.g., close objectives large, distant objects small) using

secondary and tertiary colors I had students observe and record the night sky for a week. I had them draw (at home) what they saw on 2 different pictures depicting near and far. Then, as a class we shared and discussed the observations and what made the objects seem near or far. We had previously learned about primary and secondary colors so we talked about secondary and tertiary colors. They mixed paints and added tertiary colors to their color wheel. Then we used the secondary and tertiary colors to create pictures of the night sky. With the use of the paints they combined what they had recorded on the 2 pictures making the things farther away seem smaller and darker and the closer things bigger and brighter. (2nd Grade Teacher)

Other teaching examples that were categorized as *Recognizable Subject Integration* regularly described a lesson where the subjects being integrated had to be taught and assessed in one lesson. The following example is illustrative of this point, “I do a weekly shared reading that is about the science core we are studying. Students learn a strategy as well and the science. Both are assessed in a weekly quiz” (2nd Grade Teacher).

Both Topic/Theme and Recognizable Subject Integration. A total of 14% of the teachers (10/71) had teaching examples that created the new category of *Both Topic/Theme and Recognizable Subject Integration*. The teaching examples that fell into this new category were responses that described two different lessons explaining how the teacher practiced curriculum integration. In every case, one teaching example was *Topic/ Theme Integration* and the other example was *Recognizable Subject Integration*. The following teacher’s example had the first teaching lesson coded as *Recognizable Subject Integration* because economics was taught using math. The second teaching example the same teacher provided was coded as *Topic/Theme*

Integration because science, math, and writing were all taught using the theme of the solar system.

Math: I pay the students funny money throughout the year. A student banker (who changes weekly to give everyone a chance) passes it out, making change when needed. We have an auction where they get to spend their money, learning economics. Toward the end of the year they will create businesses with partners to sell items from home. They learn cooperation and more economics as they discuss prices and partnerships. They also have different amounts of money to spend depending on what they've earned. I like to point out the real world choices of shopping at Wal Mart (little money) or Macys (rich folk). Science: After studying the solar system, the students research and create a power point about their favorite planet, which they share. They compare sizes of the planets (math) and build a replica of the solar system. They also make a book (writing and illustrations) as well (3rd Grade Teacher).

Vague Categorization. There were 10% of teachers (7/71) who had teaching examples that were categorized as *Vague Categorization*. The teaching examples in this category were lessons that did not describe an actual lesson or described a lesson that was not relevant to teaching using curriculum integration. Examples that did not describe an actual lesson may have referred to integration but did not provide enough detail: "I participated in the common core this year. I integrated literacy, social studies and science in my class this year" (2nd Grade Teacher). The other component to this category included examples of lessons that were not related to integration, "When learning about color and how to create secondary colors we also [used] counting games and color words" (Kindergarten Teacher).

Comparing Teachers' Definitions and Examples

Once teachers' definitions and examples were coded, they were then compared to determine the extent to which teachers' definitions of curriculum integration and their teaching examples were consistent. A total of 55% of the teachers (39/71) had definitions of integration that matched the examples of curriculum integration. The following example illustrates how a teacher's definition and teaching example matched. In this example, the teacher's definition of curriculum integration was coded as *Topic/Theme Integration* because emphasis was placed on using all the subject areas to teach a topic as well as using a common theme to be taught throughout all the content areas.

Curriculum integration is using all the subject areas to teach a topic, for example if you are [teaching] about rocks, you will integrate it in all subject areas not just science. A teacher might use rocks to teach measurement in math. A teacher might [know] a non-fiction unit on rocks in Language arts. Basically curriculum integration is mixing using a common theme and spreading it throughout content areas. (2nd Grade Teacher)

The teacher's teaching example of curriculum integration was also coded as *Topic/Theme Integration* because in the example the teacher used a common theme (animal report unit) that was taught using the subjects of science and art.

During our animal report unit, the [students] had to research an animal they wanted to learn more about. They were learning about [vertebrae] animals in science as well. Students also had to create a sculpture and habitat for their animal in art. (2nd Grade Teacher)

Of the 39 teachers' definitions and teaching examples that matched, 18% of the responses that matched (7/39) fell under the definition of *Topic/Theme Integration* and 82% of the

responses that matched (32/39) fell under the definition of *Recognizable Subject Integration*. The categories of *Indistinct Subject Integration* and *Vague Categorization* did not have definitions and teaching examples provided that matched.

It may be of interest to examine those examples in which the teachers' definitions did not match their examples. In total, 45% of all of the teachers (32/71) did not have definitions of integration that matched their teaching examples. The following example illustrates a teacher's definition and teaching example that did not match. In this example, the definition of curriculum integration was coded as *Indistinct Subject Integration* because the teacher stressed the importance of having no discernible subjects while teaching. "Incorporating all subject areas into a unit/lesson so that there are no discernible 'subjects'" (3rd Grade Teacher). However, the teacher's teaching example of curriculum integration did not match because it was coded as *Recognizable Subject Integration* because the teacher described how specific subjects of reading, writing and social studies were used together in the same lesson.

Reading/Writing (Taking Notes and using a Graphic Organizer)/Social Studies. We have talked about the importance of graphic organizers and how to take notes. Then the students read about different Native American Tribes and took notes about the tribes' Clothing. Food, Shelter, and Family Life. They were able to use the graphic organizers to compare/contrast each tribe and form opinions about the Tribes and their ways of life. (3rd Grade Teacher)

Of the 32 teachers' definitions and teaching examples that did not match, 21% of the responses (7/32) fell under *Indistinct Subject Integration*, 25% of the responses (8/32) fell under *Topic/Theme Integration*, 44% of the responses (14/32) fell under *Recognizable Subject Integration* and 10% of the responses (3/32) fell under *Vague Categorization*. One possible

reason teachers' definitions and teaching examples did not match is that teachers may define integration one way but are comfortable implementing integration in several different ways. Another reason could be that teachers are not exactly clear on their definition of integration and/or how they implement integration in their classrooms.

Classifying of Teachers' Rankings of Integration Teaching Scenarios

Teachers were asked to rank six teaching scenarios as integration or non-integration on a five-point Likert-type scale (1 *poor integration* and 5 *excellent integration*). The six teaching scenarios were analyzed using a definition that the researcher perceived as the strongest definition of curriculum integration given in the literature review under the category *Recognizable Subject Integration* by Hall-Kenyon and Smith (in review). It defines curriculum integration as, "instruction based on two or more objectives from two or more subject areas in one lesson" (p. xx) with two important additional qualifications. First, there should be valid connection(s) made between skills and/or content knowledge of each individual content area and second, each objective should be directly taught and assessed. See Appendix B for listing of the six teaching scenarios with the researcher's rankings and the explanation of how they were analyzed along a quality continuum of integration designed by the researcher.

The purpose of these questions on the survey was to determine whether the teachers agreed on levels of quality of integration based on their evaluation of a teaching scenario. Overall, the teachers agreed with the researcher on the rankings they provided for each teaching scenario. This suggests there is some agreement on levels of quality of integration, even though there appears to be more variability among teachers' definitions and examples. For example, teachers largely agreed that teaching scenario two was a poor example of curriculum integration because it did not meet either objective. This example matched the description of *Indistinct*

Subject Integration because there were no clear lines in the activity described when one subject started and one subject ended. The smallest number of teachers wrote definitions of curriculum integration that were coded as *Indistinct Subject Integration* and none of them included it as a teaching example. It seems that from all of these analyses, the teachers view *Indistinct Subject Integration* as the weakest definition of integration. In contrast, teaching scenario four had the highest overall ranking of curriculum integration by the teachers and was considered the best teaching scenario by the researcher. It matched the description of *Recognizable Subject Integration* because two subjects were taught in one lesson with a valid natural connection. The majority of teachers wrote definitions and teaching examples that were coded as *Recognizable Subject Integration*. It appears that from all of the analyses, teachers view as *Recognizable Subject Integration* as the strongest definition of integration.

An additional component of the analysis was to compare the overall rankings the teachers provided with each teaching scenario. There was no difference based on grade level, years of experience, and education level (See Table 1). A possible reason there was no difference based on these demographic features is that teachers may see integration as any lesson that includes two or more subjects taught whether at the same time or across multiple subjects throughout the day.

Table 1

Scenario Rankings by Teacher Demographics

Variable	n	Scenario 1 Mean (sd)	Scenario 2 Mean (sd)	Scenario 3 Mean (sd)	Scenario 4 Mean (sd)	Scenario 5 Mean (sd)	Scenario 6 Mean (sd)
Overall Demographics	71	3.48 (1.07)	1.59 (0.69)	3.35 (1.14)	4.52 (0.61)	3.30 (.096)	2.08 (1.04)
Years of Experience							
1-5 years	16	3.50 (1.03)	1.50 (0.82)	3.50 (1.03)	4.38 (0.62)	3.19 (1.05)	2.13 (1.02)
6-10 years	10	3.80 (1.14)	1.40 (0.50)	3.60 (1.17)	4.50 (0.71)	3.10 (1.20)	1.80 (0.92)
11-20 years	25	3.48 (1.16)	1.68 (0.69)	3.08 (1.29)	4.68 (0.48)	3.56 (0.87)	2.12 (1.05)
21+ years	20	3.30 (0.98)	1.65 (0.70)	3.45 (1.00)	4.45 (0.69)	3.15 (0.88)	2.15 (1.14)
Grade Level							
K	16	3.56 (0.96)	1.75 (0.86)	3.25 (1.14)	4.50 (0.63)	3.38 (0.72)	2.13 (0.89)
1	19	3.47 (1.26)	1.37 (0.60)	3.21 (1.36)	4.79 (0.42)	3.37 (1.26)	2.11 (1.20)
2	20	3.40 (1.23)	1.75 (0.64)	3.60 (0.90)	4.35 (0.75)	3.15 (0.93)	2.05 (1.00)
3	16	3.50 (0.3)	1.50 (0.63)	3.31 (1.35)	4.44 (0.51)	3.31 (0.87)	2.06 (1.12)
Education Level							
Bachelor's Degree	7	4.00 (1.00)	1.43 (0.53)	3.57 (1.13)	4.43 (0.53)	3.43 (1.13)	2.43 (1.27)
Bachelor's Degree +	32	3.28 (1.05)	1.63 (0.66)	3.44 (1.16)	4.47 (0.67)	3.38 (1.13)	2.03 (0.97)
Master's Degree	12	3.58 (1.00)	1.75 (0.80)	3.33 (1.15)	4.58 (0.67)	3.17 (0.72)	2.00 (1.13)
Master's Degree +	20	3.55 (1.15)	1.50 (0.76)	3.15 (1.14)	4.60 (0.50)	3.20 (0.77)	2.10 (1.07)

Finally, the connection between the teachers' and researcher's rankings suggest that teachers, no matter their personal definition of curriculum integration, view *Recognizable Subject Integration* as the strongest example of curriculum integration. This finding is consistent with teachers' definitions of curriculum integration and teaching examples of curriculum integration. The majority of teachers (65%) defined curriculum integration as *Recognizable Subject Integration* followed by *Topic/ Theme Integration* (21%), *Indistinct Subject Integration* (10%), and *Vague Categorization* (4%). This finding is also consistent with the examples teachers provided showing how they use curriculum integration in their classrooms.

Again, the majority of teachers (51%) provided teaching examples that were coded as *Recognizable Subject Integration*, followed by *Topic/Theme Integration* (25%), *Both Topic/Theme Integration and Recognizable Subject Integration* (14%), and *Vague Categorization* (10%). These findings describe how the majority of the teachers in this data set were consistent with stating that *Recognizable Subject Integration* was the strongest example of curriculum integration in their definitions, classroom teaching examples, and rankings of the six teaching scenarios of curriculum integration and suggest that the K-3 teachers were not so far away as the literature suggests from having a common definition of curriculum integration.

Chapter 5

Discussion

The current literature about curriculum integration is mostly theory-based. More than 10 years ago a number of researchers called for more empirical data focused on understanding the way curriculum integration is conceptualized and practiced by teachers (Beane, 1995; Czerniak et al., 1999; Davison, Miller & Metheny, 1995). To date, little or nothing has been done. Although more studies are still needed in this area, the current study provides a small set of empirical data utilizing teachers' self-reported definitions and examples of integration. These data will be explored as well as implications and further recommendations based on the findings of this study.

Summary and Interpretation of Teachers' Responses in Regard to Integration

This study illustrates the importance of the findings of the K-3 teachers' definitions and teaching examples of integration and how well they align with one another. The significance of how teachers ranked the six teaching scenarios compared to their definitions and teaching examples are also discussed.

Definitions of Integration. The three common definitions of curriculum integration the teachers provided in their definitions of curriculum integration of *Indistinct Subject Integration*, *Topic/Theme Integration*, and *Recognizable Subject Integration* matched the major definitions the professional literature discussed. No new definitions were found in the teachers' descriptions of curriculum integration. Notably, more than half of the teachers in the study defined curriculum integration as *Recognizable Subject Integration* with *Topic/Theme Integration* as the second-most common definition, followed by *Indistinct Subject Integration*. Ultimately, these findings suggest that the concern of teachers' numerous definitions of curriculum integration in

the professional literature may not be an accurate representation some of K-3 teachers' conceptions of integration.

Examples of Integration. The teachers' examples of curriculum integration were analyzed using the three *a priori* categorizes of *Indistinct Subject Integration*, *Topic/Theme Integration*, and *Recognizable Subject Integration* in part to observe if there were connections between teachers' definitions and teaching examples of integration. It should be pointed out that *Indistinct Integration* was not found in the teachers' teaching examples of curriculum integration. One possible reason could be that it is difficult to describe a lesson using *Indistinct Integration*. There was a combined category created of *Both Topic/Theme and Recognizable Subject Integration* for the teaching examples because several teaching examples provided two teaching examples of curriculum integration, one using *Topic/Theme Integration* and one using *Recognizable Subject Integration*. This suggests that teachers implemented integration in more than one way and perhaps are comfortable with more than one definition of integration. Another possible reason why the teachers provided teaching examples that were both *Recognizable Subject Integration* and *Topic/Theme Integration* though their definition of integration only had one or the other could be that teachers see curriculum integration generally as any lesson that uses two or more subjects taught whether at the same time, as in *Recognizable Subject Integration*, or through multiple subjects weaved throughout the day, as in *Topic/Theme Integration*.

A similar result found in the teachers' definitions of curriculum integration was also found in the teachers' teaching examples of curriculum integration. *Recognizable Subject Integration* was the most common way the teachers' teaching examples were described; *Topic/Theme Integration* was next, followed by *Both Topic/Theme and Recognizable Subject*

Integration. This finding suggests that *Recognizable Subject Integration* is the way most of these teachers described curriculum integration, even if their definition of curriculum integration may not have been coded as *Recognizable Subject Integration*. The majority of teachers in this study did define curriculum integration as *Recognizable Subject Integration*.

Connections Between Definitions and Examples. More than half of the teachers in the study had matches between their definitions and teaching examples of curriculum integration. However, the matches were only in the categories of *Topic/Theme Integration* and *Recognizable Subject Integration*. More than three-fourths of the teachers who had matches between their definitions and teaching examples of curriculum integration were coded as *Recognizable Subject Integration*. This finding is not surprising considering teachers' definitions and teaching examples both had *Recognizable Subject Integration* as the category in which the majority of the teachers' responses were coded.

There was some confusion expressed in just under half of the teachers' responses about how their definitions and teaching examples of curriculum integration aligned. Several teachers provided a definition that was coded one way and a teaching example that was coded a different way. This may indicate there is some apparent confusion on how teachers actually practice curriculum integration. It may be that these teachers practice integration in more than one way. Another possible reason could be that these teachers have not made a solid connection between their definitions of curriculum integration and how they implement integration in their teaching practices.

It is also significant that the three teachers who provided vague definitions of curriculum integration gave clear teaching examples of curriculum integration. Two of the teachers' teaching examples were coded as *Recognizable Subject Integration*. The other teacher's

teaching example was coded as *Topic/Theme Integration*. There were also seven teachers whose teaching examples were coded as *Vague Answer/ Unable to Categorize* who had provided clear definitions of curriculum integration. Six of them were coded as *Recognizable Subject Integration* and one of them was coded as *Indistinct Subject Integration*. This finding is worthy of note, because even though the three teachers had a vague definition of curriculum integration, they were able to provide a teaching example that matched one of the common definitions of curriculum integration. It may be that these teachers could not articulate a simple definition of what they practice.

There were also seven teachers with strong definitions of curriculum integration who were unable to provide teaching examples that matched one of the common definitions of curriculum integration. Three of the seven teachers chose to leave the teaching example answer blank. A possible reason why teachers with strong definitions of curriculum integration had poor teaching examples may be that they did not actually practice what they had defined curriculum integration to be.

Ratings of Teaching Scenarios. The six integration teaching scenarios all had rankings that were similar to the researcher. The teachers' rankings were also all similar to one another as evidenced by the small standard deviations and there were no differences based on assigned grade level, years of experience and education. What was of interest with this finding was that teachers ranked the scenarios similar to the researcher even with small variations of definitions of curriculum integration, though the majority of the teachers had their personal definitions of curriculum integration coded as *Recognizable Subject Integration*. The researcher's rankings were all based on *Recognizable Subject Integration*. This finding suggests that these teachers, no matter how they personally defined curriculum integration, are in agreement on rankings of

quality of curriculum integration. The rankings suggest that the teachers perceive *Recognizable Subject Integration* as the strongest example of curriculum integration. This finding is not surprising because it is evidenced in all of the data discussed previously with teachers' definitions and teaching examples. The majority of teachers defined integration as *Recognizable Subject Integration*, provided teaching examples of *Recognizable Subject Integration* and ranked teaching scenarios illustrating *Recognizable Subject Integration* as the strongest type of integration.

Implications

These teachers defined curriculum integration consistent with the three common definitions found in the professional literature. The definitions teachers provided in this study were all coded as *Indistinct Subject Integration*, *Topic/Theme Integration* and *Recognizable Subject Integration* with no new definitions. Perhaps the professional literature should be considered along with the way classroom teachers articulate the definition of curriculum integration. This would lessen the confusion that teachers' definitions of curriculum integration are expanding and strengthen the validity of the common definitions that already exist in the literature.

Another implication from this study suggests that these teachers already use the common definitions of *Recognizable Subject Integration*, *Topic/Theme Integration* and *Indistinct Subject Integration* the professional literature discusses, but some teachers lack a strong match between their definitions and teaching examples of curriculum integration. Professional development could help strengthen the connection between how teachers define curriculum integration and how they actually practice curriculum integration in their classroom.

Recommendations

More empirical research needs to be done replicating this same study in various areas of the country to determine if the findings from this study are similar to other K-3 teachers. More empirical research is also needed to more clearly understand teachers' actual practices related to curriculum integration. Future studies should include teachers' reported definitions along with classroom observations, in which teachers can demonstrate lessons they have developed as examples of curriculum integration, followed by teacher interviews to allow teachers the opportunity to provide additional clarification about their definitions of curriculum based on their lessons.

In the current study several of the teachers were dropped because they provided reasons why they might choose to integrate and not an actual definition. However, it may be important to consider the reasons why teachers view integration as an effective strategy and how those reasons relate to their definitions and examples of integration. A future study might examine teachers' reasons for choosing curriculum integration as a teaching strategy and then explore whether those goals are being met in the integrated lessons they are teaching in their classrooms.

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Appendix A

Teacher Integration Definition Survey

K-3 Teachers Definitions of Integration

The purpose of this survey is to find out how K-3 grade teachers define curriculum integration.

1. Please type the school district in which you teach: _____

2. Please circle your highest educational level:

Bachelor's Bachelor's + Master's Master's + Doctorate

Special Endorsements/Certificates _____

3. What grade do you currently teach? _____

4. How long have you been teaching? _____

5. Briefly define curriculum integration:

Please indicate if the following teaching scenarios are or are not an example of curriculum integration and why.

If you mark the teaching scenario as being an example of curriculum integration, please rank the quality of integration on a scale of 1-5 with 1 being poor integration and 5 being excellent integration.

6) Mr. Miller's lesson objective in art is to demonstrate how symbols and models are used to represent features of the environment and his objective in social studies is to have students make landmarks on a map of the community. During his lesson he teaches the students how symbols on a map key represent features of the environment by showing the students examples of different kinds of maps. He teaches students how to draw different landmarks for streets, houses, trees, etc. using the different kinds of maps. He then has students make a map key with different landmarks and create a map of their community.

Integration _____ Not an Example of Integration _____

Why _____

If you marked integration, please rank the quality of integration (1 being poor integration and 5 being excellent integration).

1 2 3 4 5

7) Mr. Sander's objective in science is to observe how animals resemble their parents and his objective in art is to identify primary and secondary colors. During his lesson he gives his students pictures of different kinds of animals to color. He then has his students cut out their favorite animal they colored. He has students take turns sharing at their table why the animal they cut out is their favorite and why they colored it the way they did.

Integration _____ *Not an Example of Integration* _____
Why _____

If you marked integration, please rank the quality of integration (1 being poor integration and 5 being excellent integration).

1 2 3 4 5

8) Mr. Rodriguez's objective in math is to use patterns to teach skip counting by twos and his objective in music is to create simple rhythm. During his lesson he teaches students the skip-counting pattern for twos using the song Yankee Doodle. He then asks the students to think of other songs they could use to practice skip counting by twos. They practice skip counting by twos to the new songs the students suggest.

Integration _____ *Not an Example of Integration* _____
Why _____

If you marked integration, please rank the quality of integration (1 being poor integration and 5 being excellent integration).

1 2 3 4 5

9) Mrs. Sweet's lesson objective in science is to identify characteristics of fall weather (e.g. types of precipitation, sunny, windy, foggy, and cloudy) her objective in math is to represent data using bar graphs. During her lesson she teaches students to identify the characteristics of the fall weather they have recorded for a month. She then teaches them how to represent that weather data using a bar graph.

Integration _____ *Not an Example of Integration* _____
Why _____

If you marked integration, please rank the quality of integration (1 being poor integration and 5 being excellent integration).

1 2 3 4 5

10) Mr. Miyasaki's objective in writing is to produce imaginative stories and his objective in social studies is to identify the roles of people in the school. During his lesson he teaches his students the different story elements (beginning, middle, end, problem, solution, etc.) they need to have in order to make a good imaginative story. He then has students write an imaginative story about being the school principal for a day.

Integration _____ *Not an Example of Integration* _____
Why _____

If you marked integration, please rank the quality of integration (1 being poor integration and 5 being excellent integration).

1 2 3 4 5

11) Mrs. Spark's objective in social studies is to demonstrate how to be a good friend and her objective in reading is to identify words with the same long vowel sound. During her lesson she has students work with a friend on a worksheet practicing long vowel sounds. She then has her students find a new friend to practice reading each long vowel sound word correctly from the worksheet that they finished.

Integration _____ *Not an Example of Integration* _____
Why _____

If you marked integration, please rank the quality of integration (1 being poor integration and 5 being excellent integration).

1 2 3 4 5

12) How have you integrated literacy, math, and/or social studies into a unit? Please provide 1-2 examples

If you are interested in participating in a follow-up research study about integration in K-3 classrooms during the 2012-2013 school year, please include your name and contact information. Separate consent forms will be distributed at the outset of that study so including your name here does not obligate you to participate but only expresses your interests in the possibility of participating.

Appendix B

Rankings and Explanations for Six Teaching Scenarios

Six Teaching Scenarios	Researcher's Ranking and Explanation	Teachers' Ranking Mean (SD) and Example
<p>Scenario 1</p> <p>Mr. Miller's lesson objective in art is to demonstrate how symbols and models are used to represent features of the environment and his objective in social studies is to have students make landmarks on a map of the community. During his lesson he teaches the students how symbols on a map key represent features of the environment by showing the students examples of different kinds of maps. He teaches students how to draw different landmarks for streets, houses, trees, etc. using the different kinds of maps. He then has students make a map key with different landmarks and create a map of their community.</p>	<p style="text-align: center;">4</p> <p>The researcher ranked this teaching scenario as a four because there was a valid connection between both objectives. Both objectives were taught in one lesson, though the assessment focused more on the art objective than the social studies objective.</p>	<p style="text-align: center;">3.51 (1.06)</p> <p>“He is using two different objectives from two disciplines that are related and rather than teaching them separately he uses one to enhance the other” (Kindergarten Teacher).</p>
<p>Scenario 2</p> <p>Mr. Sander's objective in science is to observe how animals resemble their parents and his objective in art is to identify primary and secondary colors.</p>	<p style="text-align: center;">1</p> <p>The researcher ranked this teaching scenario as a one because neither objective was taught, there was no valid connection between the two objectives and there was</p>	<p style="text-align: center;">1.60 (0.74)</p> <p>Students were not asked to identify or use primary and secondary colors in a meaningful way. Students were not able to see authentic examples and make</p>

During his lesson he gives his students pictures of different kinds of animals to color. He then has his students cut out their favorite animal they colored. He has students take turns sharing at their table why the animal they cut out is their favorite and why they colored it the way they did.

no assessment of either objective.

observations of how animals resemble their parents. This activity did not meet either of the objectives stated for the lesson (2nd Grade Teacher).

Scenario 3

3

3.35 (1.14)

Mr. Rodriquez’s objective in math is to use patterns to teach skip counting by twos and his objective in music is to create simple rhythm. During his lesson he teaches students the skip-counting pattern for twos using the song Yankee Doodle. He then asks the students to think of other songs they could use to practice skip counting by twos. They practice skip-counting by twos to the new songs the students suggest.

The researcher ranked this teaching scenario as a three because there was a valid connection between the two objectives. The math objective was the only objective taught and assessed through the use of the music.

“He taught math and rhythm in the same lesson” (2nd Grade Teacher).

Scenario 4

5

4.52 (.60)

Mrs. Sweet’s lesson objective in science is to identify characteristics of fall weather (e.g., types of precipitation, sunny, windy, foggy, and cloudy) her objective in math is to represent data using bar graphs. During her lesson she teaches students to identify the characteristics of the fall

The researcher ranked this teaching scenario as a five because there was a valid connection between both teaching objectives and the objectives were taught and assessed in one lesson.

“These are two great ways to integrate the curriculum with real life situations” (Kindergarten Teacher).

weather they have recorded for a month. She then teaches them how to represent that weather data using a bar graph.

Scenario 5

2

3.23 (1.02)

Mr. Miyasaki’s objective in writing is to produce imaginative stories and his objective in social studies is to identify the roles of people in the school. During his lesson he teaches his students the different story elements (beginning, middle, end, problem, solution, etc.) they need to have in order to make a good imaginative story. He then has students write an imaginative story about being the school principal for a day.

The researcher ranked this teaching scenario as a two because the connection, though valid, is weak between the two objectives. The writing objective was the only objective taught and assessed through the use of the social studies objective of getting to know the roles of the people in the school.

This example does fulfill both objectives, but I think that it is more geared toward the writing objective. Although the students might have some of the roles of a principal in their story, they might not identify all of the roles that principal really does and they haven’t addressed any of the other people in the school (3rd Grade Teacher).

Scenario 6

1

2.11 (1.07)

Mrs. Spark’s objective in social studies is to demonstrate how to be a good friend and her objective in reading is to identify words with the same long vowel sound. During her lesson she has students work with a friend on a worksheet practicing long vowel sounds. She then has her students find a new friend to practice reading each long vowel sound word correctly from the worksheet that they finished.

The researcher ranked this teaching scenario as a one because there is no valid connection between the two objectives being taught. There is also a lack of teaching and assessing either objective in the lesson.

“While your reading objective is being met, demonstrating how to be a good friend includes lots more than just getting together to do a paper” (1st Grade Teacher).