

Table of Contents

Italicized entries indicate reproducible pages.

About the Authors	ix
Introduction	1
How Brain-Friendly is Differentiation?	1
The Rise, Fall, and Rise of Differentiation	2
About This Book	3
Questions This Book Will Answer	3
Chapter Contents	4
Other Helpful Tools	5
1 The Nonnegotiables of Effective Differentiation	7
Teaching With a Focus on Learners	8
A Model for Effective Differentiation	9
Brain Research Supports Differentiation	13
Differentiation in a Nutshell	15
2 Mindset, Learning Environment, and Differentiation	17
What Are Mindsets?	18
The Effective Teacher's Mindset	19
Teachers Have a Lifelong Impact	19
The Classroom Must Feel Safe and Secure	20
All Students Want to Succeed	21
The Social-Emotional Needs of Students Must Be Met	22
Empathy Is Very Important	24
Students Should Feel a Sense of Ownership of Their Education	24
Teachers Should Identify and Reinforce Each Student's Areas of Competence	24
Teachers Should Address Fears of Failure and Humiliation	25

- What are the components of learning profiles, and how do teachers plan for them?
- What are some strategies for effectively managing the differentiated classroom?

Chapter Contents

Chapter 1: The Nonnegotiables of Effective Differentiation—In this chapter, we describe differentiation and its research base. We present a model that incorporates the basic elements of a differentiated classroom and give a brief overview of the model's parts that will be discussed in greater detail in succeeding chapters.

Chapter 2: Mindset, Learning Environment, and Differentiation—Here we explore different types of teacher and student mindsets and how they may affect teaching and learning. We describe the impact of the classroom and school environment on body chemistry as well as on social needs and other factors that affect student learning.

Chapter 3: Curriculum and Differentiation—This chapter deals primarily with the five important components of a brain-friendly quality curriculum. We discuss each component and suggest ways that it can be implemented in a differentiated classroom.

Chapter 4: Classroom Assessment and Differentiation—Because assessment is such an integral part of teaching and learning, we devote this chapter to examining the nature and purposes of assessment. We focus particularly on assessment strategies that are more likely to be effective because they take into account the diversity among learners.

Chapter 5: Differentiating in Response to Student Readiness—Student readiness is often equated with student ability, but they are not the same. In this chapter, we explain the differences, discuss why readiness matters, and offer suggestions for responding to student readiness through the learning environment as well as through curriculum, assessment, and management strategies.

Chapter 6: Differentiating in Response to Student Interest—How much interest a person has in learning something is a key factor in that person's motivation to learn and his or her subsequent achievement. Here we state why addressing students' interests can make for challenging, rewarding, and successful learning activities. We include suggestions for taking students' interests into account when supporting the learning environment and when planning curriculum, assessment, and management strategies.

Chapter 7: Differentiating in Response to Student Learning Profile—Although teachers are aware that students learn in different ways, planning for these differences on a day-to-day basis may seem impractical. But that is

Exercise 5.2

Differentiating Content, Process, and Product Based on Student Readiness

Here are some suggestions for activities that can help you differentiate content, process, and product based on your students' readiness. Add to each section other activities that you and your colleagues feel are appropriate. Building administrators can use this activity at a faculty meeting to discuss the school's progress in working toward differentiating these three components based on student readiness.

Differentiating Content Based on Readiness

1. Use a metaphor from a student's life to help him or her understand an abstract idea in science.
2. Provide students with texts in which the most essential passages have been highlighted so that a student with reading/language difficulties can succeed with what matters most.
3. Use small-group instruction targeted at members' readiness levels.
4. Ask a student who is struggling with reading to meet with two reading groups a day rather than one.
5. Offer mini-workshops as students' work indicates difficulty with key content.
6. Provide key vocabulary lists with both drawn and written definitions to help students understand a text or lecture.

Additional Activities

Differentiating Process Based on Readiness

1. Use manipulatives to help some students understand fractions (but don't use them with students who already understand the concept fully).
2. Use a computer math tutorial that assesses a student's readiness and provides tasks and feedback at the appropriate level.

Table 7.1: Howard Gardner’s Designated and Possible Intelligences

Intelligence	Description
Verbal-Linguistic	Sensitivity to and/or appreciation of words and language; ability to use words effectively for self-expression and communication and to remember information; ability to learn languages
Logical-Mathematical	Ability with numbers, logic, deduction, and the processes of scientific inquiry; ability with procedural and systematic thinking
Visual-Spatial	Ability to see objects in space; ability to recognize, create, and/or appreciate patterns in space; appreciation of color, shape, and form
Musical-Rhythmic	Ability to compose, perform, and/or appreciate sound, tone, and musical sequences; sensitivity to sounds
Bodily-Kinesthetic	Ability to use the body to address or solve problems; ability to use the body for self-expression and communication; ability to coordinate body and mind effectively
Interpersonal	Ability to understand, communicate with, and effectively work with others; ability to appreciate the motivations and goals of others and to work with them toward achieving those goals; ability to lead
Intrapersonal	Ability to understand one’s own motivations, fears, goals, and needs; ability to use self-understanding to regulate one’s life; reflective nature
Naturalist (added in the 1990s)	Sensitivity to the environment and its elements; ability to see and/or appreciate patterns in nature and to draw on them effectively to solve problems
Moral (possible, not yet confirmed)	Concern with or sensitivity to the rules, behaviors, and processes that govern humans; reverence for the sanctity of life in various contexts; well-developed sense of right and wrong and what benefits the greater good

Robert Sternberg’s triarchic theory of intelligence proposes that individuals can process or interact with ideas through three modes or intelligences: analytical, practical, and creative. Table 7.2 lists and briefly describes Sternberg’s three proposed intelligence areas. Although Sternberg sees value in enabling individuals to strengthen and capitalize on the intelligence(s) in which they are strongest, he cautions that successful people often work from a balanced state in which all three areas function effectively as needed for a given setting. While schools tend to emphasize analytical intelligence almost exclusively,

the separate entities *cognitive style* and *learning strategy* (Gardner, 2006; Sadler-Smith, 2001). Cognitive style describes the consistent differences among individuals in organizing and processing information. These style differences are stable over time, automatic, and independent of intelligence. Learning strategy refers to the interface between cognitive style and the many factors present in the external learning environment (Riding & Rayner, 1997).

Cognitive style describes consistent differences among individuals in organizing and processing information. Learning strategy refers to the interface of cognitive style with the external environment.

What Neuroscience Research Says About Learning Profile

Learning profile obviously concerns processes that occur in the brain. Yet neuroscientific research has discovered limited evidence to support the idea that individuals actually learn in different ways by using different neural networks to accomplish similar learning tasks. But there is *some* evidence, mostly related to gender. Studies have shown, for example, that female brains generally use more brain regions to process language than male brains and that the female advantage in language processing results from greater communication between the cerebral hemispheres (Garn, Allen, & Larsen, 2009; Schmithorst & Holland, 2007; Shaywitz et al., 1995; Wilke, Holland, & Krägeloh-Mann, 2007). In figure 7.2, the solid white areas show activation in a male brain and a female brain during language processing. Note the greater activation in the female brain. Other brain-imaging studies have shown that during mathematical processing, the brain areas activated in males are different from those activated in females (Keller & Menon, 2009).

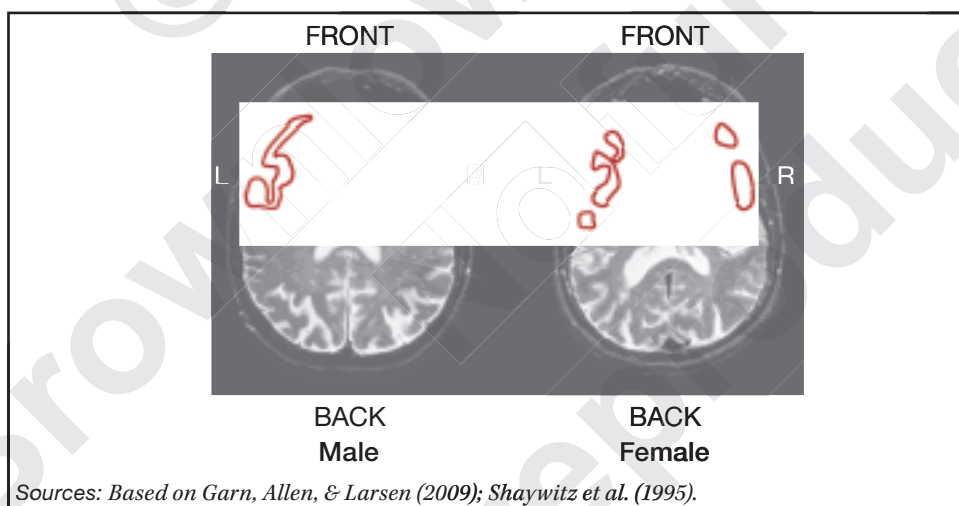


Figure 7.2: Areas activated during language processing.

Studies using electroencephalograms (EEGs) have shown that the activated brain regions differ among individuals of the same gender when performing the same cognitive task, suggesting that the EEGs are measuring different cognitive (that is, processing) styles (Goode, Goddard, & Pascual-Leone, 2002; McKay, Fischler, & Dunn, 2002; Okuhata, Okazaki, & Maekawa, 2009). As for learning strategies, the restrictive environments necessary for using