

Preface

Learning is a very different process than attention.

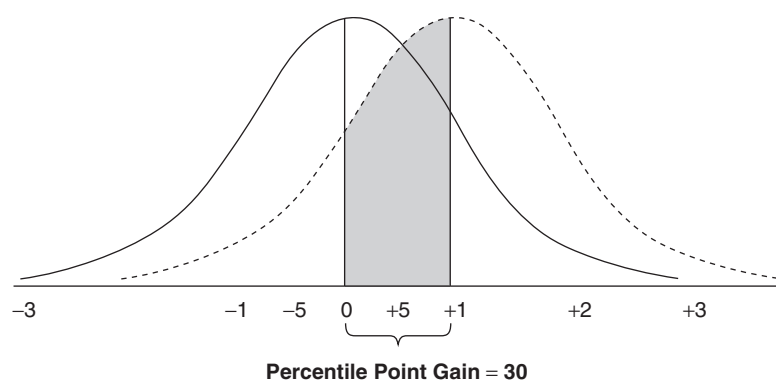
—Eric Jensen (1997, p. 27)

This book is written to incorporate what we know about how the brain learns and remembers—the order of the processes that seem to bring about the highest effects on student learning. It does not matter where we begin teaching our lessons; our students' brains begin in the self-system. If we want to tap into the natural incentives to learn, we must begin where our students are, and that involves the self-system. There is an order to learning that seems (through meta-analysis studies) to provide a greater response by the brain to the new information. How we teach is just as important as what we teach in terms of storage and retrieval. Within this book, you will be guided through a step-by-step process for powerful lessons that make a difference in student learning because they are based on the latest information on the brain.

The uniqueness of this model is that it is systemic rather than piecemeal. One of the reasons that models so often fail to live up to their promises is that they have either addressed only a single experience in one school or only a small portion of the process. You can find books that address motivation or assessment or metacognition. This book addresses all of the key aspects of the learning process. While the pilot school for these strategies showed remarkable results, the meta-analysis of many, many studies is also provided to back up the research. We live in an age of accountability, and it is important to ask of any research the following two questions:

- What does the meta-analysis of many studies say about the expected results of using this strategy?

Tileston (2006) explains meta-analysis as a study of the studies relating to given techniques and the effects of those techniques on actual student learning when compared to the learning of students who were not exposed to the techniques. Figure P.1 provides an example: Suppose that a classroom average for understanding vocabulary is at the 50th percentile. If we employ a certain method for teaching vocabulary, what does meta-analysis say will be the effect on student learning? In

Figure P.1 Meta-Analysis Example

this case, the effect was .84, meaning that the average effect size for the students in the experimental group was .84 standard deviation higher than those of the control group.

One of the useful features of using meta-analysis is that these scores can be interpreted into percentile points. An overall effect size of .84 translates into 30 percentile points. In other words, students exposed to the given method for teaching vocabulary have shown an increase in their learning by 30 percentile points over those in a control group that did not receive the same instructional practice. This research is key to making good choices about which instructional strategy to use in the classroom. In this book, where appropriate, you will be given the average effect sizes and percentile point gains for the various strategies.

- Under what conditions does the strategy work best?

While many books on the market today would have you believe that whatever strategy they are pitching works across the board, there are only a handful of strategies that do. Most strategies work differently depending on whether you are teaching declarative or procedural information and in what system of the brain you are working. For example, when introducing a unit of study, you are usually tapping into the self-system of the brain that constitutes the feelings, emotions and motivations of the learner. Strategies that have been shown through meta-analysis to have a high effect on learning at that stage of the lesson may be very different from the strategies that might be employed while teaching a process in the cognitive system.

DOES THE STRATEGY FOLLOW CURRENT BRAIN RESEARCH?

Most of the books on the market address interesting activities to be used in the classroom but lack a systemic plan for using them. Thus teachers are left with disjointed activities that they must try to fit into the lessons. These chapters are about a different approach to teaching and learning.

This book represents years of research on the factors that encourage learning and those that impede learning, whether the class is 45 minutes in length or lasts for several hours. In a classroom where quality learning is taking place, a set of characteristics is present. I call this set of characteristics *strategic learning* because it follows a specific plan (strategy) and has as its goal quality learning that leads to long-term memory retention. In a strategic-learning classroom, students are taught in an environment conducive to maximum learning. They are taught meaningful, relevant information that connects to their world and the world in which they will live as adults. Although lecture has its place in some lessons, it should only be used in short segments of time—15 minutes or less in secondary classrooms and 5–10 minutes in elementary school, based on the age of the children. It is unrealistic to believe that students who are constantly stimulated by the multimedia world will sit for hours each day passively listening to lectures, taking notes, and preparing for the pencil-and-paper exam on Friday—all this without dropping out mentally. Life is not a spectator sport; it is an exercise in active involvement: Education should reflect that active involvement.

For 6 years, I was involved in a dynamic research project that examined the factors that enhance learning and why they did so. The results of that study are dramatic and touch at the heart of how schools should teach. The project school was transformed into a place of strategic learning. Within 2 years, the results were impressive. The dropout rate went from 7.4% before implementation to 2.2% at the 2-year mark—and today shows a dropout rate of 0%. Attendance rates increased by almost 4%. Scholastic Aptitude Test scores zoomed to well above state and national averages, and what is more, students and teachers wanted to go to school each day. In a statistical study of the students over time, it was found that reading and mathematics scores for both males and females rose significantly. All of this was accomplished in a school district where more than 50% of the population qualified for free or reduced-cost lunches under the national poverty standards.

I have applied the meta-analysis studies on instructional practices to my research with some phenomenal results. Thanks to this incredible body of knowledge, we no longer have to guess which practices will have the highest effect on student learning—we know. While many books on the market will provide blanket strategies for the classroom, we now know that there are no blanket strategies, but rather, strategies are effective depending on the area of the brain engaged at the time of instruction. For example, cooperative–collaborative learning has a high effect size when students are practicing a particular learning or when the goal is to create a positive learning climate, but the effect size is low when this strategy is used to introduce a topic.

This book is divided into five chapters. Chapter 1 talks about how and why we must move from the structures of the past to a new way of teaching that better prepares students in the 21st century. It also introduces a format for active learning that I call the *Strategic Learning Model*. This model follows current research on how the brain learns and remembers best.

Chapters 2 and 3 relate to the self-system of the brain. This system is sometimes called the *gatekeeper to motivation*. In Chapter 2, I introduce the first phase of the Strategic-Learning Model, called Plugging In. This chapter is about those strategies that help us to create the kind of learning environment that is “brain friendly.” Eric Jensen (1997) talks about this kind of environment in terms of the neural systems that run our lives. This includes strategies that tap into the cerebral cortex’s need for

x TEACHING STRATEGIES FOR ACTIVE LEARNING

newness, novelty, and high contrast. It includes the midbrain's need for things that provide pleasure and positive feelings and the lower brain's desire for an environment that is safe—both physically and emotionally.

Chapter 3 introduces the second phase of the learning model, called Powering Up. This chapter focuses on strategies that tap into our natural motivation to learn. Our brains seem to be hardwired to learn—it is one of the reasons that we have survived as a species. Environmental effects tamper with that natural motivation, and as teachers, we must utilize strategies that rekindle that desire to learn. These first three chapters are so important that without them, the information from the other chapters is powerless.

Chapter 4 deals with the components needed to deliver differentiated instruction to students. I call this process *synthesis* because our students are taking a great deal of incoming information from the senses and synthesizing it into meaningful information to help them, not just for the moment but for life. Chapter 5 discusses how to ensure that students understand the information studied by requiring that they demonstrate the learning in some way. I call this *outsourcing* because they are taking the information that they learned in the synthesis phase and outsourcing it to meaningful processes. The last section, Chapter 6, provides the real-world connection to the learning. The goal is not only to help students learn but to help them put the information into long-term memory. One of the ways that we can help the brain to do this is to provide opportunities for reflection. The time when the information in this book will have the most meaning to you is when you have an opportunity to think about it, to apply it to your world and to talk about it to yourself and others.

This is a very different type of classroom from the one most often found in schools, where teachers are the imparters of knowledge in a lecture format while students memorize facts to give back on pencil-and-paper tests. The transformation takes time and commitment, but it is worth it because it is better for kids.