

**THE IMPACT OF INTEGRATED CURRICULUM  
ON STUDENTS' COMPREHENSION OF EXPOSITORY TEXTS**

by

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A Master's Thesis/Project Capstone  
Submitted in Partial Fulfillment  
of the Requirements for the Degree of  
Master of Science in Education  
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May 2015

State University of New York at Fredonia  
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# **THE IMPACT OF INTEGRATED CURRICULUM ON STUDENTS' COMPREHENSION OF EXPOSITORY TEXTS**

## **ABSTRACT**

The increasing curricular demand on K-12 students to comprehend expository texts has teachers looking for ways to improve comprehension. An integrated curriculum offers the promise of providing students with a curriculum connected across disciplines and enabling students to increase their comprehension of expository texts. To explore that promise, the research question asked was, what is the impact of an integrated curriculum on K-12 students' comprehension of expository texts in the content areas? The most appropriate way to answer that question was with a research synthesis. The exhaustive literature review and subsequent research synthesis for this study produced four findings. The first is that a key to comprehension of expository texts at the early elementary grade levels appears to be students' ability to make personal connections with the material being read across an integrated curriculum; the second finding is that students' comprehension in the upper elementary to high school grade levels can be significantly impacted by activating prior knowledge for an integrated curriculum. The third finding is that when the integrated curriculum includes hands on, interactive practices for students in grades one through six, the impact on student learning behavior and academic performance, including some literacy performance, is positive. The fourth finding appears to be that integrating literacy with nearly any other subject area may produce a positive impact on student academic performance from grades three to eight. These findings then form the basis of professional development for teachers that takes the form of an information-bearing Google Site.

## TABLE OF CONTENTS

**Abstract**

**Table of Contents**

|  |           |
|--|-----------|
| <b>Chapter 1: Introduction</b>                               | <b>1</b>  |
| Statement of the Problem                                     |           |
| Background   |           |
| Terminology  |           |
| Theoretical Framework  |           |
| Rationale  |           |
| <b>Chapter 2: Literature Review</b>                          | <b>6</b>  |
| Introduction to the Review                                   |           |
| Comprehension Through Prior Knowledge and Reader Connections |           |
| General Impact of Integrated Curriculum                      |           |
| Literacy Impact of Integrated Curriculum                     |           |
| Summary of the Review  |           |
| <b>Chapter 3: Methodology</b>                                | <b>27</b> |
| Data Collection  |           |
| Data Analysis  |           |
| Synthesis  |           |
| <b>Chapter 4: Results and Application</b>                    | <b>36</b> |
| Results of the Review  |           |
| Application of Results to a Professional Development Project |           |
| Design of Professional Development Project                   |           |
| Project Ties to Professional Standards                       |           |
| <b>Chapter 5: Discussion and Conclusion</b>                  | <b>42</b> |
| Overview of Study and Findings                               |           |
| Significance of the Findings                                 |           |
| Limitations of the Findings                                  |           |
| Conclusion: Answer to Research Question                      |           |
| Recommendations for Future Research                          |           |
| <b>References</b>  | <b>46</b> |
| <b>Appendix</b>  | <b>49</b> |

## Chapter 1: Introduction

### Statement of the Problem

As a result of the implementation of the Common Core State Learning Standards, reading instruction in New York state schools now requires an increase in the use of expository texts (Common Core, 2014). This mandated increase in the use of expository texts in kindergarten to grade 12 content areas offers an area of research looking into the struggle with comprehending expository texts across the K-12 content areas. One possible way to address this new problem of comprehension is with an old solution. Dewey (1938) advocated for it over 100 years ago: designing curriculum that would incorporate and build on the students' own experiences. This type of progressive education is a means for making connections between the curriculum and the student, and for making content relevant to the student. Perhaps the type of curriculum best suited for such a role is "integrated curriculum," which "in its simplest conception, it is about making connections" (Drake & Burns, 2004, p.7). In contrast to a disciplinary (subject specific) curriculum, an integrated curriculum offers "a way to avoid the fragmented and irrelevant acquisition of isolated facts, transforming knowledge into personally useful tools for learning new information" (Lipson, Valencia, Wixson, & Peters, 1993, p.252). Constructivist learning is about "actively constructing meaning...based on prior conceptual experiences" (Kucer, 2009, p.269). The extent of students' prior knowledge is a significant contributor to their comprehension success (Adams, 2011). In regards to the role of curriculum, Simpson and Jackson (2003) interpret Dewey as viewing the child and the curriculum as one, not as separate entities. Therefore, because each child has different experiences and different knowledge, "in-

school learning should not be delineated in detail – even if the prescribed curricula and outcomes are standardized and assessed” (Simpson & Jackson, 2003, p.27). What Dewey has proposed is a curriculum that involves, not ignores, what students already know in order to provide students with an opportunity to “integrate that which has already been learned with new attitudes, skills, and understandings” (Simpson & Jackson, 2003, p.27). Dewey’s “old solution” of integrating student prior knowledge into the curriculum still appears applicable today, and seems to reside under the umbrella of “integrated curriculum.” The role of the curriculum and the problem of requiring students to comprehend expository texts across the content areas in Kindergarten to grade 12 leads a reading specialist to the research question of what is the impact of an integrated curriculum on K-12 students’ comprehension of expository texts in the content areas? An appropriate way to address this research question is through a research synthesis.

## **Background**

My experience with integrated curriculum occurred when I was performing my student teaching; it involved creating and partially implementing an integrated thematic unit. A theme-based unit is a unit of study where “often three or more subject areas are involved in the study, and the unit ends with an integrated culminating activity” (Drake & Burns, 2004, p.11). The thematic unit I created as a student teacher required the inclusion and integration of the subject areas of math, social studies, English, science, art, and physical education around a common theme. The unit was to be designed for a 7<sup>th</sup> grade English Language Arts class. Because the 7<sup>th</sup> grade class where I was student teaching had just started reading *The Contender*, a young adult novel by Robert Lipsyte and based on the sport of boxing, I developed an integrated thematic

unit based on the theme of boxing. In this unit, I included historical background information on the time period of the novel for social studies, incorporated practice with boxing moves for physical education, selected music from the motion picture series *Rocky* for the art discipline, and integrated other content for the other content areas. Being able to offer students related, connected content in a variety of subject areas excited me as a teacher. Unfortunately for me, I did not have the opportunity to implement the unit in its entirety; however, I was able to incorporate components of the integrated thematic unit when possible. For instance, I incorporated music from the motion picture *Rocky* (playing it as students entered the classroom), boxing vocabulary and boxing “moves”, and some historical background of the novel itself. From my observation, I concluded that students enjoyed the brief moments of thematic integration. This unit left me curious about the possible benefits of a curriculum centered on a common theme across disciplines. Based on that experience and unfulfilled curiosity, I decided to explore how an integrated curriculum impacts K-12 students’ comprehension of expository texts in the content areas.

### **Terminology**

The key term for this research synthesis is “integrated curriculum.” Drake (2000) describes the purpose of an integrated curriculum as “making meaningful connections between topics or skills that are usually addressed in different subject areas” (“What is Integrated Curriculum?” section, para. 1). Because Drake has become a strong authority on integrated curriculum, her definition will be used for this synthesis study. Also, because this research synthesis focuses on comprehension of expository texts in the content areas, it will also be

helpful to define “comprehension.” For the purpose and approach of this study, “comprehension” will be defined as “understanding what one reads, hears, or sees; a process usually involving the integration of new information with prior knowledge” (Ravitch, 2007, p.54). The concept of “understanding” is appropriate for this research study because it implies that the reading material “makes sense” to the reader; so too is this definition of comprehension appropriate because it highlights the practice of “integrating” as a component of comprehension.

### **Theoretical Framework**

John Dewey’s theory of Progressive Education applies to this research synthesis. Dewey (1938) refers to “education” as an experience, and explains that, “the new facts and new ideas thus obtained [through the experience of education] become the grounds for further experiences in which new problems are presented” (p.97). With Progressive Education, students are given an opportunity to connect new knowledge with their past experiences. When put into practice, this theory means starting instruction with what students already know and then building upon that knowledge by connecting it to the new knowledge. The act of “connecting” may be considered as “comprehension” or “understanding” and at the same time as “constructing,” thus adding Constructivist Learning to the theoretical framework of this study. In terms of curriculum, this plan to connect reading material and topics is supported by the theory of integrated curriculum. Drake and Burns (2004) identify three approaches to curriculum integration: multidisciplinary, interdisciplinary, and transdisciplinary. They claim that these “three categories offer a starting point for understanding different approaches to integration” (p.8) while integration itself is “a matter of degree and method” (p.8). Thus, these theories of education, reading and curriculum

combine to produce the theoretical framework for this research synthesis study.

## **Rationale**

Rationale to support the importance of researching this question of the impact of integrated curriculum on K-12 students' comprehension of expository texts in the content areas comes from the field of literacy itself. An annual survey of leading researchers and experts in the field of literacy determines what is "hot" and what "should be hot" topics in literacy. For the past two years, experts in the field of literacy have considered *disciplinary/content area literacy*, and *comprehension* to be "hot" topics in literacy (Cassidy & Grote-Garcia, 2013; Cassidy & Grote-Garcia, 2014). Those two topics are part of the core of this research synthesis. Other support that research into integrated curriculum is worthy of study comes from research with "primary grade students at risk for reading problems" (Gelzheiser, Hallgren-Flynn, Connors, & Scanlon, 2014, p.54). Researchers have found that "a limited knowledge base is one cause of these readers' poor comprehension" (Gelzheiser et al., 2014, p.54). Research results show that when comprehension problems occur during reading, struggling readers "often fall further and further behind in their content knowledge and thus find reading even more challenging" (Gelzheiser, et al, 2014, p.54). This research both highlights a danger in the reading of expository texts and provides a rationale for the undertaking of this research synthesis.

## **Chapter 2: Literature Review**

### **Introduction to the Review**

To address the research question of the impact of integrated curriculum on Kindergarten to grade 12 students' comprehension of expository texts in the content areas, an exhaustive review and synthesis of the literature has been conducted. The major education databases including ONE Search, Education Source, and ERIC have been searched using the key words of *integrated curriculum*, *comprehension*, and *prior knowledge*. The research studies that were found can be grouped into three categories. The first category is those studies that examine comprehension through prior knowledge and reader connections; the second is those that examine the general impact of integrated curriculum, and the third category is those studies that examine the literacy impact of integrated curriculum.

### **Comprehension through Prior Knowledge and Reader Connections**

Several studies have been found that examine the role of prior knowledge and reader connections in the comprehension of expository texts. The research studies in this section specifically examine the impact prior knowledge has on students' comprehension and the impact reader connections have on students' comprehension. The following studies are grouped by prior knowledge and reader connections and are then arranged according to grade level of participants. Taboada and Guthrie (2006) work at the mid to upper elementary grade level to examine "the relationship of student-generated questions and prior knowledge with reading comprehension"

(p.1). Participants are 360 students, encompassing 125 third grade students and 235 fourth grade students. The reading materials used are science based expository texts, with a focus on ecology. Prior to reading, students were assessed on their prior knowledge on the topic of ecology. Students were assigned an ecology topic (Oceans and Forests, Ponds and Deserts or Rivers and Grasslands) and given fifteen minutes to write down everything they knew about their topic and also respond to prompting questions such as, “How are [ponds and deserts] different?” or “What animals and plants live in a [pond]?” (p.12). Students answered the prompt questions in an essay format. Researchers evaluated student responses using a scale from 1-6 with a six indicating “high prior knowledge” (p.13). In addition to the prior knowledge evaluation, students also completed “questioning, and multiple text comprehension, as well as the comprehension subtest of the Gates-MacGinitie Reading Test (Form S)” (p.11). Three findings emerged from this study. Researchers found that “students’ spontaneous question generation, in reference to authentic school texts, accounts for variance in reading comprehension above and beyond the variance accounted for by prior knowledge in the domain of ecological science” (p.24). In addition, the researchers “found no evidence of an interaction between prior knowledge and post-reading questioning for either grade,” (p.24), thus indicating, “that both of these variables had benefits for students’ reading comprehension independently of one another” (p.24). Researchers also found “that students’ question levels were associated with levels of reading comprehension measured as conceptual knowledge build from text” (p.25). These results provide little evidence that activating prior knowledge has any impact on middle elementary students’ comprehension of expository texts. In regards to writing, the types of questions students asked influenced the quality of their written response. Level one questions led to a response with “the absence of ecological concepts and biome definitions and include only a few characteristics of a biome or an

organism” (p.25). Level two questions reflected a response, which “tended to gain simple concepts from text” (p.25). Level three questions reflected “an elaborated explanation about a specific aspect of an ecological concept” (p.25). Level four and above questions reflected a response that “show patterns of organized conceptual knowledge” (p.26). These results are evidence of the positive impact that questioning and prior knowledge have on students’ writing.

At the fifth grade level, Bui and Fagan (2013) experiment to “enhance the reading comprehension performance of fifth-grade students from culturally and linguistically diverse backgrounds through [the use of] the Integrated Reading Comprehension Strategy (IRCS) intervention” (p.61). The IRCS includes three different strategies: “(a) story grammar instruction and story maps, (b) activate prior knowledge and prediction method, and (c) word webs” (p.61). The “activate prior knowledge and prediction method” (p.61) is most applicable to this research synthesis. Participants are 49 fifth grade students combined from two different classrooms. The students were arranged into two groups, either the “IRCS” group or the “IRCS Plus” group (p.61). The primary difference between the two groups is the reading materials selected: “students in the IRCS group read mainstream text while the students in the IRCS Plus group read multicultural text” (p.61-62). One 80 minute lesson included “[use] an advance organizer, review the previous lesson, make a personal connection, activate prior knowledge (e.g., word web, text overview), present and model a new strategy, read-aloud, guided practice, and independent practice” (p.62). Data collection included the use of “an informal reading inventory” (p.62). The researchers report “two major findings” (p.65): “the students from both groups (on average) made statistically significant gains from pretest to posttest for word recognition, reading comprehension, and story retell” (p.65) and “there were no statistically significant differences between the two groups on the students’ posttest mean scores on any of the reading measures”

(p.66). These results are evidence that the “activate prior knowledge and prediction method” (p.61) can positively impact fifth graders’ comprehension.

With a focus on the middle school level, Tarchi (2010) examines “both direct and indirect effects of prior knowledge on reading comprehension” (p.415). More specifically, Tarchi was interested in examining “if the same pattern of components predicts different quotes of variance in different content area texts” (p.416). Participants are 131 seventh grade students from “5 secondary schools in Florence (Italy)” (p.416). To evaluate students’ reading comprehension of two different types of informational texts, students were required to read two passages: one science based text on digestion and one history based text on England. After reading, students were required to “answer 14 questions (5 multiple choice and 9 open-ended) about information explicitly stated in the text” (p.416). To measure the impact of prior knowledge on comprehension, the researcher evaluated three categories: “prior knowledge of domain,” “prior knowledge of topic: facts,” and “prior knowledge of topic: meanings” (p.416-417). To measure “prior knowledge of domain” (p.417), students answered “10 multiple choice and 5 open-ended” questions “about history and science matters” (p.416). To measure the impact of “topic knowledge of facts” (p.417), students were asked to record any prior knowledge on the given topic before reading. To measure the impact of “topic knowledge of meanings” (p.417), students were required “to define as precisely as possible 4 key-words about digestion” and “4 key-words concerning the history of England” (p.417). The results show that “prior knowledge of meanings explained 50% of the variance of the comprehension of a science text,” and “prior knowledge of facts explained 26% of the variance of the comprehension of a history text” (p.418). The results also show “the comprehension of a science text was predicted by prior knowledge of meanings, whereas the comprehension of a history text was predicted by prior knowledge of facts” (p.419).

These results provide evidence that prior knowledge has a different impact on seventh grade students' comprehension of science and history texts.

Pittman and Honchell (2014) also examine students at the seventh grade level, but specifically look at “how literature discussion affects middle school struggling readers” (p.118). Participants of this study are from a “rural, K-8 Title I school in the southeastern United States” (p.120). While two seventh grade ELA classes participated, the researchers were specifically interested in the “16 struggling readers from the two classes described” (p.121). In regards to measures, the researches administered “pre-and post-reading interests surveys” (p.122) and collected “student-made booklets, audio recordings of student conversations, and student interviews” (p.122). Over the course of three weeks, participants read *Jeremy Fink and the Meaning of Life* and participated in “literature discussion groups (LDGs)” (p.119). After finishing the book and completing the literature discussions, students were asked to complete a “post-survey with questions designed to solicit information about their reading interest, motivation to read, and their interest in literature discussion now that they had experienced LDGs” (p.123). The researchers coded the survey responses and found that “students enjoyed reading more when they engaged in LDGS” (p.124) and most relevant to this research study, “students understood the text better though the use of LDGs when they used prior knowledge and experiences to make connections between the story and their own lives” (p.124). In addition to these results, the recorded student conversations revealed, “that the student used prior knowledge, or schema, and made important text-to-self and text-to-world connections in order to aid their understanding of and gain meaning from the novel” (p.126). These results are evidence of the positive impact using prior knowledge can have on seventh grade students' comprehension during literature discussions.

For comprehension at the high school level, Spires and Donley (1998) want to determine if the reading strategy “prior knowledge activation (PKA)” (p.249) could support students’ comprehension of informational texts. The participants are “112 ninth graders who were enrolled in six different classes of a required social studies course in an urban school in the Southeast” (p.250-251). The researchers “randomly assigned” (p.251) participants to groups. One group was to use the “prior knowledge activation strategy (PKA)”, one to use the “main idea strategy (MI),” and one assigned to the “no-instructional control group” (p.251). Prior to the reading activity, the PKA group was given an overview of the PKA strategy that required “relating an idea in the text to personal knowledge they already possessed” (p.251). They “were encouraged to make spontaneous connections between their prior knowledge and informational texts” (p.249). Each group was assigned the same social studies reading passages and answered the same “literal and application-level questions” (p.251). A comparison of the results among all three groups showed that “the PKA group consistently outperformed the MI and the control groups, on both the open-ended and multiple-choice questions” (p.254). These results provide evidence that the PKA strategy supports students’ comprehension of social studies reading, and thus indicate a strong relationship between activation of prior knowledge and comprehension of expository texts for high school students.

Believing in the value of students making personal connections to what they read, Pilonieta and Hancock (2012) work to examine, “how first grade urban students connect to literature that mirrored their personal experience” (p.1) and also “to determine how their reading stance, as measured by the type of connections students made, affected their comprehension of the story read” (p.1). Participants in this study are four first grade teachers and each of their classes of first grade students. The reading materials selected for this research study are five

books covering “discrimination, homelessness, parental incarceration and immigration” (p.3). Such reading topics were selected because the researchers felt that students could identify with these topics. Each week a teacher read aloud one book and then students were asked to respond to “three comprehension questions and two making connection prompts” (p.3). To evaluate the responses, the connection responses were recorded as having an “effluent stance,” an “aesthetic stance,” or a “blended stance” (p.4). In regards to the impact the connections had on comprehension, the results show that “students who assumed an aesthetic stance while listening to the story, and made connections based on direct or vicarious personal experiences, scored higher on the comprehension measure” (p.6) than the other students. From their study, Pilonieta and Hancock conclude “using literature that reflects students’ life experiences...allows children to make personal connections which facilitate and enhance comprehension” (p.6). These results provide evidence that making connections has a positive impact on first grade students’ comprehension of texts involving real life topics.

At the second grade level, Maloch (2005) examines “the ways in which a second grade teacher, Ms. Wilson, and her students built a shared frame of reference, or shared mental context, for viewing reading” (p.5). To do so, Maloch conducted a qualitative study, which took place over the course of five months in Ms. Wilson’s second grade classroom. Participants are the classroom teacher, Ms. Wilson, and her classroom of 15 second grade students. A component of Ms. Wilson’s instruction is “WOW reading” (p.5) which implements the use of “contextual resources,” “interpretive strategies” and “opportunities to engage in reading and thinking about reading” (p.5). Data sources include “observations, with videotaping/audiotaping in the classroom (1 to 2 days a week on average), teacher and student interviews, and collection of artifacts including lesson plans, teacher’s notes, student work, examples of student writing, and

classroom assessments of student” (p.7). One component of “Wow reading” (p.5) is “connections” (p.10), such as, “personal experiences, shared classroom experiences, and other texts” (p.10). After analysis of all the data, Maloch is able to conclude that “this connection-making engaged students in active sense-making and at the same time helped build continuity across lessons and texts” (p.10). The results show that “the teacher and students developed a shared frame for reading” (p.8) and were part of a classroom that “valued...making connections between the text, themselves, other texts, and world knowledge” (p.8). These results are evidence of the positive impact making connections can have on second grade students.

### **General Impact of Integrated Curriculum**

Several studies have been found that examine the impact generally, not just on comprehension, of an integrated curriculum across many subject areas and grade levels. The research studies in this section specifically examine the general, overall impact on students of an integrated curriculum across different grade levels. The following studies are arranged according to grade level of participants. To examine the impact of an integrated curriculum at the first and second grade level, Zhanova, Rule, Montgomery, and Nielsen (2010) analyze both an integrated and a non-integrated approach to curriculum. More specifically, their study explores “teacher talk and actions...under two conditions: (1) subject-integrated social studies lessons of an integrated curriculum unit (experimental condition); and (2) single subject-focused mathematics lessons of a traditional separate subject curriculum” (p.251). This experimental study consisted of two groups: an experimental group and a control group. The control group learned mathematical skills through a non-integrated approach. The experimental group, which received

the integrated curriculum, learned about Africa through interactive activities that involved multiple subject areas. The integrated activities “addressed art, social studies, mathematics, literacy, and science” (p.254). Students participated in “mask-making and dramatic storytelling,” and “investigating African culture” (p.252). In addition, students practiced math skills by “making ears symmetrical in size and placement” on their masks and learned about “sound studied through African instruments” (p.252) as a science component. Observations were the data source. A comparison chart of the observations of the integrated curriculum group with the traditional curriculum group shows that in the integrated curriculum group there was “teamwork,” “more general praise,” and “more suggestions to improve technique” (p.256) than in the traditional curriculum group. In addition to curriculum, this study also varied the teaching approach. With integrated curriculum, the teacher was to “provide choices and motivate through praise and ownership” whereas with the traditional curriculum, the teacher was to “provide direct instruction and control behavior, giving praise” (p.256). Results from varying the teaching approach show that “integrated curriculum supports meaning learning,” “integrated curriculum encourages student motivation,” “integrated curriculum is a more complex instructional arrangement than traditional curriculum,” and “integrated curriculum requires less behavior management than traditional curriculum” (p.256-257). These results provide evidence of the positive impact of an integrated unit on first and second grade students.

In another study with students in second grade, Poldberg, Training, and Andrzejczak (2013) examine “how integration of visual art literacy and science content creates an effective curriculum benefiting all students” (p.2). One second grade classroom at a school in Southern California participated in this study, which specifically examines the implementation of an integrated unit titled, *Rocks Tell a Story*. One specific unit lesson, involving metamorphic rocks,

was examined. For the lesson, each student chose a rock from a selection of metamorphic rocks. After the teacher showed students how to paint a picture of a rock, each student was given the opportunity to paint a picture of his or her own metamorphic rock. The class then generated a list of words to describe their rocks, and organized these descriptive words into a “semantic word web” (p.12). The final product was a student-generated riddle, with clues about the type of metamorphic rock, so that by the end of the riddle, the reader could guess the name of the rock. This lesson is “an example of the art, literacy and science integration found within the entire *Rocks Tell a Story* unit” (p.8). The results of this integrated lesson show “increased performance across the three content domains” and that “students of all ability levels were able to discuss rocks using scientific and descriptive vocabulary correctly” (p.16). The researchers conclude that an integrated curriculum “may very well be a foundation that will provide all students with a wide world of ideas, vocabulary and ways of thinking and meet the common core standards of literacy” (p.16). These results provide evidence of the positive impact an integrated curriculum may have on second grade students’ learning.

In a study with both third and fifth grade students, Guthrie, Wigfield, and VonSecker (2000) sought to examine “ways that intrinsic reading motivation can be enhanced through the implementation of a reading instructional program” (p.331), specifically, CORI (“Concept-Oriented Reading Instruction”) (p.331). The basis of CORI is “integrated reading and language arts with science inquiry” (p.331). Two classrooms of third grade students and two classrooms of fifth grade students served as the experimental groups that followed the CORI program. Other classrooms at the given grade levels served as control groups that followed a “traditionally organized basal and science instruction” (p.333) program. The CORI program involves “a conceptual theme for instructional units to be taught for 16-18 weeks in the fall and spring”

(p.333). With CORI, instruction follows four components: “(a) observe and personalize, (b) search and retrieve, (c) comprehend and integrate, and (d) communicate to others” (p.333). The traditional instruction of the control groups “had no hands-on science inquiry” and in addition, “collaborative work on integrated reading-inquiry science projects was not present” (334). Data collection includes a “Motivation for Reading Questionnaire” (p.334). The results show that “the students who received CORI had significantly higher curiosity for reading at the end of the academic year than comparison students,” “students receiving CORI were higher than students receiving traditional instruction in self-reported strategy use,” while “students receiving CORI were not significantly different from comparison students on recognition or competition” (p.338). In addition, researchers find “grade effects on recognition and competition but not on curiosity, involvement, or strategy use” (p.338). These results indicate the positive impact of integrated instruction on reading and reading strategy use by third and fifth grade students.

To examine the difference between an integrated science curriculum and a traditional curriculum at the upper elementary level, Hovland et al., (2013) designed a study to “(1) assess 4<sup>th</sup> graders’ food-related multidisciplinary science knowledge, and (2) compare gains in food-related science knowledge after implementation of an integrated, food-based curriculum” (p.81). This experimental study consists of two groups: an “intervention group” (p.81) and a control group. The intervention group includes nine fourth grade classrooms in Ohio and nine fourth grade classrooms in North Carolina. The control group includes eight fourth grade classrooms in Ohio and eight fourth grade classrooms in North Carolina. While the control group kept with their usual curriculum, the intervention group followed an integrated curriculum where concepts from math and science were integrated and teachers “implemented a hands-on, food-based intermediate curriculum” (p.81). To measure the difference in performance between the two

groups, “students completed a researcher-developed science knowledge exam, consisting of 13 multiple-choice questions administered pre and post-test” (p.81). Analysis of the exam scores shows the integrated “intermediate curriculum is more effective than a standard science curriculum in increasing students’ multidisciplinary science knowledge related to food” (p.81). These results provide evidence of a positive impact that an integrated approach can have on fourth grade students’ learning.

Another study involving fourth grade students and the impact of curriculum integration examines the effect of integrating visual art into social studies and language arts curriculum. Trent and Riley (2009) address the question, “what are the student specific impacts/outcomes of integrating visual art curricula with other academic content areas” (p.16). Participants are fourth grade students from an urban setting. Researchers used a “4<sup>th</sup> grade curricular unit ‘Privacy: Foundations of Democracy’ (published by the center for Civic Education, 1998)” (p.16). The lessons aligned with “multiple district social studies, visual art, and language arts standards and benchmarks” (p.18). One of the unit lessons, “Defining and Interpreting Privacy,” involved “drawing, symbolizing and analysis connected to the unit’s theme” (p.19). In other lessons, students “created artistic representations,” and “wrote free verse, limerick, rhyming, haiku, narrative, humorous, shape, and concrete poems” (p.19-20). Data consists of “pre/post assessment of student learning specific to unit objectives; field notes/researcher journals; collection/document of student work samples, curricular material, and lesson plans; videotaped focus group interviews and photos of classroom activities” (p.16). Data analysis shows that “arts integrated lessons supported student learning across all targeted content areas and benchmarks,” that “students enjoyed the art integrated approach, experienced high levels of engagement, and also displayed a strong sense of efficacy,” that “student comments, writing, and work samples

illustrated a solid commitment to human and legal rights and democratic skills and dispositions that were explored during the unit,” and that “students demonstrated a high degree of transferability of unit learning” (p.22). In short, researchers conclude that students “readily related the concepts studied in the unit to their own lives and changed some practices/behaviors as a result” (p.23). Thus not only did integration positively increase the impact on student learning, but it also impacted students’ comprehension of content through making personal connections. These results provide evidence of the positive impact an integrated curriculum has on fourth grade students’ learning.

To study the general impact of integrated curriculum in the three through six grade range, Baker (2013) conducted a “qualitative pilot study” (p.1) to explore “how the arts are integrated with curriculum concepts to promote cognitive development” (p.1). Participants for this study are teachers and students in grades three through six from Art Space Charter School in North Carolina. There are a total of 371 students within grades K – 8 at the charter school, but this study only included the population of students in grades three through six. At this school “art integration is accomplished through instruction that is project-based upon thematic units” (p.7). An example is the “Superhero unit in third grade used for character development” (p.9). Within this unit, grade three students learned about their own strengths and weaknesses, and came up with their own superhero to overcome one of their greatest weaknesses. This unit “included developing a name for the character, a symbol for the superhero that would then go on a costume they designed, a lair, sidekick, nemesis, acquisition of power, weakness, motivation and alter ego” (p.9). In addition to all of this, students further developed aspects of their character in the art classes as well. While art is integrated into instruction, students still attend “an art, drama, music, and dance class each week” (p.7). Observations of classroom instruction and observations

of the other art related classes served as the source for data. More specifically, “structured field notes provided the observational record to address the research questions” (p.7). In addition to the observations, the researcher also collected “descriptions of the setting, use of materials, teaching methods, and student work created in reference to specific cognitive/academic concepts being taught in the classroom” (p.7) and “products of children’s learning evidenced in their artwork, music, and drama, as well as mini-tours of bulletin boards and other displays were analyzed as well” (p.7). After the data were collected they were coded. From this research study, Baker concluded that “even instruction based on a standard course of study, can be guided by thematic objectives interwoven with the arts to yield rich and complex forms of learning for children that promote conceptual and intellectual development through their inter-relatedness to overall instructional concepts and objectives” (p.13-14). This conclusion is evidence of the positive impact arts integration may have on students in grades three through six.

To explore the impact of an integrated curriculum at the middle school level, Lorimer (2011) examines whether “infusing the visual and performing arts into language arts, math, science, and history/social studies courses is a pedagogical approach that meets the developmental needs of early adolescents” (p.1). To do this, Lorimer conducted a case study “of five middle level classrooms” (p.4). Data collection includes observations of these sixth grade students engaged in integration by “making Egyptian sarcophagi, drawing science lab experiments, recording perceptions, inferences, and responses to written questions following the careful examination of a Chinese art print” (p.5-6). Lorimer also conducted interviews with teachers and administrators. Interviews with teachers provided information on “the type of arts-infused instruction being implemented, the method/s used to design the curriculum, and teacher perception regarding learning outcomes” (p.7). Interviews with administrators provided

information on “their involvement related to arts-infused learning” (p.7). Results from the interviews reveal “all participants stated that they perceived arts-related learning to be a positive catalyst leading to more engagement, which also improves attendance, behavior, and attitudes for young adolescents from diverse backgrounds” (p.7). In regards to science and art integration, findings show “sixth graders used symbolic representation to develop their understanding of the earth’s layers and causes of earth movement” (p.6). Lorimer concludes that an integrated curriculum approach “enables middle level students to connect the curriculum to their own life experience (i.e. relevancy) while supporting creativity, problem-solving, communication, collaboration, and construction of knowledge” (p.8). These results provide evidence of the positive impact an integrated curriculum may have on sixth grade students’ learning.

At the seventh grade level, Turpin and Cage (2004) examine “the effect of an integrated, activity-based science curriculum, on science achievement, science process skills, and attitudes toward science” (p.1). To do so, the researchers used an experimental group and a control group. The experimental group, which received the “Integrated Science (IS)” (p.1) curriculum, includes 531 seventh grade students from three different schools in Louisiana. The control group, which received the “traditional science curriculum” (p.4), includes 398 seventh grade students from four different schools in Louisiana. Students in the IS experimental group had the opportunity to make “connections between different content areas of science, technology, and mathematics in ways to improve science literacy for students” (p.1); whereas, students in the control group received instruction that “consisted of a textbook emphasis with lecture and demonstration” (p.3). The two groups focused on the same science topics, but the “IS curriculum also examined content from other science subject areas” and specifically explored “how these disciplines are interrelated” (p.3). Data collection includes “the Iowa Test of Basic Skills (ITBS), the South

Eastern Regional Vision for Education (SERVE) Science Process Skills Test, and the SERVE Science Attitude Survey” (p.1). The results show that “participants in this study using the IS curriculum program had significantly higher scores in the areas of science achievement and science process skills when compared to students using a traditional science curriculum” (p. 13). The researchers conclude “that students in the IS program had improved science achievement and improved process skill development” (p.13). These results provide evidence of the positive impact of an integrated science curriculum on seventh grade students’ learning.

Moving to the high school level, Anderson and Cook (2014) conduct a case study of “two 10<sup>th</sup>-grade US History teachers” (p.1). In an effort to meet a National Council of Social Studies standard, two teachers shared a goal “to create and implement an integrated, thematic eight-week unit on war with an emphasis on differentiated instruction” (p.1). Their integrated unit centered on key questions. The teachers created a variety of assessments to measure student growth and progress. The researchers collected data from observations, interviews, records, and documents. Analysis of the data shows “a high level of student engagement” and “high on-task behavior through active participation, quality peer discussion, eye contact, with minimal amounts of side conversations or glazed-over looks” (p.8) at the start of the unit. Analysis also shows “as teachers struggled to stick with the thematic, student-centered approach, students struggled with staying engaged throughout the lessons” (p.9). However, the researchers do not comment on whether the students’ disengagement is from the integrated format of the unit or from the unit topic of war. Therefore, these results bring into question a positive impact of integrated curriculum on student learning at the high school level.

## **Literacy Impact of Integrated Curriculum**

In the search for studies into the impact of integrated curriculum, a few have been found that examine the impact specifically on literacy growth and development. The research studies in this section specifically examine the literacy impact of an integrated curriculum on students across different grade levels. The following studies are arranged according to grade level of participants. The first study is with fourth grade students, the second and third studies are with students in grades three through five and the fourth study reviewed below is with students in grades three through eight. To explore the literacy impact of integrated curriculum at the fourth grade level, Cervetti, Barber, Dorph, Pearson, and Goldschmidt (2012) conduct a study that “investigates the efficacy of an integrated science and literacy approach” (p.631). The researchers ask the question, “how does an integrated approach to science-literacy curriculum compare to business-as-usual approaches in terms of outcomes of science understanding, reading comprehension, science vocabulary and science writing?” (p.651-652). Some participants are part of the “treatment unit” which is “an integrated science-literacy unit” (p.631), and the remaining participants are part of “a content-comparable science-only unit on light and energy (using materials provided by their districts) and provided their regular literacy instruction” (p.631). Students who participated in the integrated unit used literacy skills such as “making predictions, summarizing, evaluating claims and evidence and making explanations from evidence” (p.639). These students also participated in “writing notes and reports, conducting firsthand investigations” (p.631). To measure literacy growth, researchers administered a pre-unit and a post-unit test to all students in all groups. Researchers also collected pre and post-unit writing samples. In terms of impact on student learning, “the results indicate that students in the

treatment condition scored significantly higher than students in the comparison condition on the science vocabulary measure at post-test” (p.647-648). In terms of impact on writing development, post assessment results show “treatment students actually included more science concepts than comparison students in their responses to the writing prompt on their post-test assessments” (p.652). Based on these results, the researchers conclude “integrated approaches not only benefit student science learning outcomes, but also support student literacy development” (p.652). These results provide evidence that an integrated curriculum approach can have a positive literacy impact on fourth grade students’ learning and literacy growth.

To explore the literacy impact of an integrated curriculum on students in grades three through five, Romance and Vitale (2011) conduct a “cross-sectional study” (p.3) of “in-depth science instruction as a means for accelerating student achievement in both reading and science” (p.3). The intervention group consists of “students in 12 elementary schools representative of the student diversity of the school system” (p.3), while the control group consists of “former Science IDEAS grade 6-8 students and comparison students in feeder middle schools” (p.3). The “nationally-normed *Iowa Tests of Basic Skills (ITBS) Reading Comprehension* and *Science* subtests” (p.4) were administered to all students to serve as a baseline for comparison of literacy scores and growth. Students in the comparison group were taught using “the district-adopted basal reading/language arts program as well as ½ hour daily instruction using the district-adopted science curriculum” (p.4). Whereas, students in the intervention group received the Science IDEAS curriculum, which is an intervention program with “integrated reading and writing within in-depth science instruction” (p.4). This integrated program provides “opportunities to engage in fundamental literacy practices such as discussion, reading, writing and developing forms of argumentation based on their inquiry/explorations and learning from text-based and non-text

based instructional activities” (p.3). The Science IDEAS curriculum “emphasizes students learning more about what is being learned in a cumulative fashion that builds upon core science concepts and concept relationships” (p.3). Results show that students who received the Science IDEAS curriculum had “higher achievement” (p.4) than the control group. This experiment demonstrates “the effectiveness of content-area learning in science as a means for improving student reading comprehension” (p.5). These results provide evidence that an integrated approach can have a positive impact on elementary students’ literacy growth and learning.

In a “randomized control trial study” (p.1), Cunnington, Kantrowitz, Harnett, and Hill-Ries (2014) follow a group of third grade students through to the fifth grade in order to examine “an instructional program integrating high-quality, standards-based instruction in the visual arts, math, and literacy” (p.2). The instructional program, *Framing Student Success: Connecting Rigorous Visual Arts, Math and Literacy Learning*, was implemented at “three New York City Title I elementary schools” (p.2). The purpose of the program is “to make explicit connections between subjects (visual arts and English Language Arts [ELA] or math), while maintaining the integrity, depth, and rigor of instruction in both subject areas” (p.2). The instructional program aligned the units to the Common Core State Standards. This study included a treatment group with 545 students and a control group with 456 students; however, only 266 students from the treatment group completed the full three years and only 227 students from the control group completed the full three years of the project. The difference between the two groups was that the “control group students and staff did not participate in any *Framing Student Success* project activities” (p.7). Art and ELA integration included “writing skills throughout the art-making process” (p.3), “word webs” (p.3), “word lists” (p.3), and “vocabulary practice, self-reflection, peer critique or class discussion of words of art was built into every lesson” (p.3). To evaluate

the difference between the treatment and the control group, “three years of student NYS ELA and math test scores were collected” (p.9). In addition, rubrics were used to evaluate student work. Overall, the researchers conclude “rigorous interdisciplinary instruction that teaches visual arts, literacy, and math skills, and supports cognitive skill development can increase students’ literacy and math learning while nurturing their art making skills and enhancing their ability to reflect meaningfully on their own work” (p.17). These results are evidence of the positive literacy impact integrated instruction may have on students in grades three through five.

Extending the research to grades three through eight, Hinde et al., (2007) examines “the effects on reading comprehension of GeoLiteracy – a K-8 package of 85 lessons that teaches geography in the context of practicing reading and writing skills” (p.343). Participants in this study are “ninety-six third through eighth grade teachers in Arizona and Michigan” (p.343) and their classes. Among these participants, two groups were created: an intervention group and a control group. The intervention group implemented the GeoLiteracy curriculum and the control group continued with their normal curriculum. The GeoLiteracy program combines “elementary language arts with geography through the state standards” (p.347). The GeoLiteracy curriculum involves practice with literacy skills such as “cause/effect, sequencing, main idea, summarizing, drawing conclusions/inferences, following directions, and reading/interpreting graphic displays” (p.351). Data collection included a pre and post reading test, which “required students to read three to 11 paragraphs (depending on grade level) and answer 10 selected-response questions” (p.351). The results indicate that “in grades 3,5,6,7, and 8, the mean pretest score, mean posttest score, and pretest/posttest difference were higher for the students whose teachers used GeoLiteracy lessons that addressed reading comprehension skills along with geography” (p.352). From these results, the researchers conclude “our study involving two states, 33 schools, 96

teachers, and 2589 students reveals that integrating geography with reading is associated with higher scores on tests of reading comprehension” (p.351). These results provide evidence of the positive literacy impact an integrated curriculum has on students’ comprehension in grades three through eight.

### **Summary of the Review**

This literature review contains reviews of 20 research studies. These studies were found through searches, using the key words of *integrated curriculum*, *comprehension*, and *prior knowledge* on academic databases such as Education Source, ONE Search and ERIC. The studies have been grouped according to the major sections implied in the research question and then sorted by grade level of participants (from K – 12). The sections of the review are comprehension through prior knowledge and reader connections, general impact of integrated curriculum, and literacy impact of integrated curriculum. Seven studies were found for the comprehension through prior knowledge and reader connections section, nine studies were found for the general impact of integrated curriculum section, and four studies were found for the literacy impact of integrated curriculum section. Of the 20 studies, one included participants from Europe; otherwise, all of the study participants were from the United States.

### **Chapter 3: Methodology**

To answer the research question, what is the impact of an integrated curriculum on K – 12 students' comprehension of expository texts in the content areas, an extensive review of the literature was conducted. This chapter addresses the data collection process, the data analysis, and the synthesis. The data collection section describes how the research studies were found for this particular study and what was done to organize the data. The data analysis section provides an examination of all the research studies collected and draws connections among common themes. The synthesis section summarizes what was found as a result of the data analysis.

#### **Data Collection**

Data for this research synthesis consists of the 20 research studies found through the data collection process of exhaustively searching the leading educational databases for peer-reviewed research studies. Data were then organized into three categories: comprehension through prior knowledge and reader connections, general impact of integrated curriculum, and literacy impact of integrated curriculum. These categories emerged from the research question and from an analysis of the preliminary data. These categories became the codes and themes for the further data analysis, which is explained in the next section.

## Data Analysis

The three categories that structured the literature review became the main themes for this data analysis. The first category, comprehension through prior knowledge and reader connections, contains seven research studies: five specifically examined comprehension through prior knowledge, two specifically examined comprehension through reader connections. These two sets of studies are combined in this category because they are cognitively related; a reader cannot use prior knowledge unless the reader makes a connection to the text. The readers participating in the comprehension through prior knowledge studies ranged from grades three through nine: one study at the third and fourth grade level (Taboada & Guthrie, 2006), one study at the fifth grade level (Bui & Fagan, 2013), two studies at the seventh grade level (Tarchi, 2010; Pittman & Honchell, 2014), and one study at the ninth grade level (Spires & Donley, 1998). The type of prior knowledge activated varied by study and ranged from science to literature to history. Because this synthesis is aimed at helping classroom teachers, this analysis will focus on grade level results rather than subject area results. At the third and fourth grade level, research results show little evidence that activating prior knowledge has any impact on students' comprehension of expository texts (Taboada & Guthrie, 2006); however, at the fifth grade level, research results show that activation of prior knowledge does have an impact on students' comprehension of narrative texts (Bui & Fagan, 2013). At the seventh grade level, research results show that activation of prior knowledge has an impact on students' comprehension of both expository and narrative texts (Tarchi, 2010; Pittman & Honchell, 2014). In addition, at the ninth grade level, the activation of prior knowledge appears to have a significant impact on student comprehension of expository texts (Spires & Donley, 1998). Thus all five studies

examining activation of prior knowledge for comprehension show a positive impact on comprehension of expository texts in grades seven and nine and narrative texts in grades five and seven. The readers participating in the comprehension through personal connection studies were all in the early elementary grades (below grade three). In both studies (Pilonieta & Hancock 2012; Maloch, 2005), participants were asked to make personal connections to literature (Pilonieta & Hancock, 2012) and to both expository and narrative texts (Maloch, 2005). Results of these two studies are consistent with the above findings from the activating prior knowledge studies: both studies found that using this strategy of making connections had a positive impact on students' comprehension of both expository and narrative texts. Therefore, activating and using prior knowledge appears to have the greatest impact on students' comprehension at the upper elementary grade levels and above, whereas making connections seems to have the greatest impact on students' comprehension at the lower elementary levels.

The second category, the general impact of integrated curriculum, contains nine research studies: seven at grades one to six (Zhbanova, Rule, Montgomery, & Nielsen, 2010; Poldberg, Trainin, & Andrzejczak, 2013; Guthrie, Wigfield, & VonSecker, 2000; Hovland et al., 2013; Trent & Riley, 2009; Baker, 2013; Lorimer, 2011), one at grade seven (Turpin & Cage, 2004) and one at grade ten (Anderson & Cook, 2014). The research studies at the elementary level all integrated more than one subject area, whereas at the middle school level, the integration occurred within the subject, with different science matters integrated for instruction. At the high school level, the integration also occurred within the subject area with different historical wars integrated for instruction. This middle and high school level "within subject" integration contrasts with the "multiple subject" integration at the elementary level. In five of the studies, the impact of integrated curriculum was shown be related to student learning behavior: increased

motivation (Zhbanova et al., 2010), increased curiosity (Guthrie et al., 2000), and increased engagement with the learning process (Trent & Riley, 2009; Lorimer, 2011; Anderson & Cook, 2014). These five studies all included an active learning component: two of the studies (Zhbanova et al., 2010; Guthrie et al., 2000) both used hands on activities, one of the studies (Trent & Riley, 2009) used interactive activities, one of the studies (Lorimer, 2001) used experiments, and one of the studies (Anderson & Cook, 2014) used differentiated activities. From this it can be concluded that the hands on, interactive nature of these integrated curriculums positively impacted students' behavior. In four of the studies, the impact of integrated curriculum was improved student academic performance (Zhbanova et al, 2010; Poldberg et al., 2013; Hovland et al., 2013; Turpin & Cage, 2004). While these four studies integrated different subject areas, their method was consistent. Each of these studies reported the use of hands on practices as part of the method of integration. From this, it can be concluded that using hands on practices with curriculum integration can lead to improved student academic performance in grades one, two, four, and seven. At the upper elementary range, the impact of art integration was that students were able to make connections from the content to their own lives (Trent & Riley, 2009; Turpin & Cage, 2004). Therefore, making connections appears to have a positive impact on student learning because it can support students' comprehension. Conclusions drawn from reviewing these nine studies are that curriculum integration that includes hands on, interactive practices can lead to positive student behavior and improved student academic performance at the elementary level.

The third category, literacy impact of integrated curriculum, contains four research studies: one that examines grades three, four, and five (Romance & Vitale, 2011) one that examines grade three (Cunnington, Kantrowitz, Harnett, & Hill-Ries, 2014), one that examines

grade four (Cervetti, Barber, Dorph, Pearson & Goldschmidt, 2012) and one that examines grades three through eight (Hinde, Osborn, Dorn, Ekiss, Mater, Smith & Libbee, 2007). Two of the studies examined science and literacy integration (Cervetti et al., 2012; Romance & Vitale, 2011), one of the studies examined literacy, arts, and math integration (Cunnington et al., 2014) and one of the studies examined history and literacy integration (Hinde et al., 2007). While these studies focus on different grade levels and different subject area integration, all of the researchers reported improved student academic performance. Therefore, it can be concluded that curriculum integration has a positive impact on students' literacy and content area performance at grades three and above. Two of the studies (Romance & Vitale, 2011; Cunnington et al., 2014) which examined the impact of a specific integrated curriculum, focused on students making content connections. Both of these studies included participants from grades three, four, and five and resulted in improved student academic performance. Two of the studies (Cervetti et al., 2012; Hinde et al., 2007) both include practice with the literacy skill of summarizing, and two other studies (Cervetti et al., 2012; Romance et al., 2011) both include practice with the literacy skill of using evidence to defend statements. These four studies are evidence of the positive impact an integrated curriculum has on students' comprehension and literacy performance in grades three through eight. Conclusions drawn from reviewing these four studies are that curriculum integration at grades three through eight appears to improve literacy performance, specifically in comprehension, making connections, summarizing, and using evidence to defend statements.

**Synthesis**

The results emerging from the analysis of the three categories can now be synthesized (combined) into findings that address the research question for this study. Figure 1 details the subject integration and the grade level impact.

**Figure 1: Subject Integration and the Grade Level Impact**

| <b>Subjects Integrated</b>  | <b>Method of Integration</b>                                  | <b>Grade Level</b>                | <b>Impact on Students</b>   |
|---|---|-----------------------------------|---|
| Art integrated with science, math, social studies, and literacy                   | 1 topic, lessons integrated subjects, hands on practices      | 1 <sup>st</sup> , 2 <sup>nd</sup> | Positive learning behavior<br>Improved academic performance                                 |
| Art, Science, and Literacy  | 1 unit, lessons integrated subjects, hands on practices       | 2 <sup>nd</sup>                   | Improved academic performance   |
| Reading, ELA, and Science   | Themed units, hands on practices, inquiry, extension projects | 3 <sup>rd</sup> , 5 <sup>th</sup> | Increased motivation and curiosity  |
| Topic of food integrated with math and science                                    | 24 lessons in curriculum, hands on practices                  | 4 <sup>th</sup>                   | Improved academic performance   |
| Art integrated with reading, writing, and social studies                          | 1 unit, collaborative, interactive, student choice            | 4 <sup>th</sup>                   | Supported learning<br>Engagement<br>Connection making                                       |
| Art integrated with math, reading, language, science and social studies           | Thematic units, hands on practices                            | 3 <sup>rd</sup> – 6 <sup>th</sup> | Cognitive growth  |
| Visual and performing arts integrated with ELA, math, science, and social studies | Art activities, experiments                                   | 6 <sup>th</sup>                   | Increased engagement<br>Positive learning behavior<br>Learning support<br>Connection making |
| Science (integrated topics)   | Making connections, hands on activities                       | 7 <sup>th</sup>                   | Improved academic performance<br>No impact on attitude                                      |
| Social Studies (integrated different wars)  | Thematic unit, focus questions, differentiated practices      | 10 <sup>th</sup>                  | Positive behavior at the start of the unit  |
| Science and Literacy  | Inquiry, investigations, discussions                          | 4 <sup>th</sup>                   | Improved academic performance<br>Learning support   |
| Science and Literacy  | Hands on activities, making connections                       | 3 <sup>rd</sup> – 5 <sup>th</sup> | Improved academic performance   |
| Visual arts, math, and literacy   | Units, making connections, discussions and reflections        | 3 <sup>rd</sup> – 5 <sup>th</sup> | Engagement<br>Improved academic performance<br>Positive learning behavior                   |
| Social Studies and Literacy   | 85 engaging lessons   | 3 <sup>rd</sup> – 8 <sup>th</sup> | Improved academic performance   |

An analysis of the data in Figure 1 shows that using hands on activities with integrated curriculum at the elementary level leads to positive student behavior and positive academic performance in grades one through six. The analysis also shows that using literacy integration leads to improved student academic performance at the upper elementary to middle school grade levels. The synthesis of the analysis produces four findings. The first is that a key to comprehension of expository texts at the early elementary grade levels appears to be the students' ability to make personal connections with the material being read across an integrated curriculum. These connections are enhanced and the literacy impact increased with the use of an integrated curriculum for students in grades three through five. A second finding is that students' comprehension in grades five through nine can be significantly impacted by activating prior knowledge for an integrated curriculum. This finding of positive literacy impact from integrated curriculum is consistent with the positive literacy impact of integrated curriculum at the elementary level. The third finding is that when the integrated curriculum includes hands on, interactive practices for students in grades one through six, the impact on student learning behavior and academic performance, including some literacy performance, is positive. In addition to these three findings which deal with the type of impact from an integrated curriculum, a fourth finding deals with the type of integration that produces a positive impact at various grade levels. Figure 2 shows the type of integration and its impact by grade level.

**Figure 2: Integration and Impact by Grade Level**

| <b>Grade</b> | <b>Subjects Integrated</b>  | <b>Method</b>   | <b>Impact on Students</b>                                    |
|--------------|---|---|--|
| 1            | Art integrated with science, math, social studies, and literacy         | Hands on practices  | Positive learning behavior, improved academic performance    |
| 2            | Art integrated with science, math, social studies, and literacy         | Hands on practices  | Positive learning behavior, improved academic performance    |
|              | Art, Science, and Literacy  | Hands on practices  | Improved academic performance                                |
| 3            | Reading, ELA, and Science   | Themed units<br>Hands on practices<br>Inquiry<br>Extension projects | Increased motivation and curiosity                           |
|              | Art integrated with math, reading, language, science and social studies | Thematic units<br>Hands on practices                                | Cognitive growth   |
|              | Science and Literacy  | Hands on activities<br>Making connections                           | Improved academic performance                                |
|              | Visual arts, math, and literacy   | Making connections<br>Discussions, reflections                      | Engagement, improved academic performance, positive behavior |
|              | Social Studies and Literacy   | Engaging lessons  | Improved academic performance                                |
| 4            | Art integrated with math, reading, language, science and social studies | Thematic units<br>Hands on practices                                | Cognitive growth   |
|              | Topic of food integrated with math and science                          | Hands on practices  | Improved academic performance                                |
|              | Art integrated with Reading, Writing, and Social Studies                | Collaborative<br>Interactive<br>Student Choice                      | Supported learning, engagement, connection making            |
|              | Science and Literacy  | Inquiry<br>Investigations<br>Discussions                            | Improved academic performance, supported learning            |
|              | Science and Literacy  | Hands on activities<br>Making connections                           | Improved academic performance                                |
|              | Visual arts, math, and literacy   | Making connections<br>Discussions, reflections                      | Engagement, improved academic performance, positive behavior |
|              | Social Studies and Literacy   | Engaging lessons  | Improved academic performance                                |
| 5            | Reading, ELA, and Science   | Themed units<br>Hands on practices<br>Inquiry<br>Extension projects | Increased motivation and curiosity                           |
|              | Art integrated with math, reading, language, science and social studies | Thematic units<br>Hands on practices                                | Cognitive growth   |
|              | Science and Literacy  | Hands on activities<br>Making connections                           | Improved academic performance                                |
|              | Visual arts, math, and literacy   | Making connections<br>Discussions, reflections                      | Engagement, improved academic performance, positive behavior |
|              | Social Studies and Literacy   | Engaging lessons  | Improved academic performance                                |

| <b>Grade</b> | <b>Subjects Integrated</b>  | <b>Method</b>  | <b>Impact on Students</b>  |
|--------------|---|--|--|
| 6            | Art integrated with math, reading, language, science and social studies           | Thematic units<br>Hands on practices                         | Cognitive growth   |
|              | Visual and performing arts integrated with ELA, math, science, and social studies | Art activities<br>Experiments                                | Increased engagement, positive behavior, supported learning, connection making |
|              | Social Studies and Literacy   | Engaging lessons   | Improved academic performance  |
| 7            | Science (topics integrated)   | Making connections<br>Hands on activities                    | Improved academic performance, no impact on attitude                           |
|              | Social Studies and Literacy   | Engaging lessons   | Improved academic performance  |
| 8            | Social Studies and Literacy   | Engaging lessons   | Improved academic performance  |
| 10           | Social Studies (integrated different wars)  | Thematic unit<br>Focus questions<br>Differentiated practices | Positive behavior at the start of the unit                                     |

Analysis of Figure 2 reveals that when a subject is integrated with literacy in grades three through eight, that integration positively impacts students' academic performance. The Figure also shows that the most commonly integrated subjects with literacy are science and social studies. Therefore based on this research synthesis, a fourth finding appears to be that integrating literacy with nearly any other subject area may produce a positive impact on student academic performance from grades three to eight.

## **Chapter 4: Results and Application**

### **Results of the Review**

After completing a review of the literature to determine what research has been conducted to date on the impact of an integrated curriculum on K – 12 students' comprehension of expository texts, the researcher has determined four key findings from this synthesis. The first finding is that a key to comprehension of expository texts at the early elementary grade levels appears to be the students' ability to make personal connections with the material being read across an integrated curriculum. A second finding is that students' comprehension in the upper elementary to high school grade levels can be significantly impacted by activating prior knowledge for an integrated curriculum. The third finding is that when the integrated curriculum includes hands on, interactive practices for students in grades one through six, the impact on student learning behavior and academic performance, including some literacy performance, is positive. The fourth finding appears to be that integrating literacy with nearly any other subject area may produce a positive impact on student academic performance from grades three through eight.

### **Application of Results to a Professional Development Project**

The findings from this study have significance to classroom teachers. They can assist teachers in knowing about the types of integrated curriculum and the impact of these types on K – 12 students' learning and academic performance. These findings can also assist teachers in

planning an integrated curriculum approach for the grade level they teach. Sharing the findings from this research synthesis with teachers is professional development, and the most appropriate form of professional development for sharing this new knowledge is a Google Site. This form of professional development is suited for teachers in grades one through ten, from elementary to high school, because the research that supports this professional development has been conducted with students from grades one through ten.

### **Design of Professional Development Project**

The design of this professional development project will be in the form of a Google Site. The Google Site will contain one page for each of the grade levels studied in the research. Each grade level page will include options for subject integration, ideas for methods used to integrate the subjects, and possible resulting impact on students. The grade level details from this research synthesis as displayed in Figure 2 form the basis of this Google Site. The Google Site design was chosen because it allows the teacher to view one specific grade level at a time as compared to seeing all of the grade levels at once in a large table. This design individualizes the information for each grade level teacher. This individualized, self-directed form of professional development is intended to provide classroom teachers with options for curriculum integration, methods used for integration, and a resource for their own professional development library. The Google Site also allows teachers 24 hours access, so the information is readily available. Google Sites are a free resource, so this form of professional development will be available to school districts at no cost. While this form of professional development is individualized and self-directed, Google Sites provide space for comments, so participants can respond to, question, or comment on the

information. The ability to comment on the information provides an opportunity for participants to collaborate with one another. Having the Google Site as a reference should increase educators' awareness of integrated curriculum.

### **Literacy Coaching Goals and Objectives**

The goal of the professional development Google Site is to increase teachers' professional knowledge on the research-based types of integration, methods for integrating, and impact of integrated curriculum. The second goal is to provide teachers with a resource and reference guide for planning integrated curriculum. By accessing and reading through the Google Site, teachers will learn the impact of subject integration at certain grade levels. More specifically, teachers can locate their own grade level and look at what types of subject integration that research has shown to have a positive impact on students, and furthermore teachers can see what methods were used to achieve that impact. The third goal is for participants to collaborate and discuss the topic of integrated curriculum with one another. The Google Site provides space for teachers to share their experiences with integrated curriculum, pose questions, and write comments. The Google Site will be a professional development reference for teachers to use when planning their instruction. Because the Google Site is arranged by grade level, teachers can apply this new knowledge to their own specific teaching situation.

### **Proposed Audience and Location**

This proposed professional development project is for the professional audience of classroom teachers in grades one through ten. Teachers of Kindergarten and grades nine, eleven, and twelve may reference the Google Site; however, there is no information on the site for these specified grade levels. School districts, and especially the reading specialist or head of curriculum development in the district, will be given the link to the Google Site and then the link can be dispersed to teachers. To access the site, participants only need the link; there will be no password required for this free site. The information for this professional development will be copyrighted but housed free of charge on a Google Site.

### **Proposed Project Format and Activities**

The format of this proposed professional development project is a series of interactive entries with internal hyperlinks on a Google Site. Each grade level will have its own page on the site. On each of the grade level pages, there will be links to some of the original research gathered for this research synthesis. This research may be helpful to teachers because some of the studies describe with explicit detail the integrated units and lessons implemented. In addition to the hyperlinks, further interactive activities on the site are limited to participant response. Participants or “readers” of this professional development project may type comments in designated spaces on any of the site pages to create open dialogue among colleagues and other professionals.

### **Proposed Resources for Project**

The primary resource needed for this form of professional development is an internet capable computer or equivalent device to access Google Sites. Because Google Sites are a free resource, this format offers a cost effective form of professional development for school districts. The link to the Google Site will provide potential users with direct access to the information. The link itself will be distributed among local school districts and reading specialists.

### **Proposed Evaluation of Project**

To evaluate the effectiveness and usefulness of the content and the format of the Google Site for professional development, the last page of the site will contain a link to an online survey through Google Forms. The survey will include five multiple-choice questions, one extended response question, and space for suggestions and comments. The questions will ask participants to provide their evaluation of the integrated curriculum content, as well as to evaluate the effectiveness of the Google Site and provide their feedback in regards to the site's usefulness as a professional development venue.

### **Project Ties to Professional Standards**

This proposed form of professional development project ties to the following New York State Teaching Standards (NYSED, 2011): *Teaching Standard II: Knowledge of Content and Instructional Planning, Element II.2: teachers understand how to connect concepts across*

*disciplines, and engage learners in critical and innovative thinking and collaborative problem-solving related to real world context.* This teaching standard aligns with the purpose of integrated curriculum, which is to help students make connections across and among subject areas. The Google Site will help teachers plan integrated curriculum based on research results. By using this Google Site, teachers will be engaged in understanding how to connect concepts across disciplines. This proposed form of professional development also ties to New York State *Teaching Standard III: Instruction Practice, Element III.1: teachers use research-based practices and evidence of student learning to provide developmentally appropriate and standards-driven instruction that motivates and engages students in learning.* Through this self-directed form of professional development, teachers will be using research-based practices to help design their curriculum and instruction. In addition, teachers will see on the Google Site what types of integration at which grade levels result in increased motivation and engagement. In addition to these two standards, this form of professional development also ties to New York State *Teaching Standard VII: Professional Growth Element VII.2: teachers set goals for, and engage in, ongoing professional development needed to continuously improve teaching competencies.* This individualized, self-directed professional development allows teachers to engage in their own on-going professional development.

## **Chapter 5: Discussion and Conclusion**

### **Overview of Study and Findings**

The increasing curricular demand on K – 12 students to comprehend expository texts has teachers looking for ways to improve comprehension. An integrated curriculum offers the promise of providing students with a curriculum connected across disciplines and enabling students to increase their comprehension of expository texts. To explore that promise, the research question asked was, what is the impact of an integrated curriculum on K – 12 students' comprehension of expository texts in the content areas? The most appropriate way to answer that question was with a research synthesis. The exhaustive literature review and subsequent research synthesis for this study produced four findings. The first is that a key to comprehension of expository texts at the early elementary grade levels appears to be the students' ability to make personal connections with the material being read across an integrated curriculum. The second is that students' comprehension in the upper elementary to high school grade levels can be significantly impacted by activating prior knowledge for an integrated curriculum. The third finding is that when the integrated curriculum includes hands on, interactive practices for students in grades one through six, the impact on student learning behavior and academic performance, including some literacy performance, is positive. The fourth finding appears to be that integrating literacy with nearly any other subject area may produce a positive impact on student academic performance from grades three through eight. These findings then form the basis of professional development for teachers that takes the form of an information-bearing Google Site.

### **Significance of the Findings**

These findings are significant because they contribute new knowledge on integrated curriculum that can impact teachers' curriculum design and instruction. This study shows that making personal connections with material at the early elementary grade levels impacts comprehension of expository texts, that activating prior knowledge at the upper elementary to high school grade levels impacts comprehension of expository texts, that using hands on practices in integrated curriculum positively impacts students' learning behavior and academic performance of students in grades one through six, and that integrating literacy with nearly any other subject area may produce a positive impact on students' academic performance in grades three through eight. These impacts all occur as a result of using some form of integrated curriculum. Therefore these findings on the impact of integrated curriculum are significant to classroom teachers. These findings are also significant to the field of literacy itself. They contribute new knowledge about the specific impact of integrated curriculum on literacy, and they also identify gaps in the existing research.

### **Limitations of the Findings**

The findings for this study do have limitations. One is that they are based on the existing research, and that existing research into integrated curriculum has proven to be somewhat scarce. There was no research found on the impact of integrated curriculum on students in Kindergarten, grade nine, grade eleven, or grade twelve. The majority of the research gathered focused on students in grades three through five. In addition, few studies were found that specifically

examined the literacy impact of integrated curriculum.

### **Conclusion: Answer to the Research Question**

The research question for this research study is, what is the impact of an integrated curriculum on K-12 students' comprehension of expository texts in the content areas? After conducting this study and performing a research synthesis, this researcher determined four findings: that making personal connections with material at the early elementary grade levels impacts comprehension of expository texts, that activating prior knowledge at the upper elementary to high school grade levels impacts comprehension of expository texts, that using hands on practices in integrated curriculum positively impacts students' learning behavior and academic performance of students in grades one through six, and that integrating literacy with nearly any other subject area may produce a positive impact on students' academic performance in grades three through eight. Together these findings provide this answer to the research question. The impact of an integrated curriculum on K-12 students' comprehension of expository texts in the content areas is positive learning behavior and increase of academic performance when using hands on practices in grades one through six and positive academic performance when literacy is integrated with nearly any other subject area in grades three through eight.

### **Recommendations for Future Research**

Because existing studies are scarce, the first recommendation is for more research generally into this topic of curriculum integration. Specific studies that would make

contributions to this area are those that examine integration of mathematics and literacy. The increasing number of word problems appearing in mathematics curriculum would seem to necessitate the integration of math and literacy. Another recommendation is for increased studies that use a consistent measure or rubric for determining impact on students. A more consistent measure would assist with evaluation and comparison of the impact of content area integration.

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## Appendix

### Google Forms Evaluation Survey

Thank you in advance for taking the time to complete this survey. This information will be kept anonymous and will be used to enhance future forms of professional development.

1. How useful did you find this information?
  - a. Very useful
  - b. Somewhat useful
  - c. Not useful at all
  
2. How likely are you to use integrated curriculum in your classroom?
  - a. Very likely
  - b. Somewhat likely
  - c. Not likely
  
3. How accessible was this form of professional development?
  - a. Very accessible
  - b. Somewhat accessible
  - c. Not accessible
  
4. How often do you think you will return to this Google Site?
  - a. 1 – 2 times
  - b. 3 – 4 times
  - c. 4 or more times
  
5. How likely are you to recommend this information and site to a colleague?
  - a. Very likely
  - b. Somewhat likely
  - c. Not likely
  
6. What did you find most helpful and least helpful about this Google Site form of professional development?

Further Suggestions/Comments:

Thank you for your feedback!