

Contents

FOREWORD

vii

ACKNOWLEDGMENTS

ix

INTRODUCTION

xiii

MODEL 1

Cellular

Setting Curricular Priorities

1

MODEL 2

Connected

Making Explicit Connections

9

MODEL 3

Nested

Layering Life Skills into Content Lessons

17

MODEL 4

Sequenced

Mapping the Curricula

25

HOW TO
INTEGRATE
THE CURRICULA

MODEL 5

Shared

Collaborating for Conceptual Understandings

35

MODEL 6

Webbed

Creating Patterns and Themes

45

MODEL 7

Threaded

Weaving the Life Skills Across Content

59

MODEL 8

Integrated

Designing Products and Performances

71

MODEL 9

Immersed

Fostering Learner-Centered Instruction

81

MODEL 10

Networked

Promoting Real-World Learning Networks

91

BIBLIOGRAPHY

105

INDEX

109

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.

What does integrating the curricula mean? Does it mean sifting out the parcels of each overloaded discipline and focusing on the priorities in depth? (Cellular Model)

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 does it mean utilizing concepts such as *power* and *isolation* throughout the social studies topics? (Connected Model)

Does integrated curricula mean targeting multidimensional skills and concepts into one lesson (Nested Model), or rearranging the sequence of when a topic is taught to coincide with a parallel topic in another content? (Sequenced Model) Does it mean integrating one subject with another through the learner’s conceptual eye (Shared Model), or select-

ing an overall theme (such as *persistence* or *argument*), or a simple topic (such as *transportation*) to use as a thematic umbrella? Or is it selecting a book, an era, or an artist and weaving those themes into the fabric of the discipline? (Webbed Model)

Does integrated curricula mean integrating the content of what is taught with cognitive tools and cooperative strategies that cross disciplines and spill into life situations? (Threaded Model) Or does it encompass interdisciplinary team planning in which conceptual overlaps become the common focus across departments? (Integrated Model)

Does integrating the curricula mean exploiting integrative threads within the learner to connect past experiences and prior knowledge with new information and experiences (Immersed Model), or does it mean reaching out to build bonds with other experts 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.

Why Bother?

Four winds of change drive the need to create integrated curriculum. These winds come from four distinct directions. The north and south are the ideas of the educational *theorists* and the challenges of the *practitioners*; the east and west represent the concerns of *parents* and the perspective of the *students* themselves. From the theorists come data on teaching, learning, and the human brain; from the practitioners, frustration with an over-crowded standards-based and test-driven curriculum. From opposite vectors, parents are concerned about student preparation and readiness for real-world issues, while the children themselves see learning as fractured and not very relevant. A closer look at these crosswinds of change reveals their impact on the current education 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 curricula is a research base that delineates twelve principles of the brain and learning (Caine and Caine 1994). Note in Figure 0.1 that some of these principles are common sense, others reinforce accepted pedagogy, and still others are just gaining acceptance in the world of cognition.

Caines' Twelve Principles of the Brain and Learning

1. Learning is enhanced by challenge.
2. Emotions are critical to patterning.
3. Learning involves both focused and peripheral perception.
4. The brain processes parts and whole 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.

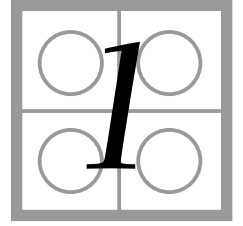
(Adapted from Caine and Caine 1994, *Making Connections: Teaching and the Human Brain*.)

Figure 0.1

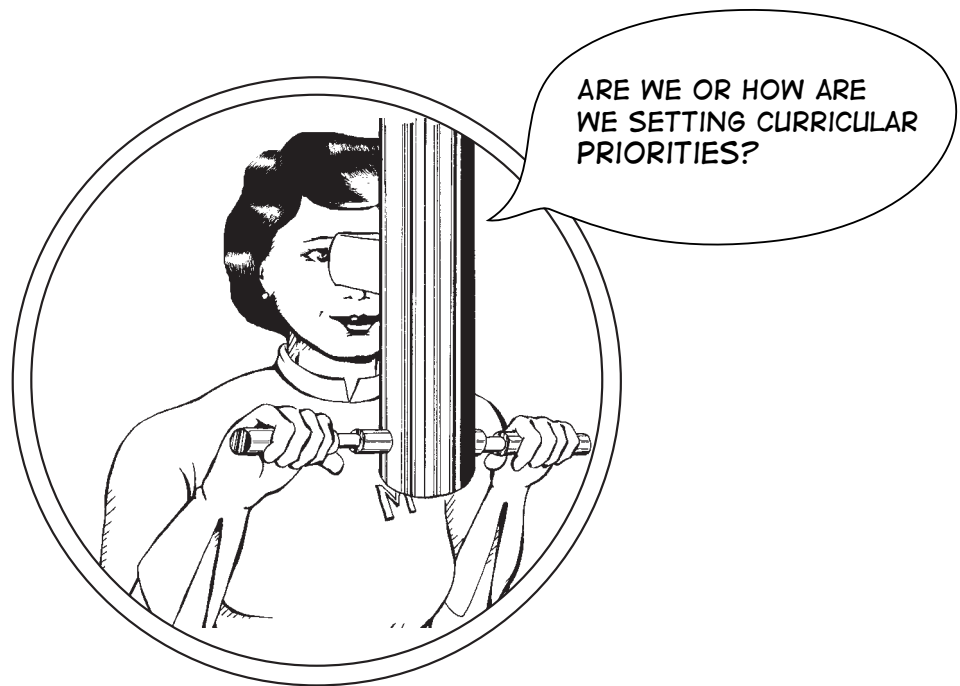
Creating the Learning Environment

The first three principles create the learning environment.

1. *Learning is enhanced by challenge.* 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, and that 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. The use of learning centers, study stations, or even the way teachers represent information on the board are organizational tools that enhance memory and learning.

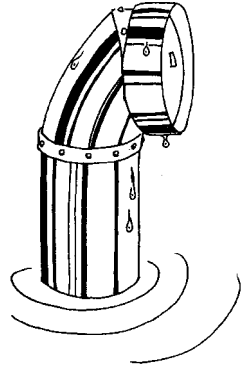


Cellular

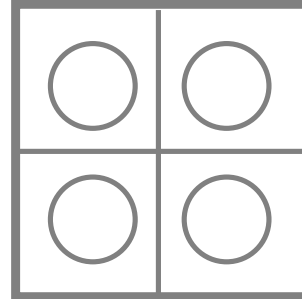


The traditional model of separate and distinct disciplines, as depicted by student learning standards in each discipline area.

CELLULAR



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



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

Example

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

“Education is the instruction of the intellect in the laws of Nature.”

—Thomas Huxley

What Is the Cellular Model?

The traditional curricular arrangement dictates separate and distinct disciplines. Typically, the four major academic areas are labeled mathematics, science, language arts, and social studies. Fine arts and practical arts pick up the remaining subjects of art, music, and physical education, which are sometimes considered peripheral subjects when compared to the hard-core academic areas. Another grouping of the disciplines uses the categories of humanities, sciences, practical arts, and fine arts. In the standard curriculum, these subject matter areas are taught in isolation, with no attempt to connect or integrate them. Each is seen as a pure entity in and of itself. Each has separate and distinct content standards. Although there may be overlaps in the sciences of physics and chemistry, the relationships between the two are implicitly, not explicitly, approached through the curriculum.