

memory

AT WORK IN THE CLASSROOM

Strategies to Help Underachieving Students

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Acknowledgments	vii
Preface.....	ix
Introduction.....	1
1. Why Learn About Memory?	6
2. Five Core Memory and Learning Concepts	11
3. Why Do the Cultural Roots of Learning Matter So Much?	24
4. Working Memory: The Doorway to Learning	40
5. Executive Functions	68
6. Semantic Memory: Foundation of Academic Learning.....	102
7. Semantic Memory: A Sociocultural Perspective	128
8. Episodic Memory	153
9. Autobiographical Memory	174
10. Practice	184
Conclusion.....	200
References	205
Index.....	214
About the Authors.....	220

INTRODUCTION

The primary goal of this book is to help classroom teachers figure out how to support learners—*especially* struggling learners—through a focus on human memory. By developing a deeper understanding of learning and learners, we can teach more effectively. We also have to understand classroom learning as a process that plays out in a social and cultural context. Each chapter is a balance between science’s new insights into human memory, filtered through the lens of how learning is also a cultural process, and how this informs classroom learning and instruction. We can harness this knowledge to gain fresh insights into the challenges faced by students who struggle academically. Each chapter provides a set of practical classroom strategies that address pressing issues in the education of our school-age children.

By exploring the different dimensions of memory and their implications for the social and individual dimensions of teaching and learning, this book can serve as a primer for all of us who would like to better understand why our struggling students continue to underperform academically, and how we can enrich our classroom teaching to better address their educational needs.

What You Will Learn in This Book

Through the study of research on learning and memory, we encourage teachers to take on the role of “learning specialist” with a particular focus on students who are academically underperforming. The book provides classroom teachers with the opportunity to deepen their understanding of both the central role that memory plays in academic learning and the (sometimes surprising) role that culture plays in memory formation and use. We present a framework for looking at learning as a social and cultural process, as a way to connect the reality of learners as neurobiological individuals to their equally important reality as social and cultural beings.

Using real-life teaching examples, the book highlights a set of specific classroom learning challenges that students (and teachers) face. We analyze these challenges from the perspective of the memory systems that play the central role in classroom learning. At each major point about memory systems, practical classroom applications accompany new insights into memory and learning. When appropriate, these are described as to how they apply to more than one grade level, and there are examples from both elementary and secondary levels throughout the book. The final chapter argues for the importance of teachers advocating for and teaching in ways that are consistent with the needs of academically challenged learners.

Chapter 1: Why Learn About Memory?

Teachers are overwhelmed as it is, so why add one more thing to our load? This chapter explores the importance of teachers becoming learning specialists, attuned to the leaning needs of our most vulnerable learners. We connect the dots as to why it is so important to take the time to understand memory systems in relation to learning, in spite of all we have to do, to better reach and teach our struggling learners.

Chapter 2: Five Core Memory and Learning Concepts

As classroom teachers, we are well trained in terms of curriculum and teaching methods, but often don't know enough about the process of learning itself. However, if we understand the functional and neurological characteristics of memory and learning, it will help

us better understand the nature of classroom learning and avoid misunderstanding the source of many challenges that students face. The five core concepts introduced in this chapter sketch out the parameters of the physical nature of our memory systems and guide our understanding of the cognitive realities of classroom learning.

Chapter 3: Why Do the Cultural Roots of Learning Matter So Much?

Many culturally and linguistically diverse learners struggle in our classrooms, in spite of best practices and new training and programs. Low-income students struggle even if they are from the “mainstream culture.” This chapter explores diverse communities of learners and highlights the social roots of human memory and learning. A sociocultural framework is introduced to help understand and respond effectively to the struggles that many academically underachieving students face.

Chapter 4: Working Memory: The Doorway to Learning

Ever wonder why students seem to forget so much of what we thought they’d learned? The key is working memory.¹ Working memory is central to learning, as it is where we initially process new information about what we’re learning, focus attention, and manipulate information. It is closely connected to the conscious mind. It’s the gateway for all learning. It is in working memory, for example, that reading comprehension takes place and mental math is processed. Chapter 4 shows how working memory plays a decisive role in all learning—if the classroom environment is not attuned to working memory, then learning will be impaired.

Chapter 5: Executive Functions

Academic learning depends on the ability to independently interpret, strategize, and problem solve—what are called executive function skills. The problem for many struggling students is weak executive function skills, so their learning is built on a house of sand, no matter how we teach our lessons. Executive functions² work closely with working memory in the regulation of attention and decision making to support academic learning. In this chapter, we explore some key executive function skills needed for successful academic learning.

Chapters 6 and 7: Semantic Memory

Semantic memory³ is our storehouse of facts about the world: world capitals, the year we were born, the molecular formula for water, our child's face, the texture of oatmeal. It is stuffed full of all the accumulated knowledge of our own years on the planet, not to mention whatever we take from the store of human knowledge formed over millennia, and stored (semipermanently) in our semantic memory. It is semantic memory that stores our knowledge of words—their meanings, pronunciations, and spellings—and how they are related to other words and concepts. Much of schooling is directed at enriching the knowledge stored in semantic memory. Chapter 6 examines important features of semantic memory that impact classroom learning. In this chapter, we also discuss another long-term memory system, procedural memory,⁴ and its role in issues of literacy development and second language learning. Chapter 7 explores the cultural roots of semantic memory organization, as well as a set of important cognitive skills closely connected to semantic memory organization.

Chapter 8: Episodic Memory

Think of an important event that you experienced in your life. Perhaps you remember the birth of a child, or the day you graduated from college or were married. Vivid personal memories of both daily events and important events in our lives, complete with images, sounds, and feelings, are stored in episodic memory.⁵ It records our everyday lives—where we were, when the event happened, what we did and said, what we were wearing, who we talked with. While semantic memory stores facts, episodic memory records our sensory impressions of our lives. We explore the role that this form of long-term memory plays in classroom learning in Chapter 8.

Chapter 9: Autobiographical Memory

Over time, students develop a sense of themselves as students: good at math, bad at spelling, interested in art or science, and especially good or not at reading. This self-image strongly impacts academic performance and is formed in autobiographical memory.⁶ When students are independent, confident, and motivated, there's a much stronger likelihood of academic success than if students are always dependent on us, lack confidence, and feel that any efforts they make will go for naught. An understanding of autobiographical memory provides an opportunity for us to develop a new awareness of

our role as classroom teachers in creating positive learner identities, a key indicator of our effectiveness as teachers.

Chapter 10: Practice

It is essential that students take initial classroom learning and transform it into stable, productive, long-term development. They do that through practice. In this chapter, we explore a number of issues related to maximizing student practice, including the importance of helping struggling learners figure out effective ways to practice.

Conclusion

The sad reality is that despite an endless parade of new teaching methods, curriculum reform, and educational policies, the academic gap of middle-class/affluent and lower socioeconomic students continues to grow. Many of our struggling students come from diverse communities, with non-literacy-oriented and culturally disrupted learners. We advocate for teachers as *learning specialists* to focus on understanding the source of struggling students' academic challenges and ways to help students become better learners especially in light of the Common Core. This includes advocating for classroom practices that are aligned with the functioning of human memory and the ways children learn.

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1. Baddeley (2007).
 2. Barkley (2012).
 3. Grossman and Koenig (2002).
 4. Paradis (2009).
 5. Draaisma (2004).
 6. Baddeley et al. (2009).