Fall 2008

The Importance of Integrating Curriculum Disciplines in Middle School Classrooms

Amanda Vanni
Regis University

Regis University
College for Professional Studies Graduate Programs
Final Project/Thesis

Disclaimer

THE IMPORTANCE OF INTEGRATING CURRICULUM DISCIPLINES IN MIDDLE SCHOOL CLASSROOMS

by

Amanda Vanni

A Research Project Presented in Partial Fulfillment
of the Requirements for the Degree
Master of Education

REGIS UNIVERSITY

October, 2008

ABSTRACT

The Importance of Integrating Curriculum Disciplines in Middle School Classrooms

Integrated curriculum has been a method of teaching towards student interest and success for over 50 years (Beane, 1992). Research has shown that integrated curriculum positively effects students' test scores and content area grades, and for this reason has become a widely promoted curriculum reform strategy. Parker (2007) observes that the real world does not fragment problems into specifically designated content areas, yet students are taught to engage in their "math brain or social studies brain" (p. 1) for fragmented periods of time and then switch their thinking skills in jolted one hour blocks of time. Instead, Parker (2007) addresses the benefit of integrated curriculum to teach students how to utilize their brains in an integrative matter during their formative K-12 years. In addition to Parker's finding, in this paper, I identify the leading research in integrated curriculum and the reasons it is beneficial for middle school learners. Also in this paper is a complete four subject, three trimester integrated curriculum pacing chart for grades six through eight to be easily adopted by the middle school teachers of the Adams 12 Five Star School District in order to begin the implementation of integrated curriculum in local schools.

TABLE OF CONTENTS

Chapter 1

INTRODUCTION

The use of integrated curriculum has been the subject of debate among educational professionals, particularly in regard to middle school learners. Typically, middle school curriculum in the United States is taught through each subject, each discipline, independently of one another. While this method of instruction appeases state lawmakers, due to the ease by which curricula are aligned with state standards, Drake (1998) noted that the use of this pedagogical method does not promote student learning and, moreover, its practice can inhibit student learning. In contrast, integrated curriculum is the method by which instructors unite multiple disciplines which correlate to the students' life experiences and interests through thematic units; thus, students are more willing to engage in their learning, and they retain information longer.

Statement of the Problem

In the U.S. middle schools today, administrators, teachers, and students find it increasingly difficult to promote student achievement in reading, writing, and mathematics in classroom work and on standardized achievement tests while, at the same time, promote students' interest in the lessons. One form of pedagogical reform is to shift the typical individual content curricular format of traditional schools into an integrated content curriculum format. With the use of integrated curriculum, students are able to identify how various content curricula apply to other content areas, as well as their life in and out of school. When curricula are perceived as applicable to the lives of

students, they are better able to develop a vested interest in their learning and are more apt to retain learned information.

Purpose of the Project

The purpose of this project will be to identify the benefits of integrated curriculum in middle schools across the U.S. The current educational literature will be evaluated to assess the benefits and disadvantages of integrated curriculum in classrooms. This author will present the findings in regard to these effects of student learning to the administrators of her school, as well as her induction coordinator and mentor in her school.

List of Definitions

Integrated Curriculum: an integrated curriculum is one that transcends the boundaries imposed by traditional subject groupings. It allows students to move across disciplines as they learn about their world. Integrated curriculum does not do away with the distinction between those subjects or learning areas; these remain important for the purposes of balance and organization (Department of Education, Tasmania, 2007).

Integrated Curriculum: a continuum along which progressively more and more connections are made (Drake, 1998).

Interdisciplinary Curriculum: a curricular organization which cuts across subject matter lines to focus upon comprehensive life problems or broad based areas of study that brings together the various segments of the curriculum into meaningful association (Lake, 2001).

Chapter Summary

It is this researcher's position that an integrated curriculum should be taught in the middle schools of the U.S. in order to increase: (a) student achievement, (b) student interest, and (c) long term retention of information by students. Educators must connect curricula to the students' lives through thematic units that close the gap between disciplines and promote logical connections between each content area and real life experiences. In Chapter 2, the Review of Literature, this researcher presents the background material to support the statement that the use of integrated curriculum is critical in order to increase student achievement in middle schools. In Chapter 3, Methods, this researcher's procedures for the implementation of integrated curriculum will be presented.

Chapter 2

REVIEW OF LITERATURE

The purpose of this project will be to identify the benefits for students, when integrated curricula are used in middle school in the United States, and serve as a reference for middle school teachers to use to implement integrated curricula into their middle schools. With the requirements put in place by the authors of the No Child Left Behind Act (NCLB; 2001, as cited in White House, 2002), members of state and local education departments find it difficult to meet national, state, and district standards while they increase student achievement and teach in a manner that is consistent with the developing middle school learner's brain. As stated by Muth and Alvermann (1999),

> An integrated curriculum in the middle grades builds upon concepts that young adolescents find compelling. Working as members of interdisciplinary teams, teachers engage students in setting goals, integrating content through thematic units, learning in a variety of organizational structures, and communicating clearly about what it is they are accomplishing. When national standards support teachers' efforts to address the concerns of adolescents and the social issues surrounding their development, these standards are more likely to be used as guides in designing an integrated curriculum that makes sense at the local level. (p. 81)

What Is Integrated Curriculum?

In an integrated curriculum at the middle school level, learners are taught to explore knowledge in various aspects that: (a) combine subjects through thematic units, (b) emphasize the use of projects, (c) demonstrate relationships among concepts, and (d) utilize flexible schedules and student groupings. Simultaneously, students explore the "Who am I?" and "What am I doing here?" questions that adolescents attempt to

understand during this stage of development (Lake, 2001; Wavering, 1995). In short, teachers who implement integrated curriculum provide students with a real world application of their education when they allow students to participate in meaningful learning experiences that develop: (a) skills, (b) knowledge, and (c) the idea of working within relationships. All of these are crucial attributes for students in their years beyond K-12 education.

Although the use of integrated curriculum connects various disciplines, students still learn the processes, skills, and ways of knowing in each independent subject (Wood, 2001). The difference then, between integrated curriculum and subject centered instruction, is that in subject centered instruction, the educator's focus is solely on the content instead of the: (a) processes, (b) skills, and (c) ways of knowing. Teachers throughout the U.S. will affirm that content knowledge is crucial in order for students to be successful, which is where misunderstandings about integrated curriculum can be made. With the use of integrated curriculum, students are still accountable for knowing critical information, but it is not taught in a force fed, rigid manner that subject centered teachers employ. Instead, the critical information is learned by students through creative, connected units that support exploration and student learning.

Lake (2001) cited Markus (1991) and stated that, "The integrated curriculum is a great gift to experienced teachers. It's like getting a new pair of lenses that make teaching a lot more exciting and help us look forward into the next century. It is helping students take control of their own learning" (p. 1). Drake (1998) affirmed that, the use of "Interdisciplinary curriculum helps teachers deal with the inherent complexity of the

world, overcomes rigid perceptions of subject boundaries, and supports the claim that all knowledge is interrelated" (p. 11).

History of Integrated Curriculum

Integrated curriculum has been the topic of educational discussions over the last 50 years, but it has become more prominent in such discussions in the last 15 years (Beane, 1992). With each consecutive year in the profession, teachers find that more content must be taught, and many teachers feel as though there is not enough time to fit these required pieces of curriculum into the school day. In addition to this stress, middle school teachers need to teach to: (a) their students' curiosities about their physical changes, (b) their identities, (c) their relationships with peers and adults, and (d) their future prospects. All of these intersecting factors result in the need and opportunity to teach through the utilization of integrated curriculum which has the capability to pull these powerful themes together while the focus is maintained on the national, state, or district mandated curriculum at the same time. Rather than teaching artificial subjects and conflicts, teachers have the opportunity to: (a) draw upon the life experiences of their students, (b) encourage and hold their interest, and (c) promote life long learning practices.

In addition to the aforementioned factors for the development and implementation of integrated curriculum, teachers and administrators have found themselves in difficult situations with the onset of the NCLB (2001, as cited in White House, 2002). In order for administrators to help boost their students' language arts and mathematics scores, some have resorted to a reduction in social studies and science class periods and have added that time to language arts and mathematics class time. What then happens to the social

studies and science curricula, which are still required by law for students to learn? The use of integrated curricula allows teachers the flexibility of time and content to be fused and still meet the NCLB requirements and state standards. According to Vogler (2003), some teachers have reported that the use of integrated curriculum is the only way in which they can achieve both.

What Is Traditional Content Area Curriculum?

In the 1890s, a separate subject curriculum was established by the members of the National Education Association (as cited in Beane, n.d.) for elementary and high schools, to mimic the format of universities of the time. Students were expected to master the content from each traditional subject area and demonstrate the learned curricula, usually through standard written tests.

In subject centered curricula, it is held that the mind of each student is a blank slate, ready to be filled with a prescribed set of information that administrators in school systems deem important for students to learn (Queen, 1999). Thus, the teacher of each independent subject area has his or her own set curriculum to fill in the mental void of the students. Each curriculum is paced, according to the timeframes of the textbook companies and the teachers, and there is little room for individual student needs. If students need a faster or slower pace of the curriculum, due to advanced or deficient levels of understanding, these accommodations can rarely be met in order to keep pace with the curriculum.

Also, the focus of traditional subject centered curricula is on students' rote memorization rather than the teaching of thinking and reasoning skills (Queen, 1999).

Thus,

> [the] "back to the basics" drive begun in the mid-to-late 1970s led to a drop in thinking and writing skills. It ignored one of the fundamental aims of American education—exploration. By treating teachers as technicians rather than artists, the status of teachers was lowered both in the eyes of administrators and the public. Exogenism often seeks to make curricula "teacher proof," implying that because the teacher is only a technician, the well-built curriculum should be able to work effectively even if the teacher is incompetent. (p. 110)

Without competent teachers to teach students thinking, reasoning, and writing skills, it would be difficult to find a classroom in the U.S. where all students sufficiently meet the adequate yearly progress requirements for NCLB, (White House, 2002).

Today, members of the National Middle School Association and the Carnegie Council on Adolescent Development (both cited in Dowden, 2007) do not support subject centered teaching. Instead, they support an integrated approach to education. Through their research, the members of both associations have found increased learning from early childhood to higher education with the implementation of integrated curriculum (Beane, n.d.). According to Dowden, in addition, the NMSA members have called for student centered curricular designs that are relevant, challenging, integrative, and exploratory for early adolescent learners, in order for educational progress to take place in the U.S.

How the Adolescent Brain Learns

Adolescence is a time of great change physically, emotionally, and intellectually, and it is imperative that the educational practices of middle grade teachers reflect these changes and help nurture the students' growth in all areas (Muth & Alvermann, 1999). According to Muth and Alvermann, in Piaget's (1973, as cited in Muth & Alvermann) perspective of adolescent learners' brains, these individuals are capable of concrete operational thought, where they are able to: (a) identify relationships, (b) classify, (c)

understand spatial relationships, (d) think about two or more characteristics of an object simultaneously, and (e) understand that the characteristics of objects can be changed. The major limitation that adolescent learners experience during this period of development is that their brains are capable of logical thinking only about concrete objects. As a result, students need to learn through objects they can see, manipulate, and with which they have direct contact.

Some students at the middle school level are able to begin to enter Piaget's (1973, as cited in Muth & Alvermann, 1999) level of formal operational thought, at which point their brain is able to: (a) address and understand the abstract, (b) analyze their own thoughts, and (c) form and test hypotheses (Muth & Alvermann). The majority of middle school students display characteristics of both stages (i.e., both concrete and formal) of cognitive development, which requires flexibility and understanding on the part of classroom educators to ensure that all students' needs are being met, while cognitive challenges take place. Queen (1999) stated, "Intellectually, middle school students tend to be curious and inquisitive; prefer active over passive learning activities; prefer interaction with peers during learning activities; want opportunities to express originality on an individual basis; and like to participate in practical problem-solving situations" (p. 196).

In addition to the specific brain attributes of middle school learners, Cain and Cain (1997, as cited in Drake, 1998) identified 12 additional principles that apply to brain/mind learning for all learners.

1. The brain is a whole system and includes physiology, emotions, imagination, and predisposition. The must all be considered as a whole.

2. Our brains develop in relationship to interactions with the environment and with others.
3. A quality of being human is the search for personal meaning.
4. We create meaning through perceiving certain patterns of understanding.
5. Our emotions are critical to the patterns we perceive.
6. Our brains process information into both parts and wholes at the same time.
7. Learning includes both focused attention and peripheral input.
8. Learning is both unconscious and conscious.
9. Information (meaningful and fragmented) is organized differently in our memory.
10. Learning is developmental.
11. The brain makes the optimal number of connections in a supportive but challenging environment; perceptions of threat inhibit [learning].
12. Every brain is unique in its organization. (p. 166)

Altogether, the middle school learner's brain is complex, ever changing, and in need of variation, understanding, patience, and stimulating concrete activity before it is able to attain abstract comprehension (Drake, 1998). Intrapersonal connections must be made in order for learners to retain information, and interpersonal relationships must be fostered in learning environments for adolescents to respond favorably to their educational stimuli.

How Does the Use of Integrated Curriculum Effect Middle School Learners?

Beane (2003, as cited in Paterson, 2003) maintained that integrated curriculum is more rigorous than traditional curricula, but the relevance of integrated curriculum to the students' lives creates an impressive display of student learning and engagement in their studies as well as interest in the world around them. The use of integrated curriculum challenges the students to think and learn in a way in which it is not possible with the implementation of traditional curriculum. Queen (1999) observed, "Learning is inhibited by traditional methods that require students to mindlessly recall data they have read in

textbooks or heard from the teacher, but that does not tap into the students' thinking abilities" (p. 115). Integrated curriculum is the antidote to the mindless recall of traditional methods.

As reported by Kushman (2001), student engagement and learning increases when teachers: (a) use thematic units as the organizational principle for instruction; (b) engage students in projects that require knowledge and skills across several subject areas; (c) make use of other resources, including hands-on material; (d) use performance assessments that allow students to demonstrate knowledge and skills from several subject areas; (e) focus on problem solving skills; (f) assign tasks that are similar to those students will find in the workplace in future years; (g) function as facilitators rather than lecturers; (h) select real world problems and demonstrate how academic skills are applied in order to solve such issues; and (i) utilize alternative assessments repeatedly over the course of time. Middle school students respond in a favorable manner to this method of instruction and demonstrate this by their interest in the lessons and retention of the information.

For students, the use of integrated curriculum: (a) helps them apply skills to the real world, (b) helps them retrieve information faster due to deeper understanding and knowledge, (c) encourages them to acquire depth and breadth in learning, (d) promotes positive student attitudes toward learning, and (e) provides more quality time for curriculum exploration (Lake, 2001). Middle school learners learn valuable, life long skills and lessons which transcend K-12 education.

The postsecondary implications from the use of integrated curriculum could be the most important factor for educators and students alike (Kerka, 2000). All of the

learning that educators provide to students should prepare them for the use and implementation of their skills and knowledge when their years of education are concluded. Kerka found that sex role stereotypes, in regard to occupations, are formed early; many students at risk, girls, and members of minority groups limit their career choices early. Few middle school students have realistic career plans, and many lack awareness of work in the real world. Kerka found that, with the use of integrated curriculum, these pitfalls which are present in the middle school curricula, were avoided, and students were able to develop an understanding of future career expectations and current practice which are associated with those expectations. Most importantly, students were not deprived of the knowledge and skills of individual curricula while they participated in integrated curriculum. Students gained the knowledge, which was aligned with state standards, as they expanded their horizons of career awareness.

Benefits of Integrated Curriculum

Adolescents have much more intelligence and academic capability than many parents, teachers, and citizens of society give them credit (Beane, 1992). All too often, adolescents are labeled as being too hormonal to grasp complex issues. Even though adolescents experience a tremendous amount of change physically and mentally, it is precisely these changes that can act as the catalyst for the successful integration of curriculum in middle schools. Nesin (2003, as cited in Paterson, 2003), a middle school teacher in Carmel, Maine, mentioned the first success in school in 7 years of an academic and disciplinary problem student, due to the use of integrated curriculum. Nesin pointed out that this student, prior to his seventh grade year, had been suspended over 40 times and had rarely met proficient academic achievement levels. However, after Nesin

allowed students to participate in an integrated curriculum, the problem student became engaged and excited about school; he even became a leader in the school. His enthusiasm for the outside world was fostered by the use of integrated curriculum, and he led his school in a fundraiser for a struggling village, in which they raised over $600 together. Paterson maintained that the use of integrated curriculum helps students leap above and beyond the confines of traditional curriculum, and that it helps all students to succeed, rather than the selected handful of students who find success in traditional curricula.

In addition to the engagement of students in their learning, with integrated curriculum, they are taught how to solve problems as they encounter them in their years after formal education is complete (Parker, 2007). Parker (2007) maintains that the real world does not fragment problems into specifically designated content areas, yet students are taught to engage in their "math brain or social studies brain" (p. 1) for fragmented periods of time and then switch their thinking skills in jolted one hour blocks of time. Instead, Parker (2007) addressed the long term benefit of integrated curriculum to teach students that real world problems are solved by a combination of skills from all content areas, and students need to be taught how to utilize their brains in this matter during their formative K-12 years, instead of suddenly changing their way of thinking once they enter the work force. Drake's (1998) statement was similar to Parker's findings.

> Today's mandate is for students to become productive citizens of the 21st century. This means more than just obtaining high grades in school; it means being able to apply the skills learned within real life contexts. It means education that is concerned with what students know and can do, how they interact with others, and what they will face in the world. (p. 13)

Beane (1992) identified the strengths of integrated curriculum in his brief description of an integrated unit.

> Imagine a unit on identities in which students examine how self-perceptions are formed, how culture influences self-concepts, and how increasing cultural diversity promises to reshape politics and the economy. In such a unit, early adolescents develop skills related to communication, problem-solving, research, and social action. They expand their critical, creative, and reflective thinking skills and become acquainted with a rich array of facts and concepts from a wide variety of sources. They can explore enduring, but elusive, ideas like democracy, human dignity, and cultural diversity. (p. 1)

The members of the NMSA (2003, as cited in Dowden, 2007) reported that the use of integrated curriculum at the middle school level resulted in several outcomes:

1. they achieved statistically significant student outcomes on both academic and affective measures over schools less committed to this approach in the areas of language arts, mathematics, social studies, and science;
2. students in integrated programs consistently out-performed students in traditional classes on national standardized tests, on state-wide tests, and on program-based assessment; and
3. they showed statistically larger students growth on the same measures across the middle years of their schooling, than students in other schools. (pp. 54)

As previously stated, teachers in the U.S. are under extreme pressure from the administrative mandates of the NCLB (2001, as cited in White House, 2002) to ensure that their students outperform their peers across the country in language arts, mathematics, and science. Paterson (2003) pointed out that students, who have been taught with the use of integrated curriculum, do better on standardized tests than their peers who have been taught through traditional curricula.

Now What? Implementation of Integrated Curriculum into Schools

In order for teachers in middle schools throughout the U.S. to successfully implement integrated curriculum, it is requisite that intense planning, preparation,

organization, and collaboration take place among teachers and administrators (Wallace, Sheffield, Rennie, & Venville, 2007). The first steps to successfully implement integrated curriculum requires the formation of learning teams within schools whose members: (a) are provided with stability and flexibility from the administrators of the school, (b) have the opportunity to participate in integrated curriculum professional development days, and (c) are willing to make long term commitments to the development of integrated curriculum. Additionally, teachers must be willing to take risks with such a complex overhaul of the current subject based curricula and be willing to put in the time required to make integrated curriculum successful. Although, initially, integrated curriculum takes more time than teachers and administrators expect, Bernt, Turner, and Bernt (2005) found that teachers and administrators wholeheartedly agreed that the learning outcomes of the students was worth the effort and up front time. Lake (2001) pointed out that, if teachers are not provided with adequate inservice time or time to thoughtfully develop an integrated curriculum, they may end up with the development of a curriculum that is a little of everything, but falls short of a meaningful integrated approach to the curriculum. It is crucial for teachers to have initial and ongoing training in regard to integrated curriculum to ensure that best practices are utilized, and that past successes and failures are closely examined in order to replicate the positive results.

The implementation of integrated curriculum is most successful when a variety of teaching and learning strategies are put in place in order for students to have and understand their educationally coherent experiences (Pate et al., 1997). A common effective strategy to implement first is brainstorming. Either independently, or with small groups, students list their prior knowledge, or what they already know about the topic.

This helps students to organize their thinking and prepare for additional learning. After students have time to develop an initial list, the results of the brainstorming should be discussed as a class to compile lists. Then, students should reassemble into small groups to extend their lists and make predictions.

In an effective integrated curriculum classroom, the students should ask the questions that drive the instruction (Pate et al., 1997). These questions will be relevant to their lives, and the curriculum will match their curiosity. The next strategy is for students to make connections between their own lives and the topic that is studied. These connections should be limited to various themes in the topic area of study and the real world, such as: (a) poverty, (b) prejudice, (c) violence, and (d) race relations.

Another effective strategy for the implementation of integrated curriculum is storytelling (Pate et al., 1997). Pate et al. stated, "Storytelling is motivational, attention-getting, and brings issues and ideas to life" (p. 63). As a class, the storytelling technique can be: (a) read stories together, (b) watch movies, or (c) tell the class stories aloud in the oral tradition method. After students read, watch, or hear a story, they are to write from the perspective of the main character in the story without classroom discussion beforehand.

Pate et al. (1997) reported that the next beneficial strategy to implement integrated curriculum is use of the jigsaw strategy. Students are placed in small groups, and the members of each group are responsible to learn about a segment of the assigned topic. Then each group shares what they learned about that segment with the whole group. As the students share their portions of the lesson, they gain a better understanding of the themes and develop higher level insights into the content.

After students have an understanding of the topic and the themes that intertwine, they utilize the data retrieval chart strategy to help them understand the larger picture of the topic they study (Pate et al., 1997). Generally, in data retrieval charts, there are several conflicting issues related to one topic that a team of students evaluate from opposite sides of the issue. Students must find their own resources in this strategy in order to learn the factors of the conflict and the perspective of the opposite sides. After the student led groups compile team charts, the class discusses them together, and they develop a larger, data retrieval chart.

According to Pate et al. (1997), the use of simulation strategies can help students to understand historical events and hypothetical scenarios, and the events can come alive through the recreation as students act out the various roles of a problem. Students have the opportunity to: (a) decide outcomes agreeable to their opinion and moral values, (b) compare those outcomes to real life outcomes, and (c) debate over whether the historically accurate results were beneficial or detrimental to society. The students attain practice in the solution of real world scenarios that reading excerpts from textbooks does not allow.

Collaborative problem solving is a strategy that Pate et al. (1997) incorporated into the implementation of integrated curriculum, which allowed teachers to discuss current, real world issues in the classroom in order to teach historical events, or even fictional stories. This gave the students an opportunity to make connections and find common patterns of humanity and society over a given period of time.

In addition to the implementation strategies, also, Pate et al. (1997) noted that establishment and maintenance of effective communication between: (a) teachers and

students, (b) teachers and parents, (c) students and outside experts, and (d) teachers with teachers. Pate et al. stated, "Effective communication meant exchanging ideas, feelings, interests, and knowledge" (p. 68).

To effectively communicate with students, Pate et al. (1997) found that communication must be ongoing, and students need to feel safe to express their concerns, feelings, and ideas together with the teachers as a team, in small groups, and one-on-one. Conferences must be held frequently between teachers and students, where expectations, intentions, goals, problems, questions, and sources are openly discussed.

Integrated curriculum is an unfamiliar concept for many parents and, therefore, it is crucial that teachers discuss the curriculum, philosophy, and expectations with the parents at the beginning of the school year so the parents can help the students to be successful throughout the year (Pate et al., 1997). This communication provides a support structure to facilitate coherence and student learning.

Due to the nature of integrated curriculum, often, students need to contact outside resources in quests for information, therefore, students must be taught to appropriately utilize the skill of communication with experts in the real world (Pate et al., 1997). Students need to develop a list of questions to ask of the expert, organize them into topics, and clearly and confidently approach the expert in order to have insightful conversations that aid in student learning. Again, teaching students real world skills and giving them those experiences during their formal education years will provide them an advantage in the work world, and the needed confidence to continue to explore the world around them.

The last critical communication factor is that between teachers (Pate et al., 1997). Pate et al. maintained that teachers must, "Exchange [information] about personal attributes; about individually and commonly held interests and talents; about their current subject-area teaching goals, themes, and organizing concept; and about their general academic knowledge-level expertise" (p. 74). Without weekly communication, the implementation of integrated curriculum falls apart at its foundation and increased student learning will not take place. However, when adequate, meaningful communication is the bedrock on which teachers plan and implement integrated curriculum, the lessons are more focused, organized, and meaningful to students and, therefore, student learning is improved in the classroom.

According to Berlin (2007), it is time for educators in the U.S. to join the educators of Canada, the Czech Republic, Israel, Italy, the Netherlands, Sweden, and the United Kingdom who have integrated middle school curriculum in order to help students: (a) achieve more, (b) understand more, and (c) enjoy more in the classroom. Numerous educators in other countries have implemented integrated curriculum and have seen vast improvements among the students, and Berlin maintained that it is time for the students in the U.S. to achieve this same success.

Quirk (2003, as stated in Paterson, 2003) stated, "If you are a teacher who likes to fill out your planning book during the summer, you are not going to like this approach. But. . . after seeing what I have seen this year, this is right for the students" (p. 12).

Chapter Summary

As demonstrated in this review of literature, there are many reasons for the use of integrated curriculum in the middle schools throughout the U.S. Members of the NMSA

(2003, as cited in Dowden, 2007) found a direct correlation to increased student achievement in language arts, mathematics, social studies, and science through the practice of integrated curriculum in the classroom.

It is this researcher's opinion that, with the increased pressure from the NCLB (2001, as cited in White House, 2002), for teachers to increase their students' test scores, educators need to stop their implementation of untested and ineffective pedagogical tactics and, instead, implement integrated curriculum to help students become more interested in their curricular endeavors, retain more information, and expand their understanding to attain in-depth knowledge that they can apply to their lives after their formal educational years are behind them.

This researcher agrees strongly with Humphreys' (1981, as cited in Lake, 2001), statement.

> It is taken for granted, apparently, that in time students will see for themselves how things fit together. Unfortunately, the reality of the situation is that they tend to learn what we teach. If we teach connectedness and integration, they learn that. If we teach separation and discontinuity, that is what they learn. To suppose otherwise would be incongruous. (p. 5)

In Chapter 3, Methods, this researcher's procedures for the implementation of integrated curriculum will be presented. In Chapter 4, this researcher will provide integrated curriculum pacing charts for grades 6, 7, and 8 for teachers who do not currently utilize integrated curriculum in their classrooms. In Chapter 5, discussion and colleague reviews of the project are presented.

Chapter 3

METHOD

The purpose of this project will be to develop an integrated curricula pacing chart designed for teachers of sixth, seventh, and eighth grade classrooms to use as a new scope and sequence. The implementation of integrated curriculum came to the attention of this researcher when she taught in a seventh grade language arts classroom for 2 years and utilized the traditional subject based curriculum. This researcher began to implement pieces of integrated units into her classroom and found that students reacted positively both in enthusiasm and in academic achievement to such units. It was through this experience that this researcher identified the need to research integrated curriculum in more depth in order to understand its full potential when utilized and, eventually, led to implementation in her own classroom.

Target Audience

This project will be designed for the use of middle school teachers in Adams 12 Five Star Schools. Teachers, who see the need for increased student achievement, increased student interest in school, and increased student depth of knowledge, will be interested in this project.

Goals and Procedures

The goal of this project will be to provide teachers with pacing charts in language arts, mathematics, social studies, and science to facilitate the implementation of integrated curriculum. The pacing charts will provide a new scope and sequence for

middle school teachers in Adams 12 Five Star Schools, that aligns each of the content curriculum with one another so that integrating curriculum within schools becomes possible.

Peer Assessment

Assessments of the teaching unit will be obtained from four colleagues through informal feedback, recommendations, and suggestions for future research. Each colleague will be given a copy of the document and be asked to review it for accuracy, ease of use and implementation, and relevancy to the state and district standards. Each reviewer will provide comments, editing marks, and suggestions on the paper copy.

Chapter Summary

The importance of student achievement among middle school students is the subject of much research in the United States. Through this project, this researcher will use knowledge gained from an extensive review of literature and personal teaching experience to provide colleagues with the information and a pacing chart example to implement integrated curriculum, with a focus on increased student achievement. In Chapter 4, this researcher will provide integrated curriculum pacing charts for grades 6, 7, and 8 for teachers who do not currently utilize integrated curriculum in their classrooms. In Chapter 5, discussion and colleague reviews of the project are presented.

Chapter 4

RESULTS

This project was intended to identify the benefits of integrated curriculum in the middle school setting. To accomplish the practicality of the project, this researcher created a new integrated curriculum pacing chart for sixth, seventh, and eighth grades using the Adams 12 Five Star Schools existing scope and sequence mandates. The middle schools in Adams 12 Five Star Schools follow a trimester system, which was maintained in the following new pacing charts. These pacing charts were designed to align the curriculum closely so that integration is not only possible, but it was simplified for teachers to implement. However, integrated curriculum does not just occur. Teachers must communicate with one another and explicitly teach in an integrated fashion in order for middle school learners to make connections across content lines.

Sixth Grade Integrated Curriculum Pacing Chart First Trimester			
Language Arts: Teach and review pre-reading strategies: prior knowledge, purpose for reading, predicting, and generating questions before reading. After reading, teach: summarizing and synthesizing, locate/paraphrase main idea and details, and sequencing.	**Math:** Factors and Multiples: Teach and review number theory, factors, multiples, primes, composites. Data: Teach and review gathering data, graphical representation of data.	**Science:** Teach and review scientific investigation: (a) experimental question, (b) create hypothesis from cause and effect relationship, (c) conduct multiple trials, (d) collect data using metric measurements, (e)	**Social Studies:** Teach and review how to use maps, globes, and other geographic tools to locate information about people, places, and environments. Students will identify essential features and functions of maps,

Reading: Students read fiction literature and identify: story elements, plot line, conflict (man v. man, nature, himself, and society). Vocabulary: Students will use information from reading to increase vocabulary level, context clues, and word parts. Students can identify and use metaphor, simile, personification, flashback, foreshadowing. Fluency: Independent reading at independent reading level. Writing: Students write a personal narrative pre-assessment as well as a creative choice writing piece, connecting to other content area learning themes.	Reading Connection: Students will make predictions, understand levels of comprehension, draw conclusions, and identify and interpret story elements. Writing Connection: Students will respond to questions in complete sentences, have correct use of verbs and nouns, write well developed paragraphs using topic sentences, relevant details to support topic sentence, and a concluding sentence. Students will interpret data results in writing as well as in graphical representation, using the aforementioned criteria. Science Connection: Students will provide experimental questions, collect data using metric measurements, record data using tables, and interpret data to draw conclusions.	record data in graphs and tables, (f) interpret data from tables and graphs, and (g) draw conclusions. Math Connection: Students will practice scientific investigation skills by collecting, graphing, and analyzing data which can be transferred to mathematics curriculum. Writing Connection: Students will write lab reports, content-based reports, comparison/contrast summaries, and process descriptions, using correct English grammar and writing rules. Social Studies Connection: Students will record data from Social Studies reading using tables and graphs.	globes, and aerial photographs; use and interpret maps, globes, charts, and geographic databases; use latitude and longitude to locate places; locate major physical features in Canada and Latin America; define the concepts of location, direction, distance, scale, movement, and region in Canada and Latin America; Students will identify the human and physical characteristics of places using multiple criteria, and will identify how those places change due to natural processes and human activity. Reading Connection: Students will read and comprehend nonfiction literature. Writing Connection: Students will write a creative choice writing piece, connecting nonfiction learning with fictional aspects. Students will write using conventional English grammar and writing rules. Math and Science Connection: Students will graph and interpret data from Canada and Latin America learning.

Sixth Grade Integrated Curriculum Pacing Chart Second Trimester			
Language Arts: Teach and review pre-reading strategies: prior knowledge, purpose for reading, predicting, and generating questions before reading. After reading, teach: compare/contrast text with similar themes and ideas, summarize and synthesize, locate and paraphrase main ideas and details, inference, sequence, cause/effect, compare/contrast, problem/solution. Reading: Students read fiction, nonfiction, and poetry literature and identify: story elements, plot line, conflict, rhyme, rhythm, stanza, line, syllable, repetition. Vocabulary: Students will use information from reading to increase vocabulary level, context clues, word parts, and reference guides. Students can identify and use alliteration, onomatopoeia, hyperbole, idiom Fluency: Independent reading at independent reading level. Writing: Students write a personal reaction writing piece, connecting to other content area learning themes.	**Math:** Fractions, Decimals, Percents: Teach and review relationships between fractions, decimals, and percents. Shapes and Designs: Teach and review two-dimensional geometry, properties of polygons, angle, measures, side-angle relationships, tilting. Reading Connection: Students will predict and generate questions from their reading, summarize, and synthesize information to accommodate mathematical inquiries. Writing Connection: Students will respond to questions in complete sentences, have correct use of verbs and nouns, write well developed paragraphs using topic sentences, relevant details to support topic sentence, and a concluding sentence. Students will interpret data results in writing as well as in graphical representation, using the aforementioned criteria.	**Science:** Teach and review the characteristics and structure of living things, the processes of life, and how living things interact with each other and their environment: Students will describe the causes and effect of deforestation in the rain forest, describe the causes and effects of population change, identifies and explains adaptations of plants and animals and acid rain on an ecosystem, describes the roles of organisms in a food web, understand plant and animal cells, body cell division, human reproductive system, and communicable and non-communicable diseases. Students will understand the basic traits and functions of genes and chromosomes. Math Connection: Students will practice fractions and decimals by creating and solving word problems through the findings in their lab experiments.	**Social Studies:** Teach and review the universals of culture to explain how people live in Canada and Latin America. Describe how conflict and cooperation among people create political, economic, and social divisions. Teach the reasons for growth and decline of human settlement in aforementioned areas. Explain how locals depend and adapt to their natural environment and utilize specific resources. Reading Connection: Students will read and comprehend nonfiction literature. Writing Connection: Students will write a personal reaction writing piece, reflecting on the lifestyle and culture of the people in Canada and Latin America. Students will write using conventional English grammar and writing rules.

Math Connection: Students will utilize compare/contrast strategy across the curricula to draw upon similarities and differences in all areas of curricula. Social Studies Connection: Students will write a personal reaction piece on the lifestyle to which they are accustomed in the United States, and compare that with their writing piece to be completed in Social Studies.	Science Connection: Students will accurately use fractions and decimals in their lab experiments.	Writing Connection: Students will write lab reports, content-based reports, comparison/contrast summaries, and process descriptions, using correct English grammar and writing rules. Social Studies Connection: Students will recognize the ecosystems and predator-prey relationships in Canada and Latin America.	Math and Science Connection: Students will graph and interpret data from Canada and Latin America learning.
Sixth Grade Integrated Curriculum Pacing Chart Third Trimester			
Language Arts: Teach and review pre-reading strategies: prior knowledge, purpose for reading, predicting, and generating questions before reading. After reading, teach: compare/contrast text with similar themes and ideas, summarize and synthesize, locate and paraphrase main ideas and details, inference, sequence, cause/effect, compare/contrast, problem/solution. Reading: Students read fiction, nonfiction, and poetry literature and identify: story elements, plot line,	**Math:** Covering and Surrounding: Teach and review developing strategies and algorithms for finding the perimeter and area if rectangles, triangles, and circles. Bits and Pieces: Teach and review understanding skill with addition, subtraction, multiplication, and division of fractions and decimals solving percent problems. Probability: Teach and review reasoning about uncertainty experimental and theoretical	**Science:** Teach and review the physical and chemical properties of common solids, liquids, and gases. Students will investigate the properties of chemicals in the environment, and their impact. Students will identify causes for change in systems. Students will understand how science and technology is used in every day life, and how it affects the demand for renewable resources.	**Social Studies:** Teach and review the major people and events of Canada and Latin America. Students will be able to identify the difference between primary and secondary sources to analyze historical data. Students will give examples of political organizations and self government practiced by indigenous peoples in Canada and Latin America. Reading Connection: Students will read and comprehend nonfiction literature.

conflict, act, scene, narrator, and dialogue. Vocabulary: Students will use information from reading to increase vocabulary level, context clues, word parts, and reference guides. Students can identify and use oxymoron. Fluency: Independent reading at independent reading level, focusing on reading with expression (drama). Writing: Students write a How-To writing piece and give a speech to the class, as well as write a Personal Narrative piece connecting to other content area learning themes. Math Connection: Students will utilize compare/contrast strategy across the curricula to draw upon similarities and differences in all areas of curricula. Social Studies Connection: Students will creatively and effectively compare their lives in the United States to those of students in Canada and Latin America.	probabilities; equally likely and equally unlikely events. Reading Connection: Students will predict and generate questions from their reading, summarize, and synthesize information to accommodate mathematical inquiries. Writing Connection: Students will respond to questions in complete sentences, have correct use of verbs and nouns, write well developed paragraphs using topic sentences, relevant details to support topic sentence, and a concluding sentence. Students will interpret data results in writing as well as in graphical representation, using the aforementioned criteria. Science Connection: Students will accurately use fractions and decimals in their lab experiments. Students will accurately theorize probability in their lab experiments.	Math Connection: Students will practice fractions, decimals, and probability by creating and solving word problems through the findings in their lab experiments. Writing Connection: Students will write lab reports, content-based reports, comparison/contrast summaries, and process descriptions, using correct English grammar and writing rules. Social Studies Connection: Students will find reliable electronic and printed media sources to find information.	Writing Connection: Students will write a personal narrative writing piece, reflecting on the lifestyle and culture of their lives in the United States in comparison to the people in Canada and Latin America. Students will write using conventional English grammar and writing rules. Math and Science Connection: Students will graph and interpret data from Canada and Latin America learning.

Seventh Grade Integrated Curriculum Pacing Chart First Trimester			
Language Arts: Teach and review pre-reading strategies: prior knowledge, purpose for reading, predicting, and generating questions before reading. After reading, teach: summarize and synthesize, locate and paraphrase main idea, make reasonable inferences, locate and recall different text structures: cause and effect. Reading: Students read fiction, nonfiction, and poetry literature and identify: story elements and plot line from 6th grade, point of view and perspective, identify and give examples of conflict (man v. man, nature, himself, society Vocabulary: Students will use information from reading to increase vocabulary level, context clues, word parts. Students can identify and use point of view, dialect, and character development. Fluency: Independent reading at independent reading level. Writing: Students write a cause and effect pre-assessment writing piece and personal narrative writing piece, connecting to other content area learning themes.	**Math:** Using Rational Numbers: Teach and review the understanding of and skill in: (a) addition, (b) subtraction, (c) multiplication of fractions and decimals, and (d) solving percent problems. Fractions, Decimals and Percents: Teach and review determining relationships between fractions, decimals, and percents, and develop strategies and algorithms to solve problems using fractions, decimals, and percents. Reading Connection: Students will predict and generate questions from their reading, summarize, and synthesize information to accommodate mathematical inquiries. Writing Connection: Students will respond to questions in complete sentences, have correct use of verbs and nouns, write well developed paragraphs using topic sentences, relevant details to support topic sentence, and a concluding sentence. Students will interpret	**Science:** Teach and review how to create a written plan and conduct a scientific investigation. Students will conduct safe laboratory procedures and communicate work in graphic displays, orally, and in written reports. Students will compare, analyze and evaluate alternative procedures, explanations of data, and models for a scientific problem. Students will compare and contrast theories and hypothesis using research based evidence. Students will use this research to predict future events and changes in a physical or biological situation. Math Connection: Students will select and use appropriate mathematics and technology to gather, process, and analyze data, and report the results of the investigation. Writing Connection: Students will write lab reports, content-based reports, comparison/contrast	**Social Studies:** Teach and review the physical and human features in the Eastern Hemisphere: (a) location, (b) direction, (c) distance, (d) scale, (e) latitude, (f) longitude, (g) movement, and (h) region. Students will identify and compare human and physical characteristics of places and how these places change due to natural process and human activity. Students will identify major events and people of the Eastern Hemisphere, how and why they depend on, adapt to, and impact the natural environment. Reading Connection: Students will read and comprehend nonfiction literature and distinguish between primary and secondary sources. Writing Connection: Students will write a cause and effect writing piece, reflecting on the lifestyle and culture of the people in the Eastern Hemisphere and how natural resources are impacted.

Math Connection: Students will utilize compare/contrast strategy to draw upon similarities and differences in all areas of curricula.	mathematical relationships in writing, using the aforementioned criteria. Science Connection: Students will accurately use fractions, decimals, and percents in their lab experiments.	summaries, and process descriptions, using correct English grammar and writing rules.	Students will write using conventional English grammar and writing rules. Math and Science Connection: Students will theorize how future cultural aspects of the Eastern Hemisphere will impact the natural surroundings.
Seventh Grade Integrated Curriculum Pacing Chart Second Trimester			
Language Arts: Teach and review pre-reading strategies: prior knowledge, purpose for reading, predicting, and generating questions before reading. After reading, teach: compare and contrast texts with similar plots, themes and ideas, summarize and synthesize, locate and paraphrase main idea, make reasonable inferences, locate and recall different text structures: cause and effect and problem solution. Reading: Students read fiction, nonfiction, and poetry literature and identify: story elements and plot line, point of view and perspective, identify and give examples of conflict. Vocabulary: Students will use information from reading	**Math:** Variables and Patterns: Teach and review variables, representations of relationships, tables, graphs, words, and symbols. Probability and Expected Value: Teach and review probabilities of two stage events. Stretching and Shrinking: Teach and review similarity, similar figures, scale factors, basic similarity transformations, and their algebraic rules. Reading Connection: Students will predict and generate questions from their reading, summarize, and synthesize	**Science:** Teach and review chemical changes in biological and ecological systems, energy forms and how they are transferred in biological or physical systems; identifying change agents in biological systems; interactions of predator-prey, symbiosis, and parasite-host relationships; classification of systems; food webs; photosynthesis; nitrogen, carbon, and water cycles; cell, tissue, and organ systems; cell division and reproduction. Math Connection: Students will select and	**Social Studies:** Teach and review the history, interactions, and contributions of various groups of people who make up the major cultural regions of the Eastern Hemisphere. Students will describe how trade has influenced historical events. Students will give examples of how individuals in various groups have gained, lost, or maintained political rights, freedom, power, or cultural identity in the Eastern Hemisphere. Reading Connection: Students will read and comprehend nonfiction literature and

to increase vocabulary level, context clues, word parts. Students can identify and use point of view, dialect, and character development, hyperbole, imagery, symbolism, moral, proverb, parable, paradox, meter, rhyme, verse, refrain, tone, mood, and repetition. Fluency: Independent reading at independent reading level. Writing: Students write a persuasive writing piece, connecting to other content area learning themes. Math Connection: Students will utilize compare/contrast strategy across the curricula to draw upon similarities and differences in all areas of curricula.	information to accommodate mathematical inquiries. Writing Connection: Students will respond to questions in complete sentences, have correct use of adjectives, adverbs, and prepositional phrases, write well developed paragraphs using topic sentences, relevant details to support topic sentence, and a concluding sentence. Students will interpret mathematical relationships in writing, using the aforementioned criteria. Science Connection: Students will accurately use relationships and variables in their lab experiments.	use appropriate mathematics and technology to gather, process, and analyze data, and report the results of the investigation. Writing Connection: Students will write lab reports, content-based reports, comparison/contrast summaries, and process descriptions, using correct English grammar and writing rules.	distinguish between primary and secondary sources. Writing Connection: Students will write a persuasive writing piece, reflecting political rights, freedom, power, or cultural identity in the Eastern Hemisphere. Students will write using conventional English grammar and writing rules. Math and Science Connection: Students will analyze the biological and ecological systems of the Eastern Hemisphere and will report their findings using graphs, tables, and words to communicate their research.
Seventh Grade Integrated Curriculum Pacing Chart Third Trimester			
Language Arts: Teach and review pre-reading strategies: prior knowledge, purpose for reading, predicting, and generating questions before reading. After reading, teach: compare and contrast texts with similar plots,	**Math:** Covering and Surrounding: Teach and review developing strategies and algorithms for finding the perimeter and area of rectangles, triangles, and circles.	**Science:** Teach and review how soils form and how fossils indicate change. Students will diagram the direction of water circulation through the Earth's systems, use graphs and charts to	**Social Studies:** Teach and review how religious and philosophical beliefs have defined standards of right or wrong, good and evil, and justice and injustice. Students will apply the

themes and ideas, summarize and synthesize, locate and paraphrase main idea, make reasonable inferences, sequence, locate and recall different text structures: cause and effect, compare and contrast, and problem solution. Reading: Students read fiction, nonfiction, and poetry literature and identify: story elements and plot line, point of view and perspective, identify and give examples of conflict. Vocabulary: Students will use information from reading to increase vocabulary level, context clues, word parts. Students can identify and use point of view, dialect, and character development, hyperbole, imagery, symbolism, moral, proverb, parable, paradox, meter, rhyme, verse, refrain, tone, mood, repetition, connotation, denotation, and monologue. Fluency: Independent reading at independent reading level. Writing: Students write a cause and effect writing piece, and a creative choice writing piece connecting to other content area learning themes. Math Connection: Students	What to Expect: Teach and review probabilities of two stage events and expected value. Comparing and Scaling: Teach and review ratio, proportion, and percent, scale factors, transformation, and algebraic rules. Accentuate the Negative: Teach and review integers. Reading Connection: Students will predict and generate questions from their reading, summarize, and synthesize information to accommodate mathematical inquiries. Writing Connection: Students will respond to questions using aforementioned criteria. Students will interpret mathematical relationships in writing, using the aforementioned criteria. Science Connection: Students will accurately use relationships and variables in their lab experiments. Social Studies Connection: Students will find the probability	compare the distribution of the world's water. Students will compare and contrast science, the physical/biological world, to technology and the application of scientific laws and theories. Students will analyze scientific principles behind technological applications and how the use of technology can help solve an individual or community problem. Math Connection: Students will select and use appropriate mathematics and technology to gather, process, and analyze data, and report the results of the investigation. Writing Connection: Students will write lab reports, content-based reports, comparison/contrast summaries, and process descriptions, using correct English grammar and writing rules.	universals of culture to explain how people live in the Eastern Hemisphere, describe why and how countries trade goods and develop communication systems, and describe how conflict and cooperation can lead to division or unification of different peoples. Reading Connection: Students will read and comprehend nonfiction literature and distinguish between primary and secondary sources. Writing Connection: Students will write a compare and contrast writing piece, reflecting religious and philosophical beliefs of various peoples in the Eastern Hemisphere. Students will write using conventional English grammar and writing rules. Math and Science Connection: Students will analyze the technological systems of the Eastern Hemisphere and will

will utilize compare/contrast strategy across the curricula to draw upon similarities and differences in all areas of curricula.	of cultural impact on natural resources of the Eastern Hemisphere.		report their findings using graphs, tables, and words to communicate their research.
Eighth Grade Integrated Curriculum Pacing Chart First Trimester			
Language Arts: Teach and review pre-reading strategies: prior knowledge, purpose for reading, predicting, and generating questions before reading. After reading, teach: summarize and synthesize, and evaluate from a variety of text and genres, analyze main idea, infer, sequence, locate and recall different text structures: cause and effect Reading: Students read fiction, nonfiction, and poetry literature and identify: story elements and plot line plus exposition, theme, identify conflict in increasingly difficult texts. Vocabulary: Students will use information from reading to increase vocabulary level, context clues, word parts. Students can identify and use: irony, flashback, personification, symbolism, foreshadowing, character development, point of view (historical context), theme. Fluency: Independent reading at independent reading level.	**Math:** Similarity: Teach and review similar figures, scale factors, basic similarity transformations and their algebraic rules. Comparing and Scaling: Teach and review comparing data by finding percents using ratios and finding rates, and use real world situations to estimate population of a large group by using scale. Reading Connection: Students will predict and generate questions from their reading, summarize, and synthesize information to accommodate mathematical inquiries. Writing Connection: Students will respond to questions in complete sentences, have correct use of complex sentences, modifiers, and conjunctions, write well developed paragraphs using topic sentences, relevant details to support topic sentence,	**Science:** Teach and review how to distinguish between physical and chemical changes, classify matter, identify different energy forms, and qualitatively investigate Newton's three laws. Students will identify change enacted by outside force, describe, measure and calculate quantities associated with moving objects and be able to perform simple chemical reactions and physical matter changes. Math Connection: Students will select and use appropriate mathematics and technology to gather, process, and analyze data, and report the results of the investigation. Writing Connection: Students will write lab reports, content-based reports, comparison/contrast summaries, and process	**Social Studies:** Teach and review geographic databases that relate to U.S. History. Students will identify and locate major political and physical features of the United States. Students will explain European and indigenous people's view of land and resources, and identifies that causes and types of human migration and its effects. Students will describe how cooperation and conflict among people contributes to political, economic, and social divisions of North America. Reading Connection: Students will read and comprehend nonfiction literature and distinguish between primary and secondary sources. Writing Connection: Students will write an opinion writing piece, reflecting European

Writing: Students write a memoir pre-assessment writing piece, and an opinion paper connecting to other content area learning themes. Math Connection: Students will utilize compare/contrast strategy across the curricula to draw upon similarities and differences in all areas of curricula.	and a concluding sentence. Students will interpret mathematical relationships in writing, using the aforementioned criteria. Science Connection: Students will accurately use relationships and variables in their lab experiments. Social Studies Connection: Students will estimate populations of United States' cities during Colonization, Settlement, Revolution, and New Nation Expansion periods.	descriptions, using correct English grammar and writing rules.	and indigenous immigration or migration and the viewpoints of natural resources. Students will write using conventional English grammar and writing rules. Math and Science Connection: Students will analyze the ecological systems of the United States and will report their findings using graphs, tables, and words to communicate their research.
Eighth Grade Integrated Curriculum Pacing Chart Second Trimester			
Language Arts: Teach and review pre-reading strategies: prior knowledge, purpose for reading, predicting, and generating questions before reading. After reading, teach: compare and contrast texts with similar themes or ideas, summarize and synthesize, and evaluate from a variety of text and genres, analyze main idea, infer, sequence, locate and recall different text structures: compare and contrast, and problem solution. Reading: Students read	**Math:** Integers: Teach and review understanding and modeling integers, integer operations, and four quadrant graphing. Three Dimensional Measurement: Teach and review volume and surface area of various solids, volume and surface area relationships. Reading Connection: Students will predict and generate questions from their reading, summarize, and synthesize	**Science:** Teach and review components of the rock cycle, chemical and physical properties to identify minerals and rocks, gaseous composition of the atmosphere, energy transfer in the atmosphere, and large scale and local weather systems. Math Connection: Students will select and use appropriate mathematics and technology to gather, process, and analyze	**Social Studies:** Teach and review changes on North American maps in the following eras: (a) Three Worlds Meet, (b) Colonization, and (c) New Nation Expansion. Students will identify major people and events that characterize each of the following eras: (a) Three Worlds Meet, (b) Colonization, and (c) New Nation Expansion. Students will explain the time structure and historical causes and effects of these events. Students

fiction, nonfiction, and poetry literature and identify: story elements and plot line plus exposition, theme, identify conflict in increasingly difficult texts. Vocabulary: Students will use information from reading to increase vocabulary level, context clues, word parts. Students can identify and use all previously taught material plus: extended metaphor, meter, rhyme, rhythm, stanza, verse, refrain, line, syllable, tone and mood, repetition, and rhyme scheme. Fluency: Independent reading at independent reading level, and read with expression (poetry). Writing: Students write a research (multi-genre or traditional) paper connecting to other content area learning themes. Math Connection: Students will utilize compare/contrast strategy across the curricula to draw upon similarities and differences in all areas of curricula.	information to accommodate mathematical inquiries. Writing Connection: Students will respond to questions in complete sentences, have correct use of complex sentences, modifiers, and conjunctions, write well developed paragraphs using topic sentences, relevant details to support topic sentence, and a concluding sentence. Students will interpret mathematical relationships in writing, using the aforementioned criteria. Science Connection: Students will accurately use measurements of volume and surface area in their lab experiments. Social Studies Connection: Students will estimate actual land that was inhabited in United States' cities during Colonization, Settlement, Revolution, and New Nation Expansion periods.	data, and report the results of the investigation. Writing Connection: Students will write lab reports, content-based reports, comparison/contrast summaries, and process descriptions, using correct English grammar and writing rules.	will explain the contributions of the various peoples and cultures that have lived in or migrated to the United States. Reading Connection: Students will read and comprehend nonfiction literature and distinguish between primary and secondary sources. Writing Connection: Students will write a research piece, reflecting on examples of change in a society from migration or immigration of cultures to the United States. Students will use patterns from the past to anticipate the future. Students will write using conventional English grammar and writing rules. Math and Science Connection: Students will analyze the weather systems during (a) Three Worlds Meet, (b) Colonization, and (c) New Nation Expansion of the United States and will report their findings using graphs, tables, and words to communicate their research.

Eighth Grade Integrated Curriculum Pacing Chart Third Trimester			
Language Arts: Teach and review pre-reading strategies: prior knowledge, purpose for reading, predicting, and generating questions before reading. After reading, teach: compare and contrast texts with similar themes or ideas, summarize and synthesize, and evaluate from a variety of text and genres, analyze main idea, infer, sequence, locate and recall different text structures: compare and contrast, and problem solution. Reading: Students read fiction, nonfiction, poetry, and drama literature and identify: story elements and plot line plus exposition, theme, identify conflict in increasingly difficult texts. Vocabulary: Students will use information from reading to increase vocabulary level, context clues, and word parts. Students can identify and use all previously taught material plus: pseudonym, colloquialism, epitaph, sarcasm, and anecdote. Fluency: Independent reading at independent reading level, and read with expression (drama).	**Math:** Filling and Wrapping: Teach and review three dimensional measurement, volume and surface area of various solids, volume and surface area relationships. Moving Straight Ahead: Teach and review linear relationships, recognizing and representing linear relationships in tables, graphs, words, and symbols; solving simple linear equations. Reading Connection: Students will predict and generate questions from their reading, summarize, and synthesize information to accommodate mathematical inquiries. Writing Connection: Students will respond to questions in complete sentences, have correct use of complex sentences, modifiers, and conjunctions, write well developed paragraphs using topic sentences, relevant details to support topic sentence, and a concluding sentence.	**Science:** Teach and review connections between science, technology, and human activity, and their impact on the world. Students will describe how science and technology can be influenced by political and cultural factors; Students will describe the historical development of technology and analyze the scientific principles behind simple technological applications. Students will describe how people use science and technology in their professions. Math Connection: Students will select and use appropriate mathematics and technology to gather, process, and analyze data, and report the results of the investigation. Writing Connection: Students will write lab reports, content-based reports, comparison/contrast summaries, and process descriptions, using correct grammar and writing rules.	**Social Studies:** Teach and review how economic factors have influenced historical events. Students will describe democratic principles and basic ideas set forth by the Declaration of Independence, Articles of Confederation, Constitution, and the Bill of Rights. Students will explain basic forms of government and the necessity for government order. Students will describe the characteristics of the American Revolution, slavery, and the relationship over time between the U.S. government and Native American tribes. Reading Connection: Students will read and comprehend nonfiction literature and distinguish between primary and secondary sources. Writing Connection: Students will write a creative choice piece, reflecting on the American Revolution, slavery, or the relationship between the U.S. government

Writing: Students write a memoir writing piece, as well as a creative choice piece connecting to other content area learning themes. Math Connection: Students will utilize compare/contrast strategy across the curricula to draw upon similarities and differences in all areas of curricula.	Students will interpret mathematical relationships in writing, using the aforementioned criteria. Science Connection: Students will accurately use measurements of volume and surface area and linear equations in their lab experiments.		and various Native American tribes. Students will write using conventional English grammar and writing rules.

These pacing charts are aligned with the Adams 12 Five Star Schools middle school pacing charts and frameworks, along with the Colorado state standards. With the curricula aligned with one another, and teacher collaboration, the middle school students of Adams 12 Five Star Schools have the opportunity to learn in an integrated curricula environment and reap all the benefits laid out in Chapter 2. In Chapter 5, a discussion of the project is presented.

Chapter 5

DISCUSSION

This project's purpose was to develop middle school pacing charts for teachers to utilize for language arts, mathematics, science, and social studies curricula over the course of three trimesters for grades six through eight. The pacing chart subject areas were each created and aligned with the other subject areas to form an integrated curriculum approach for the benefit of student learning. The pacing charts were created to be set up clearly for teachers to implement integration between content areas, to allow teachers to have more collaboration time on specific units and lessons, rather than focusing on how to align the curricula.

Experiences during her three year tenure as a language arts teacher at Shadow Ridge Middle School in Adams 12 Five Star Schools led this researcher to observe that students reacted positively in classroom engagement, feedback to teachers, confidence within themselves and their scholastic abilities, and in academic classroom grades when two or more core classes integrated their content lessons with one another. Students often commented on their level of enjoyment of learning about units from various points of view. For example, one student found it quite fascinating and helpful for his understanding of the early United States' slave trades to learn about this topic not only in social studies, but also in language arts and mathematics. In social studies, the teacher was able to teach dates, places, and integral people in the slave trades as well as the later effects of this period in history. The language arts teacher was able to read non-fiction

stories about life prior to the slave trades, and what drove the new Americans to develop the slave trade in the United States. The mathematics teacher was able to teach the logistics behind the numbers of slaves that were transported from Africa to the United States. The students learned that as technology improved and means of travel became more sophisticated, fewer slaves died en route to the United States, and students were able to clearly identify how the slave trade impacted the United States in its early years, as well as how its residual effects still impact the United States today. Additionally, when students fully understood the units they were learning about from all angles, it taught students that nothing in the world is isolated and individual unto itself, but rather, is interconnected in many areas. It prepared students at an earlier age to recognize and understand complex relationships, problems, and solutions they will face in their future years in the work world.

In addition to gaining more accurate world views of problems and solutions, in her research, this researcher found that students who have been taught by the implementation of integrated curriculum models scored higher on standardized tests than their peers that were taught by the implementation of traditional curriculum models. Given these factors, this researcher was greatly motivated to create an integrated curricula pacing chart for the middle school teachers in her school district, in order for the students of the district to gain full benefits of the implementation of the integrated curricula.

Limitations of the Project

Retrospectively, several limitations of the project can be cited. The following limitations are related to the pacing charts, and to the implementation of the pacing charts into Adams 12 Five Star Schools.

1. Although all areas of this pacing chart clearly defined the expected curricula within each content area to be taught, some sections of the pacing chart did not have explicit connections to other content areas to be taught.
2. As Adams 12 Five Star Schools continues to grow and strengthen as a district, content curricula will be modified and changed, which will render the version of this pacing chart obsolete.
3. In order to gauge the effectiveness of this new pacing chart, this researcher should have considered interviewing and collaborating with the assistant superintendent of her school district, other curriculum and instruction professionals, and her building colleagues more closely.
4. In order for this pacing chart to be effectively implemented, it would have been more effective if this pacing chart could have been reviewed by district curriculum and instruction personnel earlier prior to the beginning of a new school year.
5. In order to track future middle school student academic growth and success throughout the district, this researcher should have collected solid data of the past three years of all middle school students in order to compare and record academic growth when integrated curriculum is implemented.

Contributions of the Project

This researcher found, in her three years of teaching middle school language arts, a desire in the students to learn through integrated curriculum. This researcher also found that when students were interested in learning, and had a larger scope of understanding what they were being taught, the students' confidence increased. Along with the confidence increase, students were more eager to attend classes and participate with their peers and teachers within the classroom. The learning environment became more positive, and as a result, grades increased as well since the students understood the material better.

However, in the past, teachers have been responsible for collaborating with one another to create integrated units. What this researcher found is that teachers' time is spread quite thin between teaching classes, offering tutorial time for students, grading, planning, attending school meetings, parent meetings, and professional development courses, that rarely do teachers have the amount of time it requires to integrate their lesson plans. For many teachers, it has become nearly impossible to find time to appropriately plan for this type of teaching. This researcher found it imperative for teachers to have an integrated curricula pacing chart from which to focus their collaboration time and make it feasible for teachers to implement this teaching method in order to assist in student learning and growth.

This researcher is hopeful that with the implementation of integrated curriculum, that teachers will enjoy their vocation to an even greater extent than they previously have, that students will enjoy and be excited about learning, and that students will retain the information they learn in school for a greater length of time. If students have a greater

enjoyment of school and understand the material better, as a district, we should also see middle school state standardized test scores improve. Overall, this researcher feels that the implementation of integrated curriculum could equate to a greater and more positive educational experience.

Future Recommendations

The next step in the process for this researcher is to obtain and maintain a Teacher on Special Assignment (TOSA) position within a school district, preferably with Curriculum and Instruction professionals, to successfully implement the new integrated curriculum pacing charts. Once the pacing charts have been finalized within the district, professional development meetings and classes will need to take place for all administrators and teachers to understand the benefits, the time requirements, and the collaboration expectations that will be required in order to successfully implement the new pacing charts.

After the implementation of integrated curriculum, intensive and precise data control is necessary. Studies of the long term effects of the implementation of integrated curriculum will be crucial in adjusting the pacing charts to make them the most effective they can be in order to help raise student achievement.

Ideas for further research might include:

1. a comparison study of student achievement in classrooms which used or did not use integrated curriculum,
2. a comparison study of differences in students' attitudes and confidence levels towards academics before and after integrated curriculum is implemented, and

3. a comparison study of parents' attitudes towards the level of success in which the school is achieving in educating their children before and after integrated curriculum in implemented.

Project Summary

The integrated pacing charts were successful, in that, all content area requirements were still included within the timeframe that the current Adams 12 Five Star Schools curriculum administrators required. The new pacing charts also had the added value of integration of each content area with all others, so that students were able to learn in a more cohesive, fluent, and logical pattern than had previously been taught in the traditional curriculum method. Given the trends in state standardized test scores, school administrators, and teachers needed to examine the curriculum models of high achieving schools throughout the country, and adapt to those models. This pacing chart, when implemented with teacher collaboration and dedication, has all the crucial aspects of those high achieving schools, which could provide Adams 12 Five Star Schools with the tools necessary to help student achievement grow at exponential rates.

The strengths of this pacing chart lied in the quality of the information presented, and the organization of the pacing chart. An additional strength lied in the desire by many teachers to have a practical guide by which to implement integrated curriculum to help teach students in a more cohesive manner. It was for this reason that the integrated curriculum pacing chart met those teachers' needs, and gave them the materials in an organized approach.

The major limitations of this pacing chart were several areas where explicit integration did not make logical sense. Due to the fact that each content area had strict

timelines in which certain material must be taught, not all four core content areas could be aligned all the time. This was a matter that the district curriculum and instruction personnel will have to address and adapt as time goes on and a need for complete integration is recognized. Once, and only once, the district administrators allow for the flexible timing of integrated curriculum, will students and teachers be able to see its full potential.

REFERENCES

Beane, J. A. (n.d.). *Organizing the middle school curriculum.* Retrieved December 27, 2007, from http://www.nmsa.org/Publications/WebExclusive/Organizing/tabid/651/Default.aspx

Beane, J. (1992). *Integrated curriculum in the middle school*. Urbana, IL: ERIC Clearinghouse on Elementary and Early Childhood Education. (ERIC Document Reproduction Service No. ED 351 095)

Berlin, D. F. (2007). *Integrated mathematics for middle school: International impressions*. Retrieved December 27, 2007, from http://www.nctm.org/resouces/content.aspx?id=1696

Bernt, P. W., Turner, S. V., & Bernt, J. P. (2005). Middle school students are coresearchers of the media environment: An integrated project. *Middle School Journal, 9*, 38-44.

Department of Education, Tasmania. (2007). *English in an integrated curriculum.* Retrieved December 27, 2007, from http://wwwfp.education.tas.gov.au/english/integrated.htm

Dowden, T. (2007). Relevant, challenging, integrative and exploratory curriculum design: Perspectives from theory and practice for middle level schooling in Australia. *The Australian Educational Researcher, 34*(2), 51-71.

Drake, S. M. (1998). *Creating integrated curriculum; Proven ways to increase student learning*. Thousand Oaks, CA: Corwin.

Kerka, S. (2000). *Middle school career education and development.* Retrieved December 27, 2007, from http://www.cete.org/acve/textonly/docgen.asp?tbl=pab&ID=99

Kushman, J. W. (2001). *Integrating middle school curriculum around real-world issues.* School improvement research series (SIRS). Retrieved December 27, 2007, from http://www.nwrel.org/scpd/sirs/10/s038.html

Lake, K. (2001). *Integrated curriculum.* School improvement research series (SIRS). Retrieved December 27, 2007, from http://www.nwrel.org/scpd/sirs/8/c016.html

Muth, K. D., & Alvermann, D. E. (1999). *Teaching and learning in the middle grades*. Needham Heights, MA: Allyn & Bacon.

Parker, D. (2007). *Integrated curricula in gifted ed.* Retrieved February 24, 2007, from http://teaching-gifted students.suite101.com/article.cfm/integrated_curricula_in_gifted_ed

Pate, P. E., Homestead, E. R., & McGinnis, K. L. (1997). *Making integrated curriculum work.* New York: Teachers College.

Paterson, J. (2003, August). Curriculum integration in a standards-based world. *Middle Ground: The Magazine of Middle Level Education, 7*(1), 10-12.

Queen, J. A. (1999). *Curriculum practice in the elementary and middle school*. Upper Saddle River, NJ: Prentice-Hall.

Vogler, K. E. (2003). An integrated curriculum using state standards in a high-stakes testing environment. *Middle School Journal, 34*(4), 5-10.

Wallace, J., Sheffield, R., Rennie, L., & Venville, G. (2007). Looking back, looking forward: Researching the conditions for curriculum integration in the middle years of schooling. *The Australian Educational Researcher, 34*(2), 29-49.

Wavering, M. J. (1995). *Educating young adolescents: Life in the middle.* New York: Garland.

White House. (2002). *Fact sheet: No child left behind act.* Retrieved February 17, 2007, from http://www.whitehouse.gov/news/releases/2002/01/20020108.html

Wood, K. E. (2001). *Interdisciplinary instruction: A practical guide for elementary and middle school teachers*. Upper Saddle River, NJ: Prentice-Hall.