Analyzing Curriculum Models from the 20th Century: A focus on Integration

Rachel Turner
Southeast Utah State University

Introduction

The debate on organizing curriculum in schools persists, particularly regarding the division of specialized subject education vs. general education. Even the elementary school, at one time devoted to self-contained classrooms, operates differently. Younger students, tasked with difficult discipline specific goals, find themselves segmented by content area. Elementary schools reflect semi-departmentalization, grouping subjects based on state testing requirements rather than curriculum goals or teacher expertise. In many states, one often sees an elementary teacher responsible for either math and science or language arts and social studies. The most popular reason for this arrangement is the fact that math and reading include sate assessments. By departmentalizing teachers, administrations hope to reduce teacher stress as they focus on a single tested subject, math or reading, rather than both. The goal for semi-departmentalization is increased student performance due to more intensive instruction. This leads to higher emphasis on the tested subjects, reducing time and focus on the non-tested subjects such as science and social studies.

However, social studies and science inclusion in the elementary school curriculum causes growing support for teachers to use integration as a method to incorporate social studies and science into the tested subjects. This primarily occurs in reading. However, in my own experience and according to elementary teachers with whom I have worked, teacher supports for understanding methods for organizing curriculum for integration does not exist.

Purpose

As I explored approaches for organizing curriculum across the 20th century, I found the most prominent approaches cited include correlation, fusion, multidisciplinary, broad fields, interdisciplinary, transdisciplinary, and core curriculum. As I analyzed each approach, I noticed some approaches push for total integration of subject matter while others advocate for partial integration. I set out to determine how teachers use these organizational approaches, with their varying degrees of integration, to meet student needs, such as real-world application of knowledge, while also providing fundamental skill development within the content areas. I designed a Disciplinary Scale that allows me to rate each organizational approach along this scale. I hoped, through this process, to determine

- What methods are used to organize curriculum to bring multiple subjects together?

Literature

One of the most prominent education debates over the past century centers around the separate subject approach vs. the experience approach. The separate subject approach impacted the education system in the United States, particularly curriculum and school organization. Curriculum integration emerged as an instructional approach as the progressive education movement pushed back against the separate subject approach. In the following section, I summarize the debate around separate subjects, as well as knowledge integration, and highlight the ways integration of ideas is important for student education and development.

The Single Subject Approach

According to Hopkins (1937), "the subject curriculum is characterized by a large number of subjects taught independent of each other. It assumes that education is something

which an individual does before he enters adult life" (198). The separate subject curriculum tends to be teacher driven, fact and skill driven, and relies heavily on students meeting essential benchmarks to move forward (Hopkins 1937). Each separate subject includes a unique background, education, training, procedure, methods and content areas (Piaget 1972).

The National Education Agency (1895) significantly impacted curriculum within schools as the Committees of Ten and Fifteen emphasized separate subjects in both the elementary and high school. Advocacy for the study of traditional subject and disciplines as the best method to provide optimal learning continues (Tanner & Tanner 1995). According to Tanner and Tanner (1995):

> when the evidence fails to reveal these claimed benefits, instead of seeking ways of integrating these studies and relating them to the life of the learner and to social reality, there is a tendency to look to extreme learner centered approaches and to negate systematically organized knowledge. (65)

This shift towards student centered approaches has impacted curriculum integration in the 20th century.

The emphasis on separate subjects continued into the 1950s with the space race emphasizing math, science and foreign languages. In the 1960's, Bruner's work placed emphasis on separate subjects with his focus on structure of the disciplines (Beane 1997). By the 1970's the discipline-based movement reemerged (Evans 2004). This tradition continues today as separate subject organization remains prevalent in all levels of schooling. This prevalence is due to the extensive systems formed around specific subjects within school systems and educational organizations (Beane 1997). Additionally, teachers' tradition of teaching using the same methods they experienced as students impacted the staying power of separate subjects (Beane 1997). The organization of teachers and schools into discipline departments also influenced the popularity, as teacher identity and teaching certifications revolve around specific subjects (Beane 1997). This connection between teachers and curriculum continues to push the separate subject approach forward.

The single subject approach can lead to a disconnected curriculum. The separate subject curriculum "tends to neglect natural and logical connections between and among the separate subjects and between the subjects and life outside school" (Wraga, 2009, 89). With reform efforts such as *A Nation at Risk* (1983) and *No Child Left Behind* (2001), subject matter has become a conduit for passing high stakes tests. This sends the message to students that schooling is to study subjects and pass tests, rather than prepare for life and solve problems (Wraga, 2009).

Why Curriculum Integration?

Curriculum integration emerged in the late 19th century and throughout the 20th century was a prominent method to move away from the separate subject approach. A number of scholars and theorists who shifted away from the separate subject approach in the late 1800's into the early 1900's include Herbartian society members Charles A. and Frank M. McMurray and Charles DeGarmo's ideas about correlation between content and development (Gutek 1995). Charles A. McMurray (1857-1929) was most known for his views on interdisciplinary curriculum, while his brother Frank M. McMurray (1862-1936), was most known for developing student teaching practices. Charles DeGarmo (1849-1934), another prominent Herbartian society member, wrote extensively on educational practice and theory. Additionally, Francis Parker's (1837-1902) problem centered experiences (McMurry 1927), and Dewey's (1859-1952) social experiences related to school life (Dewey 1938) helped push forward the experience approach.

John Dewey (1916), who tested his progressive ideas while at the University of Chicago, felt that one of the biggest problems with education itself was the separation of curriculum from everyday life. Even with these scholars pushing against separate subjects, curriculum makers continued to focus on the school experience on separate subjects.

Two major issues raised around the separate subject approach include overcrowded and disjointed curriculum. Wesley and Adams (1946) stated "since each subject tends to set its own limits and to demand that its requirements be met, their mere presence leads to an overcrowded curriculum" (161). This overcrowded curriculum makes integration much more difficult, as focusing on separate subjects leads to isolated and unrelated topics (Wesley & Adams, 1946). Separate subjects make it more difficult to draw connections between subject areas and make it more difficult to draw connections to life itself. Curriculum integration developed because teachers had an "unease about the dissociation of what is taught in school and what is experienced in life, their despair at the practical difficulties raised by the proliferation of knowledge and so on" (Ingram 1979, 20).

Educational reform movements also influenced the move away from separate subjects. Harold Alberty (1890-1971), known for his work on The Eight-Year Study and general education, explains three influences that led to breaking down subject matter lines within the curriculum (1938). First, the "success of the activity movement in elementary education" allowed teachers to experiment with broad units that cut through subject area distinctions (Alberty 1938, 223). Second, the push to see school as a focus on community life led to curriculum focused on home and community problems, naturally blurring of subject matter lines (Alberty 1938). Third, changes within psychology influenced the push away from separate subjects as focus shifted away from the view that "Behavior as being made up of mechanical elements, and toward an organismic view. According to this conception, not only does the learner respond to an organic whole, but he responds to the total situation as well" (Alberty 1938, 223). These educational reforms of the activity movement, community and psychology helped facilitate the push away from separate subjects.

While problems with the separate subject approach exist, educators and administrators acknowledge the correlation between separate subjects and integrative approaches. A critical feature of integration is the relationship between subjects and disciplines (Ingram 1979). Ingram (1979) described the debate around subject matter vs. curriculum integration as an all or nothing matter; choose subjects or choose integration. This view is problematic because the two connect and "dependent upon association with each other" (Ingram 1979, 24). There is need for further exploration of the relationship between discipline specific approaches and integrative approaches.

Integrating curriculum benefits student learning because it supports connections made across content area lines. According to some scholars, integrated curriculum provides students with needed skills (Drake & Burns 2004), improved learning outcomes (Beane 1995) and engagement (Drake 1998). Many scholars find students supported through integration as the curriculum is more relevant to their needs and interests (Jacobs 1989) while also providing real world application (Beane 1997). For teachers, benefits include support for understanding content and support for their teaching community (Ingram 1979).

Knowledge Integration

According to the National Council for the Social Studies, "The primary purpose of social studies is to help young people make informed and reasoned decisions for the public good as citizens of a culturally diverse, democratic society in an interdependent world" (National

Council for the Social Studies 1994, 3). If developing students into good citizens serves as our main goal, we must expose them to a variety of topics, issues, themes and ideas. These topics, issues, themes and ideas that occur in real life transcend content area or disciplinary boundaries. As Crowell states, "The more ways we tell students that the universe is made up of independent fragments, the more their minds will conceptualize and reproduce such a world" (1989, 61). Ultimately, we want civically competent students who use knowledge and experiences in the real world (National Council for the Social Studies 1994; Beane 1995).

Across the 20th century we see knowledge specialization become more and more dominant. All levels of schools are organized around disciplinary lines, teachers are certified to teach specific subjects, and course requirements are built around specific disciplines. Curriculum integration emerged as a way to prepare students for life. Ward, Suttle and Otto (1960) describe the importance of understanding integration within the individual prior to understanding integration of curriculum. Integration of the individual involves "all that makes up that which is called an individual" (Ward, Suttle & Otto 1960, 10). Integration, involving the idea of self, is the process of "correlating parts, seeing relationships, making generalizations and syntheses" (Ward, Suttle & Otto 1960, 26). The role of integration is one of internal and external awareness (Ward, Suttle & Otto 1960). Ultimately, we want our students to understand specific disciplinary skills, objectives, philosophies and methods, yet within the context of life itself.

Content integration can take many forms. Teachers today must attend to the grade level content area learning and standards while also attending to district or school scope and sequences. Historically, integration takes three forms, what Wraga (2009) describes as "vertical articulation, horizontal articulation and diagonal articulation" (91-92). Vertical articulation refers to the integration of the same content area across grade levels (Wraga, 2009). Horizontal articulation refers to integration of different content areas within the same grade level (Wraga, 2009). Lastly, diagonal articulation refers to the integration of different content areas across grade levels (Wraga, 2009). The remaining analysis of each curriculum approach is situated within the horizontal articulation. This was chosen because most elementary teachers are responsible for more than one subject area. Shedding light on the approaches to organizing curriculum within the horizontal approach allows teachers to see how they can integrate content areas within their classroom.

Table 1
Example of Single Subject Approach

	Social Studies	**Math**	**Science**	**ELAR**
Single Subject	Teacher teaches students to use bar graphs to show population of states	Teacher teaches students to use bar graphs to represent numbers of items	Teacher teaches students to use bar graphs to show numbers of fauna in a field collection	Teacher does not teach bar graphs – not in curriculum standards; students don't represent data they read about

Table 1 shows how bar graph skills are taught by two of the three teachers. However, the teachers fail to connect the use of bar graphs in other discipline areas.

Correlation

Correlated curriculum presents a first step away from the separate subject approach on the Continuum of Organizational Approaches shown in Figure 2. The goals of correlated curriculum

remain guided by separate subject lines (Hopkins 1937; Wesley & Adams 1946). Correlated curriculum involves relating subject matter when possible but with little attempt to change the ultimate goals of the learning or the teaching methods (Hopkins 1937). Essentially, correlation occurs with connections between subjects, while not compromising "that which has always been recognized as important" (Hopkins 1937, 201). Essentially, connections to life and other content areas occur yet prove unplanned and not the focus.

Making connections between disciplines is often misunderstood as integration, indicating issues with teachers utilizing correlation under the name of integration. For example, during a reading unit on summarization, an elementary teacher reads the picture book "Coming to America: The Story of Immigration" by Betsy Maestro (1996), and tasks students to summarize the beginning, middle and end of the book. The primary learning skill in focus, summarizing, was applied using a social studies themed book. While the picture book contains social studies topics and themes, the book served as a tool for summarizing, not for its social studies content. Though connections to life or other disciplines may occur, no planned attempt to connect the learning standards from multiple curriculums exists. Table 2 illustrates how the various teachers organizing content in a correlated approach address the content skill of bar graphs.

Table 2
Example of the Correlated Approach

	Social Studies	**Math**	**Science**	**ELAR**
Correlation – these explanations are not coordinated and do not happen at the same time in the school year.	Social Studies teacher teaches students to use bar graphs to show population of states. Social studies teacher explains how students can use bar graphs in math, science and reading.	Math teacher tells students that bar graphs can be used in math to represent numbers of items. Math teacher tells students bar graphs can be used in social studies to represent populations and numbers in science.	Science teacher tells students to use bar graphs to show numbers of fauna in a field collection. Science teacher tells students bar graphs can be used in social studies to represent populations	ELAR teacher isn't likely to tell students bar graphs can be used in social studies to represent populations. Social studies teacher tells students they can represent data found in literature using bar graphs.

Table 2 represents an example of bar graph skills taught by three of the four teachers. It shows how three of the four teachers mention how the topic applies in other subjects. However, the ELAR teacher, whose curriculum does not focus on bar graphs, does not make those connections.

Fusion

Fusion provides problems to be solved in which a variety of disciplinary learning is included (Hopkins 1937). As Park and Stephenson (1940) wrote, fusion is the organization of learning units that do not take account of specific subject boundaries. Hopkins (1937) and Wesley and Adams (1946) explain how this approach looks in social studies, where the separate subjects of geography, history, civics, economics and others no longer exist, but instead included a general course of social studies.

Fusion was particularly popular in the elementary social studies classroom in the 1940's (Halvorsen 2013). In her work on the history of social studies, Halvorsen (2013) described the elementary social studies fusion curriculum as "structured around topics, issues, geographic areas, or time periods" (78). According to Halvorsen (2013), during the 1940's, aspects of

separate subjects remained, however fusion remained most popular.

The fusion approach does not apply only to the social studies. Fusion applies to courses or units of study where multiple disciplines come together. For example, this occurs when reading teachers focus on a particular genre and cover reading, writing, listening and speaking skills in the unit. Table 3 shows another example of the fusion approach.

Table 3
Example of the Fusion Approach

	Social Studies	**Math**	**Science**	**ELAR**
Fusion – teachers in other subjects are not included in instruction	Content knowledge is not focus – teacher engages students in exploration of change in population over time - social studies teacher makes connection to knowledge and skills from other subjects.	No participation SS teacher uses line graph knowledge taught in math to represent change over time.	No Participation SS teacher has students calculate change in food availability and relation to population growth.	No participation SS teacher has students read and write reports that tell about population growth and contributors to growth.

Table 3 highlights one example of fusion where only the social studies teacher connects the topic of population change to other content areas. The social studies teacher has students explore population change in ways that require other content area knowledge to make sense of the topic. Topics and skills taken from math, science and ELAR, (line graphs, food availability, and reports) may not comprise the topics and skills covered in the math, science and ELAR curriculum at that time.

Multidisciplinary

The multidisciplinary approach brings together subjects around a central unit or theme (Beane 1997; Harden 2000). While subjects come together in multidisciplinary approaches, the lens remains focused on the separate subjects. According to Gibbons (1979), "if the concepts and propositions about the same object were allowed to lie side by side without any attempt to synthesize, this would be called multidisciplinary study; alternatively, in attempting synthesis, one is attempting integration" (323). Additionally, Harden (2000) points out that "the characteristic of multidisciplinary integration is that, whatever the nature of the theme, it is viewed through the lens of subjects or disciplines" (554).

Robin Fogarty highlights several multidisciplinary approaches within her book "How to Integrate the Curricula" (2009). She highlights 10 ways of integrating curriculum, five of which fall under the multidisciplinary organization. These five approaches include sequenced, shared, webbed, threaded and integrated (Fogarty 2009). Fogarty provides practical descriptions utilizing graphics and diagrams to represent the approaches. The multidisciplinary approach differs from fusion in that fusion makes a new topic based on the integrative parts, while the multidisciplinary approach brings integrative parts together but still identifies them as separate. The representation shown in Table 4 provides an example of the multidisciplinary approach as applied to state populations.

In practice, multidisciplinary curriculum takes on a variety of formats. For example, in a self-contained elementary classroom, it is popular for teachers to organize curriculum into

thematic units. A first-grade class might study weather as a unit. This allows the teacher to cover science and social studies concepts regarding weather patterns and how they affect the environment. This weather unit also provides opportunities to expose students to a variety of texts involving weather and how humans interact with weather.

Table 4
Example of the Multidisciplinary Approach

	Social Studies	Math	Science	ELAR
Multidisciplinary - these explanations are coordinated and happen at the same time in the school year.	Teacher teaches students to use bar graphs to show population of states.	Math teacher teaches students about how to construct and analyze bar graphs as a way of representing data.	Science teacher teaches students to represent data from experiments in bar graphs.	ELAR teacher teaches students to analyze text features from expository texts which include a variety of graphs and charts including bar graphs.

In Table 4, notice that each teacher provides opportunities for students to apply knowledge and skills around the topic of bar graphs. The teachers collaborate to ensure that they each apply the focus topic or skill at the same time.

Broad Fields

Broad fields curriculum is made up of several large fields of study (Hopkins & Hammer 1937). The social studies form a broad field because it is made up of the fields of government, civics, cultural studies, geography, history and economics. The broad fields curriculum is present in the elementary schools, with general subjects such as social studies, language arts, science and math (Hopkins & Hammer 1937). In fact, all subject areas listed previously fall under the broad fields classification as they pull together numerous aspects of a discipline to make up the curriculum.

Hopkins and Hammer (1937) describe how broad fields approaches vary depending on the philosophy guiding the curriculum, either the experience curriculum or the subject philosophy. In experience guided broad field curriculum, specific situations avoid the meticulous planning as seen in the subject guided curriculum (Hopkins & Hammer 1937). The learning is also much more restrictive in the subject guided broad fields curriculum approach, although much less so than the traditional separate subject approach (Hopkins & Hammer 1937). The term "broad" fits this method well, as it encompasses a broad range subjects and applicability.

While similar to fusion, the broad fields approach is different because it focuses on integrating knowledge across an entire disciplinary field, where fusion is focused on bringing together a few disciplines to create a new course or curriculum. The organization of elementary content area standards in Texas is an example of the broad fields method. For example, in all elementary math classes, the content area standards include specific learning expectations in numbers and operations, algebraic reasoning, geometry and measurement, data analysis, personal financial literacy and problem solving. As students' progress through their educational careers, each of these areas become more and more specialized with their own courses and curriculum.

Table 5
Example of the Broad Fields Approach

	Social Studies	Math	Science	ELAR
Broad Fields – these explanations are not coordinated and do not happen at the same time in the school year.	Modern history course which brings together history, civics, culture, government, economics and geography but applied to 20th century.	Precalculus course where students apply concepts and connect ideas in geometry, probability, statistics, trigonometry, and calculus to model physical situations.	Integrated Physics and Chemistry (IPC) course that brings together knowledge of both physics and chemistry and how they work together.	Teacher teaches a unit on expository text where students reading, listen to, speak about and write expository texts.

Table 5 illustrates how the broad fields approach emphasizes building connections within the discipline. A new course of study or unit forms around a disciplinary field, pulling together several specific areas. The new course of study or unit includes its own specific goals and, because there exist connections with other disciplines, those goals are included.

Interdisciplinary

Interdisciplinary refers to the type of curriculum that occurs when disciplines or sub-disciplines come together around a common theme. This occurs by bringing together different disciplines, such a math and science to study measurement. Jacobs (1989) describes interdisciplinary as "a knowledge view and curriculum approach that consciously applies methodology and language from more than one discipline to examine a central theme, issue, problem, topic or experience" (8). However, Jacobs (1989) argues against the use of interdisciplinary methods for the sake of using them. Like any other instructional method, interdisciplinary methods are best utilized when the unit of study and expectations for student learning are the central focus.

While interdisciplinary curriculum sounds similar to multidisciplinary curriculum, the two differ. Interdisciplinary curriculum pays "no reference to individual disciplines or subjects, and subjects are not identified as much in the timetable" (Harden 2000, 555). Instead of focusing on the separate subjects, emphasis rests on the themes of study and the commonalities shared among the disciplines as they relate to the theme of study (Harden 2000). In "How to Integrate the Curricula" (2009) Fogarty highlights three approaches within the interdisciplinary approach. These include cellular, connected and nested (Fogarty 2009). By focusing on the theme of study, separate subjects become secondary, brought in based on needs, and allow for in depth analysis. While organized around real-world questions in a way that removes content area segmentation, interdisciplinary curriculum strives to meet specific curriculum goals.

In practice, interdisciplinary curriculum takes a variety of forms. For example, an elementary class that completes a project-based learning unit around recycling, allows students to apply science and social studies concepts such as natural resources and conservation. Student activities include creating recycling plans for their school, inclusion of media and financial literacy topics to determine how to raise money and buy materials for their recycling goal serve as a few examples. Table 6 provides a picture of the interdisciplinary approach as it applies to conservation.

Table 6
Example of the Interdisciplinary Approach

	Social Studies	Math	Science	ELAR
Interdisciplinary - these explanations are coordinated and happen at the same time in the school year.	Teacher teaches unit on conservation and students solve conservation problems using social studies knowledge and skills.	Teacher teaches unit on conservation and students solve conservation problems using math knowledge and skills.	Teacher teaches unit on conservation and students solve conservation problems using science knowledge and skills.	Teacher teaches unit on conservation and students solve conservation problems using ELAR knowledge and skills.

Table 6 also highlights how the interdisciplinary approach primary focus on the topic or theme, applied within a variety of content areas. Each of the content areas cover the topic or theme at the same time, whether by one or multiple teachers.

Transdisciplinary

Transdisciplinary integration, "transcends the individual disciplines" with a focus "not a theme or topic selected for this purpose, but the field of knowledge as exemplified in the real world" (Harden 2000, 555). The idea of transdisciplinary integration stems from the work of Alfred North Whitehead (1929) and his push for education based on life experiences rather than separate subjects. The transdisciplinary approach allows for life problems to become areas of study within the classroom.

The transdisciplinary approach answers real life problems and brings relevance to student learning. The transdisciplinary approach is predominantly built around student raised concerns or questions (Drake & Burns 2004; Beane 1997). Transdisciplinary curriculum also includes negotiation, where teachers and students negotiate the curriculum, teaching methods and assessments based on their own interests and questions (Drake & Burns 2004). As with all other approaches, a variety of applications exists when putting the approach into practice. Fogarty, in *How to Integrate the Curricula* (2009) provides two approaches to integration utilizing the transdisciplinary approach, immersed and networked. With the transdisciplinary approach, students play a vital role in both the material taught and how they learn it.

With the transdisciplinary approach, teachers include concepts as they apply to the questions raised and the negotiated curriculum. For example, a second-grade class poses a question 'How do we want to help our world?' The class works together to determine how to help people meet their basic needs. Content area instruction emerges as students plan projects that answer the posed question. Specialized content instruction is given to each student or group. Therefore, the teacher works with students and groups individually to ensure project success. Table 7 displays another example of the transdisciplinary approach. Table 7 shows how knowledge from each discipline forms around the relevance of the topic as well as individual student needs. After posing a question, the students work to answer the question, applying knowledge and skills as needed.

Table 7
Example of the Transdisciplinary Approach

	Social Studies	Math	Science	ELAR
Transdisciplinary – no separation of content areas or instructional time	The teacher and students generated a question to study: "How can human behavior change the environment?" The students worked in groups to determine answer this question and design a project that displays their findings. One team wanted to represent numerical data and the teacher worked with the students on displaying data in a variety of ways, including bar graphs			

While not all the groups needed to know about displaying data, the students that did were able to gain the necessary skills to display their findings.

The previous sections included explanations of seven different models of organizing content. For each, the examples provided show how a similar content topic, bar graphs, appear in the disciplinary teachers' instructional activities. The last two approaches, interdisciplinary and transdisciplinary, include the goal of integrating knowledge within the students. The interdisciplinary approach adheres to disciplinary areas but integrates the learning, thereby ensuring all content is covered. The transdisciplinary approach ignores specified content areas and focuses on issues important to the learner, incorporating only the disciplinary knowledge needed to address the questions.

The Disciplinary Scale

The Disciplinary Scale was created as a way to provide information about the major types of curriculum organization approaches. Due to the organization of schools around subject disciplines, as well as the major curriculum goals students need to achieve in separate subjects, most school environments cannot utilize a 100% integrated approach. When determining what curriculum approach to utilize, it is essential to understand how the approach is structured. The Disciplinary Scale acts as a crosswalk that provides information to aid in understanding the variety of organizational approaches to subject area learning. Figure 1 includes a list of each category within the Disciplinary Scale.

- Disciplinary Knowledge
- Connections within the Disciplines
- Connections across Disciplines
- Real World Problems
- Separate Instructional Time

Figure 1 Disciplinary Scale Categories

Justification for Disciplinary Scale

The first category, *Disciplinary Knowledge* indicates a primary emphasis on disciplinary knowledge and skills. This category involves teaching subject areas independent of other subjects with no emphasis on connecting learning together. Approaches primarily focused on Disciplinary Knowledge tend to be teacher, fact and benchmark driven. The second category on the scale is *Connections within the Discipline*. These approaches focus on curriculum goals and objectives while also building connections within the disciplinary field of study. For example, in a geometry lesson, links to other math disciplines, such as algebra or trigonometry, may exist.

Connections across Disciplines is the third category, indicating an approach is focused on building connections across disciplines.

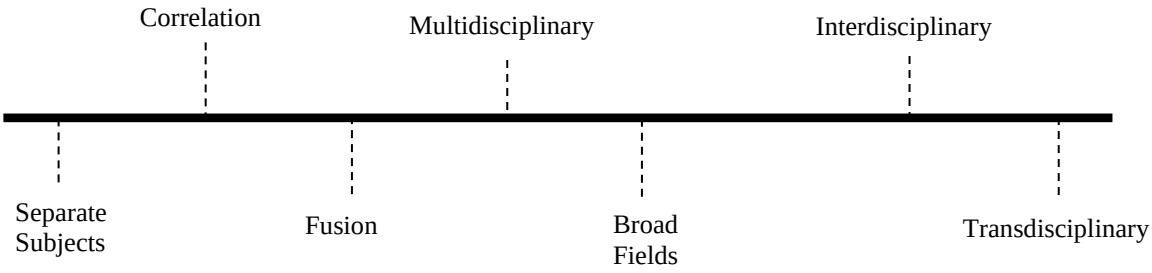
Connections are made across disciplines and include subjects a teacher teaches, previously learned content from former grades or units, or future learning at upcoming grades or units. When utilizing an approach that makes Connections across Disciplines, it is critical the teacher has knowledge of curriculum goals and objectives in other content area.

Real World Problems is the fourth category on the scale, indicating an approach focused on real world problems and issues. This includes building connections to real world situations, solving real world problems, and allowing student input in the learning process. The last category on the scale, *Separate Instructional Time,* indicates how teachers organizes the learning experiences for students. Some approaches keep the school day organized around traditional content areas while other approaches organize the day around problems or projects, making the separate subject topics less identifiable.

Analysis of Curriculum Organization Approaches

While many organizational and disciplinary approaches to curriculum exist, the most popular approaches in the 20th century include correlation, fusion, multidisciplinary, broad fields, interdisciplinary, and transdisciplinary. These approaches vary in how they view disciplinary knowledge. Figure 2 illustrates the continuum of curriculum organization approaches.

Figure 2 Continuum of Curriculum Organization Approaches



Each approach represents a unique view on how discipline knowledge organization. While each approach did not intend to integrate student knowledge, each approach did intend to bring disciplinary knowledge together in a unique way. In the following section, I describe each of the organizational approaches, and analyze each approach based on the categories outlined in the Disciplinary Scale, described above. See Table 8 for the complete analysis of all approaches. As district administrations urge campus administrators and teachers to utilize curriculum integration in their elementary classrooms, these descriptions and the Disciplinary Scale helps them determine the best approach for their environment. The Disciplinary Scale also helps administrators and teachers understand connections between theories and practices that differentiate these approaches. Table 8 shows an example of how a teacher following the correlation model emphasizes disciplinary knowledge and separate instructional time for the subject. On occasion, when appropriate, teachers utilizing correlation make connections within the discipline or across disciplines. With correlation, there is no emphasis on relating discipline to real world problems or questions.

Table 8
Analysis of Curriculum Organization Approaches using the Disciplinary Scale

	Disciplinary Knowledge	**Connection within the Discipline**	**Connection across Disciplines**	**Real World Problems**	**Separate Instructional Time**
Single subject	+	-	-	-	+
Correlation	+	0	0	-	+
Fusion	+	0	-	-	+
Multidisciplinary	+	0	0	0	+
Broad Fields	+	+	-	0	+
Interdisciplinary	0	+	+	0	-
Transdisciplinary	0	0	0	+	-

Key

+ = Primary Focus
0 = There when Needed
- = Totally Ignored

Notice disciplinary knowledge is the primary focus for most of the approaches shown in Table 1. Only the interdisciplinary approach maintains the primary focus of building connections within and across disciplines. None of the approaches focus on both disciplinary knowledge and answering real world questions. The approaches that separate instructional time make it difficult to connect across disciplines, either from a lack of teachers' content area knowledge or a lack of opportunities to collaborate. When utilizing approaches such as correlation or multidisciplinary approaches, opportunities to collaborate with other content area experts, to form authentic connections, are essential.

Conclusions

While bringing subject areas together seems like the best way for elementary teachers to include social studies in their classroom, while simultaneously meeting the demands of testing and accountability; the truth is, little knowledge exists related to the effects of integration on student learning. Though the term integration is used in elementary schools when joining subjects like social studies and reading, little support or professional development occurs on the types of integration. We know that young students must understand specific disciplinary knowledge and skills, yet how it relates to the world outside of schools is also of importance. We need to approach integration as one method to meet the needs of students. At the present time, integration is primarily seen as an organizational method that merely provides an accidental way to include content areas, such as social studies, when there is not enough time, support or knowledge to teach them adequately. Within each of the approaches discussed, correlation, fusion, multidisciplinary, broad fields, interdisciplinary and transdisciplinary, there exist more specific models and explanations for implementation within the classroom. The Disciplinary Scale allows teachers and administrators access to integration by serving as an instructional tool, a tool to help determine which approach best meets their curriculum needs and school environment.

References

Alberty, H. 1938. Development of core curriculums. *Educational Research Bulletin*, 17, no.8: 222–230.

Beane, J. A. 1995. Curriculum integration and the disciplines of knowledge. *Phi Delta Kappan*, 76, no. 8: 616–622. https://doi.org/10.4324/9780203817568.ch20

Beane, J. A. 1997. *Curriculum integration: Designing the core of democratic education*. New York, NY: Teachers College Press.

Crowell, S. 1989. A new way of thinking: The challenge of the future. *Educational Leadership*, 7, no. 1: 60–63.

Dewey, J. 1916. *Democracy and education: An introduction to the philosophy of education*. New York, NY: Macmillan

Dewey, J. 1938. *Experience and education*. New York, NY: MacMillan.

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

Drake, S. M., and Burns, R. C. 2004. *Meeting standards through integrated curriculum.* Alexandria, VA: Association for Supervision and Curriculum Development.

Evans, R. W. 2004. *The social studies wars: What should we teach the children?* New York, NY: Teachers College Press.

Fogarty, R. 2009. *How to integrate the curricula.* Corwin Press

Gibbons, J. A. 1979. Curriculum integration. *Curriculum Inquiry*, 9, no. 4: 321–332.

Gutek, G. 1995. *A history of the western educational experience*. Prospect Heights, IL: Waveland Press, Inc.

Halvorsen, A. L. 2013. *A history of elementary social studies: Romance and reality*. New York, NY: Peter Lang.

Harden, R. M. 2000. The integration ladder: A tool for curriculum planning and evaluation. *Medical Education*, 34, no. 7: 551–557. https://doi.org/10.1046/j.1365-2923.2000.00697.x

Hopkins, L. T. 1937. *Integration: Its meaning and application*. New York, NY: D. Appleton-Century

Hopkins, L.T., and Hammer, I. A. 1937. The broad fields curriculum. In *Integration: It's meaning and application*, edited by L.T. Hopkins, 210-233. D. Appleton-Century

Ingram, J. B. 1979. *Curriculum integration and lifelong education: A contribution to the improvement of school curricula*. New York, NY: Pergamon Press Inc.

Jacobs, H. H. 1989. *Interdisciplinary curriculum: Design and implementation.* Alexandria, VA: Association for Supervision and Curriculum Development.

Maestro, B. 1996. *Coming to America: The story of immigration*. New York: Scholastic Press.

McMurry, F.M. 1927. Some recollections of the past forty years of education. *Peabody Journal of Education*, 4, no. 6: 325-332.

National Council for the Social Studies. 1994. *Expectations of excellence: Curriculum standards for social studies*. National Council for the Social Studies.

National Education Agency. 1895. *Report of the committee of fifteen*. Boston, MA: The New England Publishing Company.

Park, J., and Stephenson, O. W. 1940. Clarifying social studies terms. *Social Education*, 4: 311–316.

Piaget, J. (1972). The epistemology of interdisciplinary relationships. In *Interdisciplinarity: Problems of Teaching and Research in Universities*, edited by L. Apostel, et. al., 127–139. Organization for Economic Co-operation and Development.

Tanner, D., and Tanner, L. 1995. *Curriculum development: Theory into practice*. Prentice Hall.

Ward, J. M., Suttle, J. E., and Otto, H. J. 1960. *The Curriculum integration concept applied in the elementary school*. Austin, TX: The University of Texas Press.

Wesley, E. B., and Adams, M. A. 1946. *Teaching social studies in elementary schools*. Boston, MA: D. C. Heath and Company.

Whitehead, A. N. 1929. *The aims of education and other essays*. New York, NY: Macmillan.

Wraga, W. 2009. Toward a connected core curriculum. *Educational Horizons,* 87, no. 2; 88-96.