

Introduction

To the young mind every thing is individual, stands by itself. By and by, it finds how to join two things and see in them one nature; then three, then three thousand; and so, tyrannized over by its own unifying instinct, it goes on tying things together, diminishing anomalies, discovering roots running underground whereby contrary and remote things cohere and flower out from one stem. . . . The astronomer discovers that geometry, a pure abstraction of the human mind, is the measure of planetary motion. The chemist finds proportions and intelligible method throughout matter; and science is nothing but the finding of analogy, identity, in the most remote parts.

—Emerson

WHAT IS THIS BOOK ALL ABOUT?

To help the “young mind . . . [discover] roots running underground whereby contrary and remote things cohere and flower out from one stem” is at once the mission of the teacher and of the learner. To that end, this book presents models to connect and integrate the curricula in a more coherent fashion.

Yet the question begging for an answer is, “What does integrating the curricula mean?” Does it mean sifting out the parcels of each overloaded discipline and focusing, in depth, on the true priorities, the enduring learnings (Wiggins & McTighe, 1998) (Cellular Model)?

Yet the question begging for an answer is, “What does integrating the curricula mean?”

Does it mean integrating or connecting yesterday’s lesson to today’s topic? Or relating all issues studied in the biology class to the concept of evolution? Or studying concepts such as power and isolation throughout social studies topics? Does it mean making connections explicit rather than implicit with every classroom opportunity (Connected Model)?

Does integrating curricula mean targeting multidimensional skills and concepts into one lesson (Nested Model) or mapping the curricula by rearranging the sequence of when a topic is taught to coincide with a parallel topic in another content area (Sequenced Model)? Does it mean integrating one subject with another through the learner’s conceptual eye or selecting an overall theme

<i>Model</i>	<i>Definition</i>
Cellular Model	Focusing on priorities of each course
Connected Model	Making explicit connections with each classroom opportunity
Nested Model	Targeting multi-dimensional skills and concepts into one lesson
Sequenced Model	Rearranging sequence when a topic is taught to coincide with a parallel topic in another discipline
Shared Model	Integrating one subject with another through the learner's conceptual eye
Webbed Model	Weaving natural and obvious themes of a subject (such as the work of an artist or writer) into the fabric of a discipline
Threaded Model	Integrating what is taught with cognitive tools, strategies, and technical tools that cross disciplines
Integrated Model	Involving interdisciplinary team discussions when planning curriculum
Immersed Model	Connecting past experiences and prior knowledge with new information
Networked Model	Building new bonds of interest with other experts through networking

(such as persistence or argument) or a simple topic (such as transportation) to use as a “big idea” thematic umbrella (Shared Model)? Or is it more deductive in nature, such as selecting a book, an era, or an artist and weaving those natural and obvious themes into the fabric of the discipline (Webbed Model)?

Does integrating curricula mean integrating the content of what is taught with cognitive tools (predicting, classifying), cooperative strategies (debating, finding consensus), and technical tools (computer skills, electronic media) that cross disciplines and spill into real-life situations (Threaded Model)? Or does it encompass interdisciplinary team discussions and planning in which conceptual overlaps (structures, cycles) become the common focus across departments (Integrated Model)?

Does integrating the curricula mean exploiting integrative threads sparked from within the intense interests of the learner (photography, hunting, dancing) to connect past experiences and prior knowledge with new information and experiences (Immersed Model)? Or does it mean reaching out to build bonds with experts in the area of interest (hunting, environmentalist, cartographer) through networking (Networked Model)?

The answer, of course, is that integrating the curricula can be any or all—and more—of the aforementioned models. Each teacher and each learner views the integration process differently. Each finds natural and robust ways to connect the world in search of deeper meaning and richer understanding. Each seeks the relatedness between and among things to discover “roots running underground whereby contrary and remote things cohere and flower out from one stem.”

WHY BOTHER?

Why bother being concerned with a coherent curriculum? What is the rationale for connecting ideas, discerning themes, and threading skills? The answer lies in the four winds of change, coming from four distinct directions, that create the urgency for a more integrated curriculum. The north and south represent the ideas of educational theorists and the challenges of practitioners; the east and west represent the concerns of parents and the perspective of students themselves. From the theorists come data on teaching, learning, and the human brain; from the practitioners, frustration with an overcrowded standards-based and test-driven curriculum. From opposite vectors, parents are concerned about student preparation and readiness for real-world issues, while students see learning as fractured and not very relevant. A closer look at these crosswinds of change reveals their impact on the current educational climate of school reform in our nation's schools.

The Theorists: Research on the Brain and Learning

Supporting the concept of a more connected, integrated curriculum is a research base that delineates 12 principles of the brain and learning (Caine & Caine, 1994, 1997). Note that some of the principles in Figure 0.1 are common sense, others reinforce accepted pedagogy, and still others are just gaining acceptance in the world of cognitive/neuroscience.

Supporting the concept of a more connected, integrated curriculum is a research base that delineates 12 principles of the brain and learning.

1. Learning is enhanced by challenge and inhibited by threat.
2. Emotions are critical to patterning.
3. Learning involves both focused and peripheral perception.
4. The brain processes parts and wholes simultaneously.
5. The brain has a spatial memory system and a set of systems for rote learning.
6. The brain is a parallel processor.
7. Learning engages the entire physiology.
8. Each brain is unique.
9. Understanding and remembering occur best when the facts are embedded in natural, spatial memory.
10. The search for meaning is innate.
11. The search for meaning occurs through patterning.
12. Learning always involves conscious and unconscious processes.

Figure 0.1 Caine & Caine's 12 Principles of the Brain and Learning

SOURCE: Adapted from *Making Connections: Teaching and the Human Brain*, by R. N. Caine and G. Caine, 1994, Reading, MA: Addison-Wesley. Copyright 1994 by Geoffrey Caine. Adapted with permission.

Creating the Learning Environment

The first three principles create the learning environment.

1. *Learning is enhanced by challenge and inhibited by threat.* The brain learns optimally when appropriately challenged and reacts viscerally when it senses threat. Therefore, a safe, rich environment fosters a state of relaxed alertness for learning, whereas threatening experiences, such as testing situations, often create a state of fear and anxiety.

2. *Emotions are critical to patterning.* Emotions and cognition cannot be separated. When emotions kick in, the brain pays attention. Attention is necessary for memory and learning. Therefore, a positive emotional hook, such as an intriguing question, enhances learning.

3. *Learning involves both focused and peripheral perception.* The brain responds to the entire sensory context. Therefore, in an enriched environment, peripheral information can be purposely organized to facilitate learning. Learning centers, study stations, and even the way teachers represent information on the board are organizational tools that enhance memory and learning.

Using Explicit and Implicit Memory Systems

Principles 4 and 5 involve the memory systems.

4. *The brain processes parts and wholes simultaneously.* Bilateralization of right and left hemisphere processing, although inextricably linked for interaction, allows the brain to reduce information into parts and at the same time perceive and work with the information as a whole. Therefore, immediate application of direct instruction of skills and concepts allows the learner to perceive information from both perspectives.

5. *The brain has a spatial memory system and a set of systems for rote learning.* There are facts and skills that are dealt with in isolation and require rehearsal, and at the same time there is natural, spatial memory that needs no rehearsal and affords instant memory. Therefore, rote memorization techniques are necessary for fostering long-term learning for transfer. Rote memorization requires more conscious effort to remember because the facts may have little meaning or relevance to the learner. When the brain senses that there is no need to remember, it tends to let go of the information. Therefore, rote memorization of isolated facts often needs more explicit work to learn and recall information, whereas spatial memory has built-in cues that help in the retrieval of information. Teaching that focuses on the personal world of the learner to make learning relevant taps into the experiential or spatial memory system. In sum, rote memory is explicit, while spatial memory is implicit.

Processing Incoming Information

Processing is supported by four principles.

6. *The brain is a parallel processor.* Thoughts, emotions, imagination, and predispositions operate simultaneously. Therefore, optimal learning results

from orchestrating the learning experience to address multiple operations in the brain. When all four lobes of the brain (frontal, occipital, temporal, parietal) are activated, memory is enhanced. And memory is the only evidence we have of learning (Sprenger, 1999).

7. *Learning engages the entire physiology.* Learning is as natural as breathing, yet neuron growth, nourishment, and emotional interactions are integrally related to the perception and interpretation of experiences. Therefore, stress management, nutrition, exercise, and relaxation are integral to the teaching and learning process.

8. *Each brain is unique.* Although most brains have a similar set of systems for sensing, feeling, and thinking, the set is integrated differently in each brain. In short, each and every brain is wired differently. Therefore, teaching that is multifaceted, with inherent choices and options for the learner, fosters optimal learning.

9. *Understanding and remembering occur best when the facts are embedded in natural, spatial memory.* Specific items are given meaning when embedded in ordinary experiences, such as learning grammar and punctuation and applying that learning to writing. Experiential learning that affords opportunities for embedded learning is necessary for optimal learning.

Making Meaning

The final three principles address the brain's way of making meaning.

10. *The search for meaning is innate.* The search for meaning cannot be stopped, only channeled and focused. Therefore, classrooms need stability and routine as well as novelty and challenge. The learning can be shepherded explicitly through mediation and reflection.

11. *The search for meaning occurs through patterning.* The brain has a natural capacity to integrate vast amounts of seemingly unrelated information. Therefore, when teaching invokes integrated, thematically reflective approaches, learning is more brain compatible and, subsequently, enhanced.

12. *Learning always involves conscious and unconscious processes.* Enormous amounts of unconscious processing go on beneath the surface of awareness. Some of this happens when a person is awake, and much of it continues when a person is at rest or even asleep. Other learning occurs when the person is fully conscious and aware of the process. Therefore, teaching needs to be organized experientially and reflectively to benefit maximally from the deep processing.

Profile of Intelligences

In addition to these principles of the brain and learning, another important fact is that each brain has a unique profile of intelligences (Gardner, 1983, 1999) that reveal both strengths and weaknesses in accessing learning. These intelligences include verbal-linguistic, visual-spatial, interpersonal-social, intrapersonal-introspective, musical-rhythmic, logical-mathematical, bodily-kinesthetic, and naturalist-physical world.

These principles of learning and the theory of multiple intelligences provide a profound backdrop of theory-embedded ideas.

These principles of learning and the theory of multiple intelligences provide a profound backdrop of theory-embedded ideas that comprise this first wind of change. What does this forceful wind bring to the educational agenda? It brings the idea of orchestrating the curriculum into complex experiences that immerse students in multiple ways of learning and knowing (Kovalic, 1993). These robust curriculum models include integrated, thematic instruction and ongoing projects and performances, such as a student-produced newspaper, a school musical, or a service learning project to eliminate graffiti in the community (Caine & Caine 1991, 1994, 1997). This seamless learning—curricula that find the “roots running underground”—fosters connection-making for lessons and learners.

The Practitioners: Abandonment of an Overloaded Curriculum and Adherence to Standards of Learning

One university professor tells his pre-med students, “By the time you graduate and become practicing physicians, 50 percent of what we’ve taught you will be obsolete . . . and we don’t know which half that will be” (Fogarty & Bellanca, 1989). Curriculum overload is a reality that teachers from kindergarten to college face every day. Drug and alcohol education, AIDS awareness, consumer issues, marriage and family living, computer technology, Web and Internet training, wikis, blogs, podcasts, character education and bullying, the human brain, and safety and violence prevention programs have all been added over the years to an already content-packed curriculum. There is no end to it. The myriad content standards of the various disciplines and the process standards or life skills—thinking, organizing, assessing information, problem solving and decision making, cooperation, collaboration, and teamwork—inundate the expanding curriculum.

Meeting Standards With Integrated Curricula

There is much concern about how to meet the spectrum of content standards required by various states. Some think that each standard must be addressed discretely and within a particular discipline. Yet common sense tells us that if educators try to approach standards by laying them end to end in a sequential discipline-based map, they would need to add at least two more years to the schooling cycle. The only way the compendium of standards can possibly be met is by clustering them into logical bundles and addressing them in an explicit yet integrated fashion.

Common sense tells us that if educators try to approach standards by laying them end to end in a sequential discipline-based map, they would need to add at least two more years to the schooling cycle.

It’s not standards *or* curriculum, but rather standards *and* curriculum. Standards help to prioritize content teaching in an overloaded, fragmented, and sometimes outdated curriculum. They provide the foundation for what students need to know and be able to do. Well-designed standards help set the curricular priorities necessary for an integrated, coherent, and authentic curriculum.

With this solid foundation firmly in place, decisions about curriculum become seamless as teachers decide what to selectively abandon and judiciously include in their planning. Standards champion the cause of a more connected, more relevant, more purposeful curriculum at all levels of schooling.

The sample standards of learning in Figure 0.2 illustrate the types of learning goals contained in typical state standards for student achievement. A cursory look at these reveals the broad strokes of the standards and the ease of integration that can result if they are clustered and layered within robust learning.

This book promotes the concept of a standards-based and integrated curriculum that is reflective of lifelong learning. With standards as the guide for rigorous and relevant curricular decisions, readers may use the inventories provided later in this introduction (Figures 0.7 and 0.8) to determine what they are already doing to foster integration of concepts, skills, and attitudes across the disciplines.

These quick inventories introduce readers to the 10 models that shape integration of the curricula in myriad ways. As readers learn about the models described in this book, they discover ways to prioritize curriculum concerns, methods for sequencing and mapping curricular content, templates for webbing themes across disciplines, techniques for threading life skills into all content areas, and strategies to immerse students in content through self-selected, personally relevant learning experiences.

The focus on standards-based curricula begins the conversation about what students need to know and be able to do. The concept of integrated curricula continues the conversation with practical ways to transform that learning into real-life experiences that transfer effortlessly into future applications.

Remember, it's not standards *or* integrated curriculum, but both standards *and* integrated curriculum that lead to students who are well prepared for a world that we as their teachers may never know.

With a multitude of standards as the goal, coverage of content, of course, is an ongoing concern as traditional evaluations (e.g., "the test") are supplemented with more authentic assessments (e.g., portfolios, performances). Yet as Hunter (1971) so aptly puts it, "Covering the curriculum is like taking a passenger to the airport—you rush around and get to the airport on time, but you leave the passenger at home" (p. 51). In other words, a teacher finishes the book or curriculum but wonders if the students came along for the ride. In the flurry of covering content standards to prepare students for "the test," teachers leave some students far behind. As one student said, "Mrs. Smith, may I be excused? My brain is full."

What does this powerful wind of change mean for schools? It means educators need to seek ways to "selectively abandon and judiciously include" standards in the curriculum (Costa, quoted in Fogarty, 1991, p. 65). The standards are the goals of the curriculum approach, within a single discipline, across content areas, and in the mind of the learner.

The concept of integrated curricula continues the conversation with practical ways to transform that learning into real-life experiences.

The Parents: What Will Our Children Need 25 Years From Now?

A father of a 13-year-old describes the typical, cellular model of schooling in which an eighth-grade student brings home "thirty examples to do for math

Communications Arts Standards

Students will acquire a solid foundation that includes knowledge of and proficiency in:

1. speaking and writing standard English (grammar, punctuation, spelling)
2. reading and evaluating fiction (poetry, drama) and nonfiction (biographies, newspapers, technical manuals)
3. relationships between language and culture

Mathematics Standards

Students will acquire a solid foundation that includes knowledge of and proficiency in:

1. addition, subtraction, multiplication, division, and other number sense
2. data analysis, probability, and statistics
3. mathematical systems, geometry, and number theory

Science Standards

Students will acquire a solid foundation that includes knowledge of and proficiency in:

1. properties and principles of matter and energy, force and motion
2. characteristics and interactions of living organisms
3. processes of scientific inquiry

Social Studies Standards

Students will acquire a solid foundation that includes knowledge of and proficiency in:

1. economic principles
2. principles of democracy and processes of governance
3. geographical study and analysis

Fine Arts Standards

Students will acquire a solid foundation that includes knowledge of and proficiency in:

1. processes and techniques of production, exhibition, and performance
2. principles and elements of different art forms
3. interrelationships of visual and performing arts

Health/Physical Education Standards

Students will acquire a solid foundation that includes knowledge of and proficiency in:

1. structures of, functions of, and relationships among human body systems
2. principles and practices of mental health
3. principles of movement and fitness

Figure 0.2 Sample Standards of Learning

SOURCE: Adapted from *Standards of Learning*, by Missouri Department of Elementary and Secondary Education, 1996, Jefferson City, MO: Author. Copyright 1996 by Missouri Department of Elementary and Secondary Education. Adapted with permission.

homework, twenty minutes of trombone practice, an autobiography to complete, irregular French verbs to learn for a test, and a chapter to read in the science text” (Fogarty, 1991, p. 61). He goes on: “There is a need to examine what students learn

Surely we must wonder: what do we want kids to know twenty-five years from now?

under these circumstances. Students may opt to do all of it, do some of it or do none of it. Surely we must wonder: what do we want kids to know twenty-five years from now? And, we must create the organizational structure that eliminates obstacles and enables students to grow and learn” (p. 62).

This wind of change means that students need schooling for a lifetime, not just for the test (Bellanca & Fogarty, 1991). In terms of relevant learning for life, one parent related a comment from her son, who told her, “I have a million things on my mind, and not one of them turned up on the test.”

Yes, educators want all students to meet the learning standards, and they want them to pass the test, but in the end they really want students to be able to function effectively in life. Interestingly, one critical element of integrated learning is the lifelike projects that are relevant and meaningful to students.

The Students: Education Is a Vaccination

A student once told me, “Math is not science; science is not English; English is not history. A subject is something you take once and need never take again. It’s like getting a vaccination; I’ve had my shot of algebra. I’m done with that.” While subject matter content falls neatly into those discipline-based departments, students, unfortunately, do not compartmentalize themselves or their learning that readily.

Learning is incidental and inductive (Kovalic, 1993); it’s holistic and interactive (Bellanca & Fogarty, 1991). Students learn complex language skills from their interactions with the language in genuine and authentic episodes. Baby talk disappears because other people do not talk that way. The comment “We learned about irregular verbs today” will be self-corrected to conform with standard English because students desperately want to say things “the right way.” And they learn much of this naturally in integrated, cross-ability groupings of siblings and peers.

What does this wind of change mean? It means a shift toward more holistic, experiential learning for children. It means problem-based learning, case studies, performance tasks, service learning, apprenticeships, and internships. Learning is a function of experience, and teachers must create the experiences for learners.

HOW CAN THE CURRICULUM BE INTEGRATED?

Each teacher and each learner views the integration process differently. Yet there is a common vision encompassing three distinct dimensions that is accepted by a large number of educators (see Figure 0.3).

Each teacher and each learner views the integration process differently.

The vertical spiral represents the spiraling curricula built into most texts and standards documents as content is integrated and revisited through the K–12

grades. Introduction, development, and mastery of certain materials are expected at various levels in preparation for building on that material for the next concepts at subsequent levels. Integration occurs vertically throughout the schooling years.

The horizontal band represents the breadth and depth of learning in a given subject. As different subjects are approached, explored, and learned within each discipline, a cumulative effect is anticipated. Students are to expand their conceptual bases for future learning in related fields: one math concept builds toward the next as ideas are integrated within a discipline.

Finally, the circle represents the integration of skills, themes, concepts, and topics across disciplines as similarities are noted. These explicit connections are used to enhance the learning in a holistic manner as students link ideas within one subject area and from one subject to another. Both integration within a discipline and integration across disciplines are necessary to fully integrate the curricula.

10 Models of Integrating the Curricula

To further explore this idea, this book presents detailed discussions on a range of models (see Figure 0.4 for a graphic overview). Beginning with an exploration within single disciplines, at the left end of the spectrum, and continuing with models that integrate across several disciplines, the continuum ends with the ultimate and most natural models that integrate within the learner.

These models provide a tool for teachers and teacher leaders to inventory what they are already doing in their classrooms and schools to integrate the curricula. Figure 0.5 identifies the 10 views for integrating the curricula. See Figures 0.6 and 0.7 for interactive charts of the 10 models.

These are the forces that are moving educators toward integrated, holistic, and authentic kinds of learning.

The winds of change are stronger than we think.

The brain research, the off-loading of an overloaded curriculum, the emergence of standards-based curricula, the need for the life skills of thinking and collaborating, and the call for learner-centered schools are moving forces in the educational world today. These

winds signal the need for integrated, rich, and robust curricula that serve as gateways to lifelong learning—not as gatekeepers that block the pathways from one discipline to another. These are the forces that are moving educators toward integrated, holistic, and authentic kinds of learning. The winds will not calm. Change is in the air. It is imminent.

AGREE/DISAGREE INTRODUCTORY ACTIVITY

Use the Agree/Disagree chart (Figure 0.8) to record your positions regarding statements about integrating the curricula before reading more about it. Read each statement and place a plus, minus, or question mark next to it.

Plus—Agree

Minus—Disagree

Question Mark—Not Sure

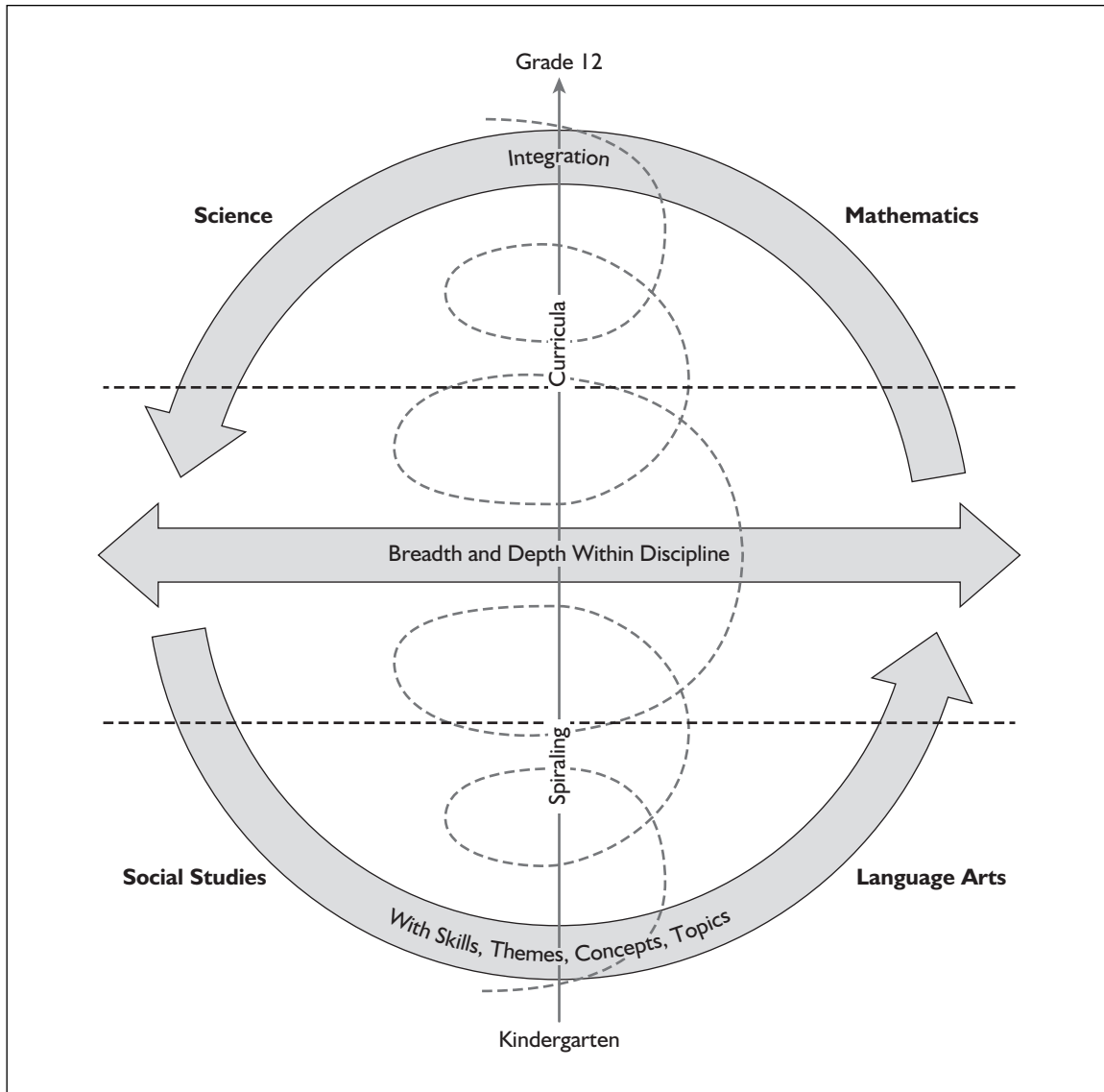


Figure 0.3 How to Integrate the Curricula: Three Dimensions

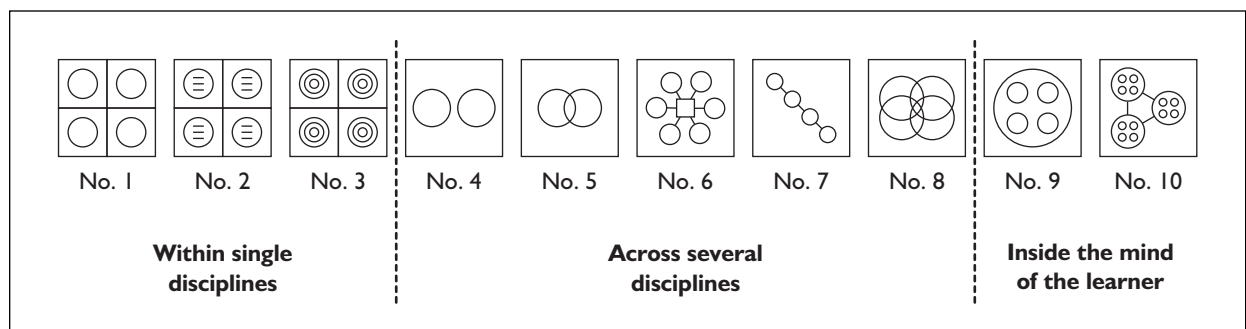

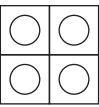


Figure 0.4 How to Integrate the Curricula


Ten Views for Integrating the Curricula: How Do You See It?

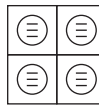
1  **Cellular**
Periscope—one direction; one sighting; narrow focus on single discipline or content area



Description
The traditional model of separate and distinct disciplines, as depicted by student learning standards in each discipline area.


Example
The teacher applies this view in mathematics, science, social studies, language arts or sciences, humanities, fine and practical arts.

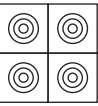
2  **Connected**
Opera glass—details of one discipline; focus on subtleties and interconnections



Description
Within each subject area, course content is connected topic to topic, concept to concept, one year's work to the next, and relates ideas explicitly.


Example
The teacher relates the concept of fractions to decimals, which in turn relates to money, grades, etc.

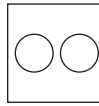
3  **Nested**
3-D glasses—multiple dimensions to one scene, topic, or unit



Description
Within each subject area, the teacher targets multiple skills: a social skill, a thinking skill, and a content-specific skill based on standards.


Example
The teacher designs the unit on photosynthesis to simultaneously target consensus seeking (social skill), sequencing (thinking skill), and plant life cycle (science content).

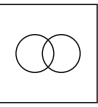
4  **Sequenced**
Eye glasses—varied internal content framed by broad, related topics



Description
Topics or units of study are rearranged and sequenced to coincide with one another. Similar ideas are taught in concert while remaining separate subjects.


Example
An English teacher presents a historical novel depicting a particular period while the history teacher teaches that same historical period.

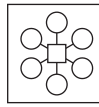
5  **Shared**
Binoculars—two disciplines that share overlapping concepts and skills



Description
Shared planning takes place in two disciplines in which overlapping concepts or ideas emerge as organizing elements.


Example
Science and mathematics teachers use data collection, charting, and graphing as shared concepts.

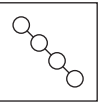
6  **Webbed**
Telescope—broad view of an entire constellation as one theme, webbed to the various elements



Description
Webbed curricula represent the thematic approach to integrating subject matter.


Example
The teacher presents a simple topical theme, such as the circus, and webs it to the subject areas. A conceptual theme, such as conflict, can be webbed for a broader thematic approach.

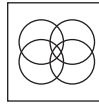
7  **Threaded**
Magnifying glass—big ideas that magnify all content through a metacurricular approach



Description
Standards, thinking skills, social skills, study skills, graphic organizers, technology, and a multiple intelligences approach to learning thread through all disciplines.


Example
The teaching staff targets prediction in reading, mathematics, and science lab experiments while the social studies teacher targets predicting current events, and thus threads prediction across all four disciplines.

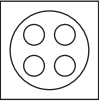
8  **Integrated**
Kaleidoscope—new patterns and designs that use the basic elements of each discipline



Description
The integrated curricular model represents a cross-disciplinary approach similar to the shared model.

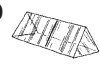
Example
In mathematics, science, social studies, fine arts, language arts, and practical arts, teachers look for patterns and approach content through these patterns in all the discipline areas.

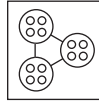
9  **Immersed**
Microscope—intensely personal view that allows microscopic exploration as all content is filtered through lens of interest and expertise



Description
The individual integrates all data, from every field and discipline, by funneling the ideas through his or her area of interest.

Example
A student or doctoral candidate has an area of expert interest and sees all learning through that lens.

10  **Networked**
Prism—a view that creates multiple dimensions and directions of focus



Description
The networked model of integrated learning is an ongoing external source of input, forever providing new, extended, and extrapolated or refined ideas.

Example
An architect, while adapting the CAD/CAM technology for design, networks with technical programmers and expands her knowledge base, just as she had traditionally done with interior designers.

Figure 0.5 Toward an Integrated Curriculum

SOURCE: Based on *Design Options for an Integrated Curriculum*, by H. H. Jacobs (Ed.), 1989, Alexandria, VA: Association for Supervision and Curriculum Development.

Are We or How Are We Integrating the Curricula?

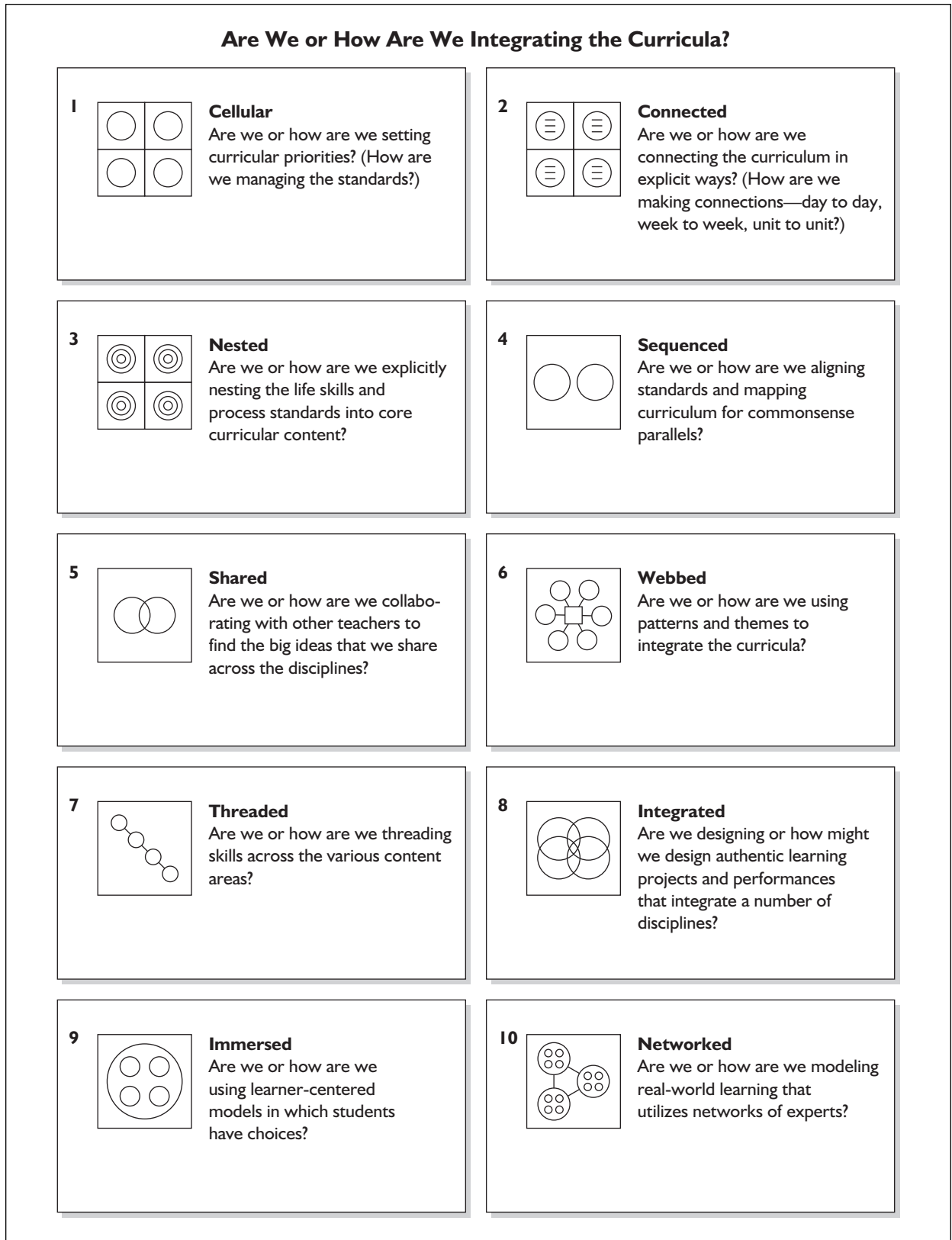


Figure 0.6 10 Models of Curricular Integration: How Are We Doing?

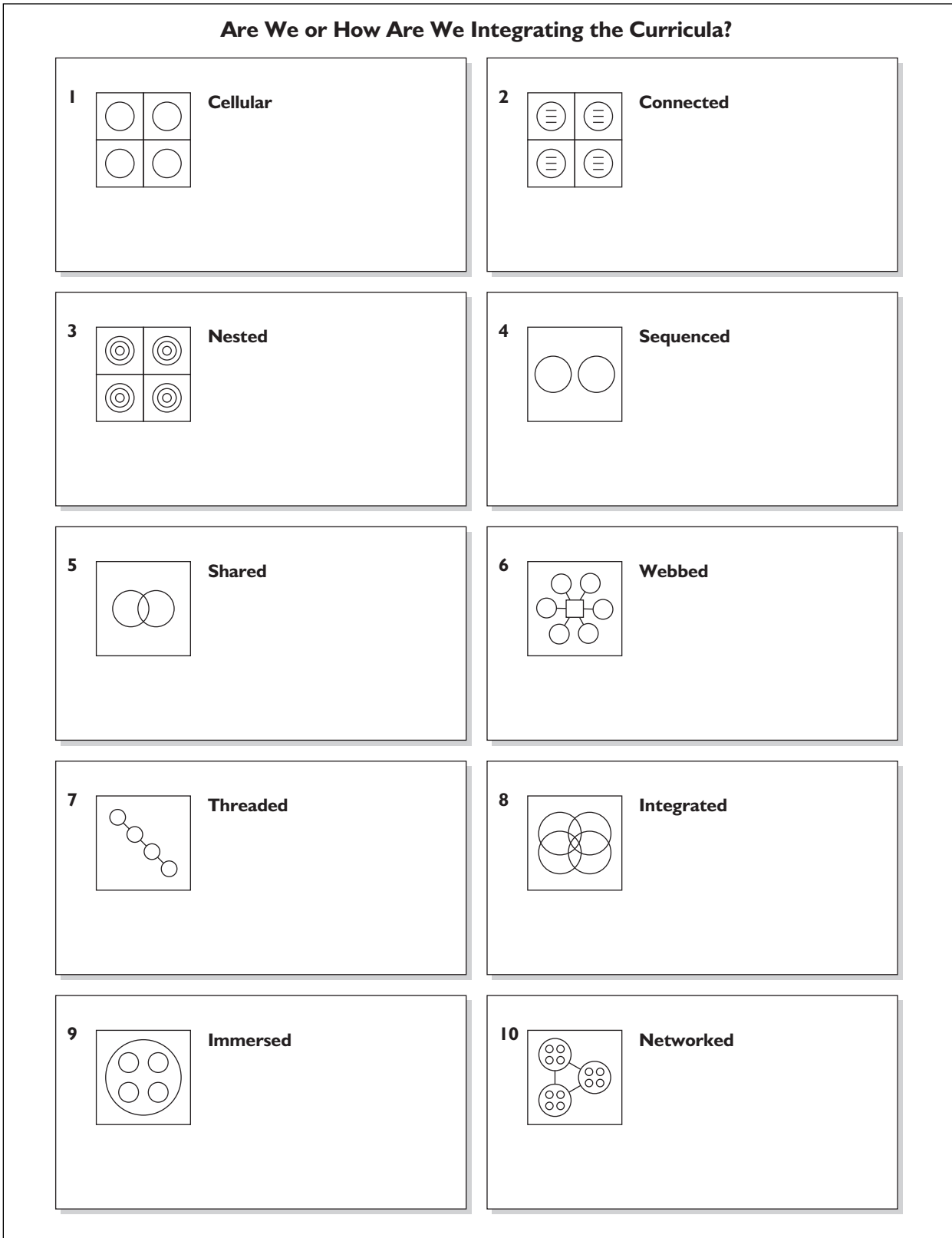


Figure 0.7 Tally Sheet for Personal Reflections and Comments

Use individual thinking first, and then dialogue with a partner.

Statement	Before		After	
	Agree	Disagree	Agree	Disagree
1. Integrating is connecting today's topics to yesterday's.				
2. Integrating means selecting an overall theme.				
3. Team teaching is part of integrating the curricula.				
4. It's so easy to integrate a novel with history.				
5. Math can't be integrated because it's sequential.				
6. <i>Integrated</i> is a synonym for <i>interdisciplinary</i> .				
7. We're already doing integrated models.				
8. The purity of the discipline is lost in integrated curricula.				
9. Integrated models are easier for students, harder for teachers.				
10. Integration is clustering standards in robust projects.				
11. Integrated models take too much time.				
12. Performance tasks are examples of integrated curricula.				

Figure 0.8 Agree/Disagree Chart

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FOUR-FOLD CONCEPT DEVELOPMENT ACTIVITY

To discover the meaning behind the idea of curriculum integration, the team-building four-fold concept development activity can help the group come to a common understanding of the concept. In groups of two, three, or four, fold a large piece of poster paper into four sections and label the sections as shown in the diagram: LIST, RANK, COMPARE, ILLUSTRATE. Write “Curriculum Integration” at the top of the paper, and follow the cues provided by the headers and label in Figure 0.9.

First, brainstorm 10–20 synonyms of phrases for the concept of curriculum integration. Then, rank the top three through discussion and place the three words in the appropriate section. Now, think of an analogy, by finding a tangible, concrete object, to compare to the concept of curriculum integration.

Figures 0.10–0.12 provide several examples to use to prime the pump as you and your team think about an analogy. Look these over, and then proceed with your analogy in the third section. Then, add the accompanying visual metaphor or poster illustration in the last section.

<p>LIST Brainstorm 20 synonyms</p>	<p>RANK Prioritize the top 3</p>
<p>COMPARE Use the analogy: _____ is like curriculum integration because both _____.</p> <ol style="list-style-type: none">1.2.3.	<p>ILLUSTRATE</p>

Figure 0.9 Curriculum Integration

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EXAMPLES OF THE FOUR-FOLD CONCEPT DEVELOPMENT ACTIVITY

CI: Curriculum Integration

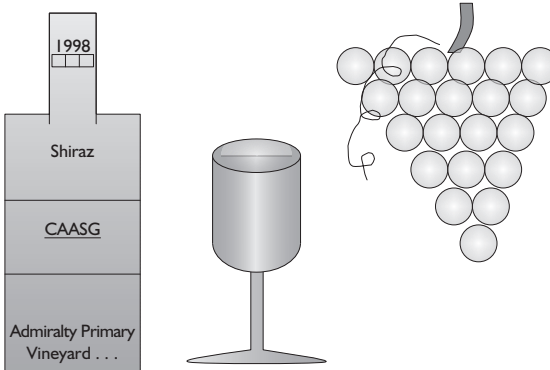
<p>LIST</p> <p>Brainstorm Synonyms, Phrases, etc.</p> <p>Interdisciplinary Active Learning</p> <p>Teamwork Relationships</p> <p>Connections (building) Student-centered</p> <p>Across the board</p> <p>Cross subjects/departments</p> <p>Prior knowledge</p> <p>Themes</p>	<p>RANK</p> <p>Best Ideas</p> <div style="border: 1px solid black; padding: 5px; text-align: center; margin-bottom: 10px;">Interdisciplinary</div> <div style="border: 1px solid black; padding: 5px; text-align: center; margin-bottom: 10px;">Building connections</div> <div style="border: 1px solid black; padding: 5px; text-align: center;">Active learning</div>
<p>COMPARE</p> <p>Integrated curriculum is like a <u>good wine</u> _____, because both _____.</p> <ol style="list-style-type: none"> 1. Get better over time. 2. Leave a bittersweet taste in the mouth. 3. Provide flavor to the day. 4. Are best in moderation. 	<p>ILLUSTRATE</p> 

Figure 0.10

CI: Curriculum Integration

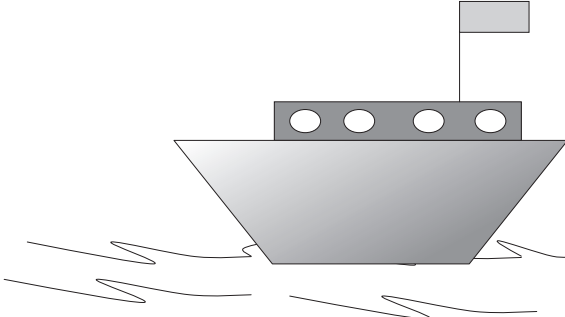

<p>LIST</p> <p>Brainstorm List of Synonyms, Phrases, etc.</p> <table border="0"> <tr> <td>Complement</td> <td>Making meanings</td> </tr> <tr> <td>Differentiated</td> <td>Applying knowledge</td> </tr> <tr> <td>Seamless</td> <td>Enhanced learning</td> </tr> <tr> <td>Projects</td> <td>Infusion</td> </tr> <tr> <td>Make connections</td> <td>Planning</td> </tr> <tr> <td>Consolidation</td> <td>Teamwork</td> </tr> <tr> <td>Interdisciplinary</td> <td>Progressive</td> </tr> <tr> <td>Reflective Practices</td> <td>Interdependent learning</td> </tr> </table>	Complement	Making meanings	Differentiated	Applying knowledge	Seamless	Enhanced learning	Projects	Infusion	Make connections	Planning	Consolidation	Teamwork	Interdisciplinary	Progressive	Reflective Practices	Interdependent learning	<p>RANK</p> <p>Best Ideas</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">Interdisciplinary</td> </tr> </table> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">Infusion</td> </tr> </table> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">Seamless</td> </tr> </table>	Interdisciplinary	Infusion	Seamless
Complement	Making meanings																			
Differentiated	Applying knowledge																			
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Projects	Infusion																			
Make connections	Planning																			
Consolidation	Teamwork																			
Interdisciplinary	Progressive																			
Reflective Practices	Interdependent learning																			
Interdisciplinary																				
Infusion																				
Seamless																				
<p>COMPARE</p> <p>Concrete Object to Curriculum Integration in an Analogy</p> <p>Integration is like <u>shipbuilding</u>, because both _____.</p> <ol style="list-style-type: none"> 1. Result in a greater final product. 2. Fuse different types of materials. 3. Include specialization of the different components. 	<p>ILLUSTRATE</p> <p>With a Visual Metaphor</p> 																			

Figure 0.11

CI: Curriculum Integration

<p>LIST</p> <p>Brainstorm Synonyms, Phrases, etc.</p> <table border="0"> <tr> <td>Rich</td> <td>Engaged learning</td> </tr> <tr> <td>Teamwork</td> <td>Relationships</td> </tr> <tr> <td>Interconnected</td> <td>Student-centered</td> </tr> <tr> <td>Cross subjects/departments</td> <td>Connectedness</td> </tr> <tr> <td>Prior knowledge</td> <td>Woven</td> </tr> <tr> <td>Themes</td> <td>Interwoven</td> </tr> <tr> <td>Threaded</td> <td>Laced</td> </tr> <tr> <td>Coherency</td> <td>Spiced</td> </tr> <tr> <td>Robust</td> <td></td> </tr> </table>	Rich	Engaged learning	Teamwork	Relationships	Interconnected	Student-centered	Cross subjects/departments	Connectedness	Prior knowledge	Woven	Themes	Interwoven	Threaded	Laced	Coherency	Spiced	Robust		<p>RANK</p> <p>Best Ideas</p> <div style="border: 1px solid black; padding: 5px; text-align: center; margin-bottom: 10px;">Student-centered</div> <div style="border: 1px solid black; padding: 5px; text-align: center; margin-bottom: 10px;">Connectedness</div> <div style="border: 1px solid black; padding: 5px; text-align: center;">Coherency</div>
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Cross subjects/departments	Connectedness																		
Prior knowledge	Woven																		
Themes	Interwoven																		
Threaded	Laced																		
Coherency	Spiced																		
Robust																			
<p>COMPARE</p> <p>Concrete Object to Curriculum Integration as an Analogy</p> <p>Integration is like <u>a bowl of ice cream</u>, because both _____.</p> <ol style="list-style-type: none"> 1. Are refreshing and renewing (quench thirst for knowledge). 2. Have many varieties and variations on the theme. 3. Are colorful (different subjects/interesting). 	<p>ILLUSTRATE</p> <p>With a Visual Metaphor</p> <div style="text-align: center;">  </div>																		

Figures 0.12

HOW DO TEACHERS USE THIS BOOK?

This book is divided into 10 chapters, one for each of the models. The discussion for each model includes answers to the following questions:

What is it? (a metaphorical name and description of the model)

What does it look like? (examples of integrating the model)

What does it sound like? (examples of integrating the model)

What are the advantages? (benefits for teaching and learning)

What are the disadvantages? (detriments for teaching and learning)

When is this model useful? (purposeful and meaning applications)

To complete the discussion of each model, a vignette of teachers working with it is presented in script format for a quick readers' theater activity when using the book as a course or for the reader to ponder if using the book independently. The scripted scenarios depict the ongoing interactions and evolving journey of four faculty members trying to integrate the curricula.

There are four teachers in the scripts, symbolizing typical departmental staff who are in the process of shifting toward a more integrated approach to curriculum. The first teacher is Maria Novela, the language arts teacher, who has been with the district for 17 years. The second teacher, Sue Sum, is a recent graduate who landed a job in the mathematics department. Bob Beaker has manned his science lab for the past 5 years. And Tom Time has been in the history department "since time began." Obviously, with tongue in cheek, these scenarios are included to signify the real concerns of staff.

Each chapter ends with a set of graphics that are included for reader use. Each model includes actual samples of curricular integration for teachers to study and discuss as well as a graphic that requires teachers to design lessons and units using the construct.

Whether you are working alone, with partners, or in teams, the organizers provide immediate and visible transfer of the models into useful prototypes. In fact, a faculty can easily work with this over time to develop integrated curricula throughout the school. Each staff member or team can choose one model to work with each semester or combine models that seem to have a synergy built in. Or students themselves can work with the models to explore the connections they make within and across disciplines and within and across learners.

The templates are visible evidence of the integration ideas and solidify the ideas in a highly concrete way. As teachers begin the conversation about integrating the curricula, the spectrum of models becomes more inviting.

As teachers begin the conversation about integrating the curricula, the spectrum of models becomes more inviting.