

DONNA WALKER TILESTON

**What Every Teacher
Should Know About**
SPECIAL LEARNERS



Contents

About the Author	vii
Acknowledgments	ix
Introduction	xi
Vocabulary Pre-Test	xv
1. Differentiation and the Brain	1
The Brain in Action	2
Processing Information	9
Storing and Retrieving Information	11
2. Who Is At Risk and What Can We Do About It?	21
Conditions Often Included in At-Risk Criteria	24
Behavioral Disorders	35
Teaching and Learning Strategies That Have a Profound Effect on At-Risk Learning	37
Strategies That Impact the Learning of All Students	39
3. Special Education Students in the Regular Classroom	47
Federal Regulations	48
Explanation of Special Education Categories	52
The Process	60
4. Gifted Education: Differentiation	63
Differentiating Through Content	63
Differentiating Through Process	65

Differentiating Through Product	72
Using Gifted Strategies	81
Vocabulary Summary	83
Acronyms Associated With Special Learners	91
Vocabulary Post-Test	95
References	101
Index	103

1

Differentiation and the Brain

Differentiation is the use of time, planning, and instructional practices to meet the different needs of diverse learners. Tomlinson (1999) says, “In differentiated classrooms, teachers begin where students are, not the front of a curriculum guide.” The classroom teacher has the task of differentiating curriculum every day in order to meet the needs of all of the learners. Special populations, which include at-risk students, special education students, and gifted students, all need that differentiation if they are to be successful.

Some of the special populations that we will discuss in this chapter and the chapters to follow include those students—

1. Identified as needing the services of a program for academically gifted
2. Identified as having Attention Deficiency Disorder (ADD) or Attention Deficiency Hyperactive Disorder (ADHD)
3. Identified for services under the guidelines of special education

2 Special Learners

4. Identified for services under at-risk guidelines including guidelines for English language and second language learners, compensatory education, Section 504, and Title I
5. Identified for services under emotional and behavioral services

THE BRAIN IN ACTION

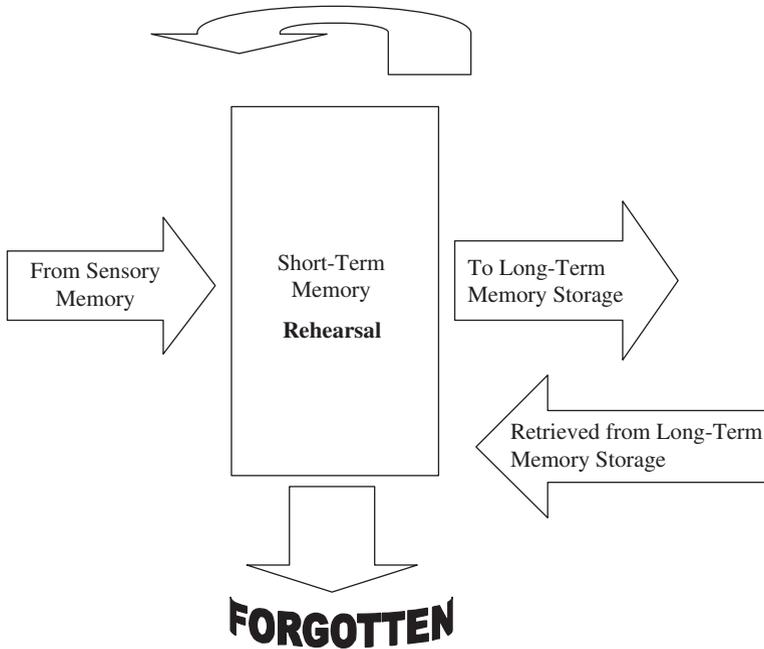
In order to understand the needs of these students and how the classroom teacher can modify and differentiate for those differences, it is necessary to look at how the brain learns, processes, and retrieves information under most circumstances. According to Sprenger (2002), we identify as “smart” those students who can take in information efficiently and quickly, process it, and then retrieve it quickly when it is needed. Gifted students tend to process more efficiently and quickly, and thus they need modifications so that they are challenged sufficiently and can reach their potential. Students with learning or behavioral problems may not be able to carry out one or more of these functions (taking in information, processing it, and retrieving it) without difficulty.

Incoming Information

It has been said that smart people are those who can quickly store and retrieve information. Underachievers are those who process information quickly but retrieve it from storage slowly; overachievers are those who process information slowly but retrieve it from storage quickly. How, then, can we help students process information in a faster and more efficient way so that when they need to use the information they can retrieve it quickly?

Our rate of learning is the amount of time it takes to acquire information. Using the graphic in Figure 1.1, let’s look at how the brain takes in information, how it decides what to keep and what to discard, and how it retrieves information from long-term memory.

Figure 1.1 A Summary View of the Learning Process, From the Senses to Retrieval



Most brain researchers say that 99% of what we learn comes to us through our senses—vision, hearing, smelling, tasting, and feeling. That means that the classroom environment is important and that the way teachers teach students is important in getting information processing in the brain. For students experiencing difficulty with the learning, the classroom environment is a critical part of the learning process for them. How can we help these students to use their senses to take in information at a more efficient rate and to move the information to the processing center of the brain?

Using a Variety of Learning Modalities

Researchers have identified three learning modalities most often used by students to taking in information. Most of

4 Special Learners

us prefer one of these modalities to the others and are able to take in information faster and more efficiently if taught in our preferred modality. As a matter of fact, it is believed that students who have difficulty with the learning will not be successful unless they are re-taught in the modality in which they learn best. Following is a discussion of the three modalities and their characteristics (from Tileston, 2000).

Visual Learners. Visual learners make up the largest group in the classroom; perhaps as many as 87% of the students in any given classroom are visual learners. These students need to “see” the learning: Memorizing formulas in math is not enough for them. They need to know how the math works and they need to see it visually. Many of our at-risk students can be moved to higher levels of understanding simply by adding visual tools to the learning. Both linguistic and nonlinguistic tools are the keys to working with these learners.

Visual learners are those students who:

- Have difficulty remembering names but may remember details about a person
- Learn best when there are visual tools to help explain the learning
- Would rather read a story than have someone tell it to them
- Organize thoughts by writing them down
- Have difficulty remembering directions that are told to them
- Facial expressions often give away their emotions
- Like puzzles

As teachers, we can help these students to be more successful by using visual models. Visual models are usually either linguistic (i.e., use words to communicate the information) or nonlinguistic (i.e., use structure, symbols and fewer words to communicate the information). Form 1.1 is an example of a nonlinguistic organizer that helps students to organize the information in their notebooks.

Form 1.1 Linguistic Organizer

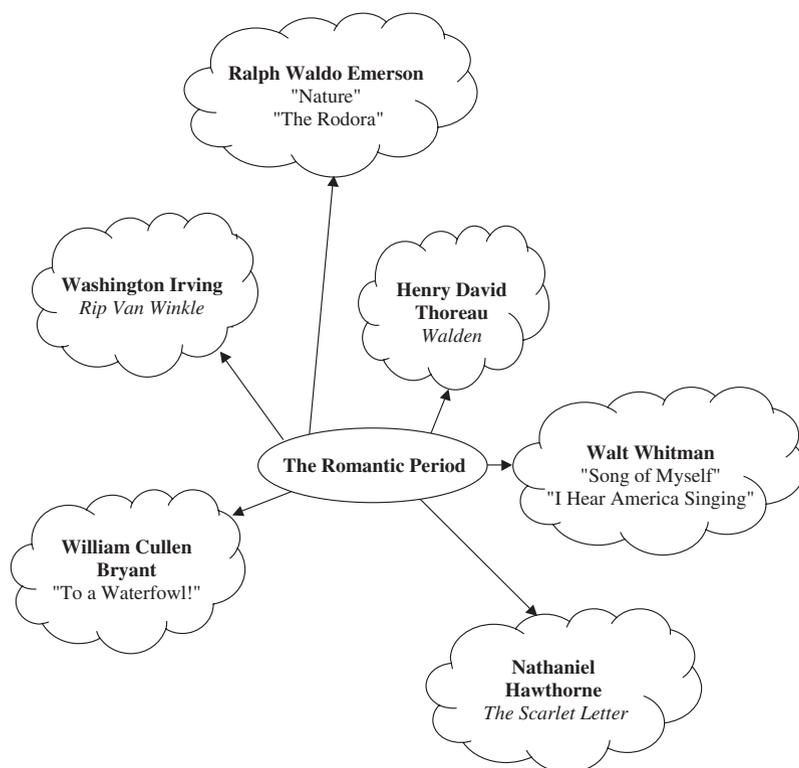
<i>Mathematical Principle</i>	<i>Example</i>	<i>Notes to Help Me Remember</i>

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Students with learning problems are usually not very well organized, yet they need the structure to help them learn. For these students, it is essential that the classroom teacher set up structures to help these students organize their work. The structure in Form 1.1 is set up for a math notebook so that students can keep up with the different math concepts and formulas and how they are used. For language arts, a similar chart might be included for vocabulary words or parts of speech. For science, how to read the periodic table might be put into a graphic format.

An example of a nonlinguistic organizer is provided in Figure 1.2. A nonlinguistic organizer relies on structure and few words to help students learn.

The brain likes structure. As a matter of fact, the brain builds new learning by attaching it to old learning or experiences. When we can put information into a structure, we help all learners, but especially at-risk learners, to understand the information. In studies conducted by Mid-continent Regional Educational Laboratory and written by Marzano (1998), the effect size of using graphic models to help learners was significant. This means that students working at the 50th percentile range who receive instruction that includes visual

Figure 1.2 Nonlinguistic Organizer

graphic models can make as much as 39 percentile points progress when the instructional strategy is used properly. In other words, a student at the 50th percentile range can be moved to the 89th percentile range through the appropriate use of visual models. While this information comes from studies with regular education students, the studies conducted under the auspices of the U.S. Department of Education (2002) conclude that practices that make a significant difference in the learning of regular education students will probably make a significant difference for all students.

For students with visual perception problems or poor experiences with the learning, visuals will only be helpful if they are discussed in detail by the teacher or by others. Guenther (1998) says that what we see is really not a direct

representation of reality but one based on inferences within our brains based on past experience and perceptions. Given (2002) provides the following example:

Two students may react quite differently to a poster showing various brain lobes and an announcement that the next thematic science unit will focus on the nervous system. A student with low reading skills and limited success in science may perceive only portions of the poster that accentuate his weaknesses. He immediately believes that his skills are inadequate to the task, fails to see any positive aspects of the project, and responds with worry. By contrast, another student, whose background is richly endowed, may perceive abundant detail and look forward to the experience as an exciting new learning opportunity.

Auditory Learners. Auditory learners make up the smallest number of the learners in the classroom. Many veteran teachers are auditory learners and were taught in classrooms that relied on lecture and discussion for learning. Few of today's students learn that way, which explains why many students struggle in a classroom based solely on lecture for disseminating information. It is not unusual to find in these classrooms that only a small percentage of the students are successful—usually those students who are auditory and those students that are good at adapting to the mode of teaching being used at any time. Most at-risk students are not good at adapting to the teaching style of the classroom.

Students who are auditory learners:

- Remember names better than faces
- Forget what is read unless it is discussed
- Would rather be in a group discussion about a topic than to read about it
- Are easily distracted by sounds
- Are good storytellers