

# Introduction

**T**his book places ready-to-use instructional strategies into the hands of teachers. Rather than being just a compendium of good ideas for the classroom, the techniques here have been proven through research and classroom practice to strengthen student achievement. Research shows a direct link between how students are taught and how well they achieve. In times of heightened accountability, governmental involvement in education, and increasing student diversity, teachers need, and fortunately have, reliable tools to improve instruction.

Historically, research has played a small role in decision making about teaching methods. During the last two decades, however, a new knowledge base of specific instructional techniques has emerged, yielding consistent results with many teachers and students. This book summarizes that literature and showcases its strategies so teachers are supported in their efforts to improve the learning of all students.

It is not a goal of this book to promote a particular educational trend, model, or theory. All experienced K–12 teachers have encountered scores of innovative theories and reform efforts. Exciting ideas can leap from the pages of a new book or the words of an inspirational speaker into mainstream practice, with scant attention paid to whether track records exist of improved student achievement. Often, reforms spread unabated through schools, regions, and, in some cases, the country. Then, when the innovations fail to deliver as promised, teachers frequently are held responsible for the lackluster results. In reality, they were given little to work with in the first place.

Educational and neuroscientific researchers have observed the phenomenon of theory- or fad-driven educational change. They have noted that many innovations not only lack solid research bases but also ignore classroom practice implications and processes (Diamond & Hopson, 1998, citing Stigler & Bruer; Ellis, 2005; Ellis & Fouts, 1997; Grossen, 2000). When innovations skip over instruction, the heart and soul of any improvement effort is neglected and reform is unlikely to succeed.

A lack of focus on instruction is currently evident in the standards reform movement. While state standards and the No Child Left Behind legislation draw attention to issues of student achievement, little thought (for better or worse) has gone into classroom processes that meet the increased achievement goals. In this new era of heightened accountability, school administrators and teachers

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are analyzing student data and seeking ways to meet children and youth's academic needs. Teachers everywhere, regardless of their school's educational model or legislative demands, want to teach effectively so their students will benefit.

One way to improve achievement is to seek out the knowledge and tools that make learning meaningful, memorable, and effective. This book puts such tools into teachers' hands. It summarizes the literature on key aspects of instruction and provides 101 research- and classroom-substantiated instructional strategies.

We have titled this book *Mindful Learning* for specific reasons. To us, being *mindful* means using proven classroom practices that have worked on other occasions and are most likely to work again. It means meeting students where they are by tapping their existing background knowledge, respecting their diversity by varying instructional processes so all learn successfully, and acknowledging gains with meaningful forms of assessment. Being mindful means making informed, professional decisions about how best to teach, and balancing enthusiasm and personal opinion with research-based strategies so that consistent results can be realized. We intentionally use the word *learning* instead of teaching in the title because student learning should be at the forefront of all efforts to improve education.

The suggestion of basing one's practice upon research does not imply that teachers never innovate. Teachers and students work, creatively and intuitively on many occasions, but it is also true that there are many times when research-tested practices will boost student learning the most. The same holds true for those in other professions. Doctors, mechanics, pilots, and architects rely on professional knowledge to attain predictable results. Being mindful as teachers means putting our professional knowledge base to effective use. We can combine our commitment to children with knowledge and skill to make American education the best in the world.

Where did the techniques in this book come from, and why were they chosen? The book's 101 strategies were derived from two primary sources: the cognitive sciences and educational research on effective instructional practices. The cognitive sciences have recently yielded important insights into how to improve learning. This research influenced key themes and three chapters in this book: engaging student background knowledge, immersing students in active learning, and addressing student diversity. Several instructional strategies are described for each of these three topics; the research that warrants their inclusion in classroom practice is also explained. A brief introduction to the cognitive sciences follows below.

### **THE NEW SCIENCE OF LEARNING**

The last four decades have witnessed a revolution in the study of the human mind. In the late 1950s, a new, multidisciplinary field emerged, that of the cognitive sciences (Bransford, Brown, & Cocking, 2000; Diamond & Hopson, 1998; Gardner, 1985; Willis, 2006). Made up of psychology, linguistics,

philosophy, computer science, neuroscience, and anthropology, the cognitive sciences have delved into the complexity of thinking and learning.

Much of the research on learning emerged from studies of the development of expertise, the acquisition and transfer of knowledge, problem solving, and teaching effectiveness. We are gaining insight into the physiological, cultural, metacognitive, emotional, interpersonal, and dispositional aspects of learning. More recently, innovations in neuroimaging and brain mapping with PET scans, fMRIs, and other technologies have become available. These allow us to see areas of the human brain in real time when involved in discrete learning tasks. However, while these studies are fascinating and provocative in implication, the depths of human cognition are not yet well understood. As a result, we limited the strategies from cognitive science researchers to those that have demonstrated the ability to improve student achievement. We theoretically agree that the potential of the human mind is vast but avoid making sensationalized claims about any strategy in this book.

Neuroscientists and educational researchers likewise caution educators about embracing unproven brain-based methods that far exceed their scientific basis (Bransford, Brown, & Cocking, 2000; Damasio & Damasio, 1993; Ellis & Fouts, 1997; Miller, 1993; Sylwester, 1995, 2000; Viadero, 2007). As medical neuroscientist Judy Willis (2006) states, brain research results have been unfortunately “misinterpreted and misrepresented by nonscientists. Every day there are new claims of ways to improve learning and memory from herbs and vitamins to meditation and hypnosis” (p. ix). Many of us can also recall the oversimplification of the right- and left-brain research and the related and erroneous calls for educational change. Essentially, all learning cannot be anything other than brain-based.

Such cautions are mentioned not to discount this book but rather to situate it in the context of what is known about learning at this time. Fortunately, there are reliable theories and strategies that are helpful in the classroom. For example, as we explain in the pages ahead, it is clear from cognitive research (and from every teacher’s daily experience!) that different people process information in different ways. No single method will work for all students all of the time. It is important to be intentional about accommodating “difference” in instruction.

This fundamental fact gave rise to this book’s offering more than 10, 30, or even 50 strategies. We chose 101 so that educators can choose, adapt and refine several approaches as appropriate for their students. We also explicitly address ways to respond to student differences throughout the pages ahead. Further, another visible contribution of the cognitive sciences to this work is the chapter on engaging students’ prior knowledge and another on experiential, active learning approaches for the classroom.

We agree with Daggett and Nussbaum (2007) that the cognitive sciences will have increasing significance for education. In the years ahead, we will probably gain a deeper understanding of how students learn, why some of them struggle and ways to assist, and how to tap the potential of the human mind in the classroom. As the tools of science improve and research continues, we will have even more certainty about how best to teach and how our students—and ourselves—can realize mindful learning.

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### BEST PRACTICES

*Best practice* is another educational concept that has been used widely without a clear definition of the concept or reference to a solid knowledge base. What are best practices? Who determines what is best? Best for whom? Are there best practices that work for all students regardless of background and cultural differences? Might the terms “promising practice” or “emerging best practices” be more appropriate?

We do not claim that the instructional techniques in this book represent “best practice.” Instead, we searched the literature for research-tested practices that resulted in student achievement gains. What literature was used? The 101 strategies were distilled from three sources: (a) educational meta-analyses of instructional techniques; (b) studies conducted by educational agencies, teams, or individuals; and (c) cognitive scientists who have researched learning and its enhancement. Reference lists are offered at the end of each chapter for readers interested in accessing these resources themselves. Additionally, each chapter begins with a condensed literature review that explains the rationale for the inclusion of each strategy.

It is also worthwhile to point out that not all the techniques in this book are new. While reform movements tend to emphasize cutting-edge initiatives, contributions from familiar researched techniques are also noteworthy. As the knowledge base about effective teaching grows, it should integrate worthwhile discoveries from the past. It is unlikely that many in medicine would shun the Salk vaccine and risk an outbreak of polio simply because the research occurred decades before.

As the reader peruses this book, please note that we are not implying that each technique will yield substantial gains with every student. What we are saying is that research can identify which teaching practices are most likely to produce the desired results. The book’s 101 strategies were selected, in part, as a reaction against educational fads that come and go with little to justify their presence. At the same time, we are well aware that research does not necessarily capture all that is valuable in teaching and learning. There may be enhanced attitudes, values, and engagement processes that studies overlook but that readers and their students encounter in the classroom.

### WHAT THIS BOOK INCLUDES

The content, format, and conceptual framework of the book were carefully considered. An array of practices are offered for the range of aptitudes, interests, and diversity of contemporary classrooms. Both research and instructional practices are featured in each of the five chapters. The strategies are displayed in a simple, numbered, easy-to-access format. One strategy is described per page; in some cases, multiple examples of an individual strategy are given. While the literature base that supports the inclusion of the techniques can be read in a short time, annotated resources are included in each chapter and references are at the back of the book, for those who desire additional information.

Chapter 1 summarizes the research on prior knowledge and gives 17 instructional approaches for enlisting background knowledge to improve student learning. Chapter 2 reviews the importance of active learning in the classroom, with 27 strategies to offer students many opportunities for experiential, hands-on learning. Chapter 3 discusses the gender-related research on student achievement and outlines 20 instructional approaches to enhance the achievement of both males and females. Chapter 4 highlights effective ways to respond to the diversity among our students. Its 20 strategies address culture's influence on learning, English language-learning, socioeconomic class and learning, and inclusive approaches. Chapter 5 considers performance-based assessment and provides 16 strategies for documenting student achievement.

A simple conceptual framework unites the book's five chapters. As stated previously, though, we are not promoting new educational programming, theories, or jargon. Instead, we want to make explicit the simple teaching and learning cycle that the 101 strategies support. Chapter 1, "Beginning With What Students Know: The Role of Prior Knowledge in the Classroom" is placed first because it is critical that teachers know what students bring to the classroom in terms of prior knowledge, life experiences, and perhaps misperceptions of the content. Tapping background knowledge gives us a starting point—a baseline—to determine where to begin our instruction and to later look back on and see how far students have traveled in learning.

Once students' current knowledge base is determined, then teachers can select strategies from the next three chapters to introduce new content and guide student learning. The chapters are entitled "Active Learning," (Chapter 2), "Ensuring Gender-Fair Instruction," (Chapter 3), and "Teaching Diverse Students" (Chapter 4). A single, unifying concept underlies these three chapters. It is to provide classroom approaches that mindfully and respectfully engage diverse students in learning. The third and final step in the book's conceptual framework is the fifth chapter, "Assessing Student Performance." Here, teachers will find several ways to assess student learning and to involve students in improving their learning through self-assessment.

## **THE QUESTION THIS BOOKS ANSWERS**

This book responds to the question, "How can I improve the learning of my students?" The 101 techniques included here have proven track records with female and male students and with students of diverse ages, languages, abilities, and socioeconomic status. Teachers of every grade and subject will find strategies to apply or adapt to their circumstances. We recognize that teachers may have to adjust the level of a strategy to fit Grade 1 or 4 or 9, but teachers are good at that when they have clear material. We also understand that no one can use all 101 strategies or do all that is suggested all the time. Teachers are encouraged to focus on those strategies of particular importance to them and appropriate for their classrooms.

This book underscores the centrality of quality instruction in improving achievement. The demands of No Child Left Behind ideally should not interfere

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with good instruction. Though there are and will continue to be many external demands on our time and effort, effective teachers can increase their efficacy by being lifelong students of learning. Part of being a student of learning includes knowing how, when, and why certain strategies work in the classroom. Just as we endeavor to teach students important skills, knowledge, and attitudes, we can model such skills, attitudes, and knowledge ourselves by using research to guide our efforts. Today, as challenges increase both inside and outside the classroom, so has the available research on what works. One teacher in one classroom when supported with effective instructional strategies can make a profound and lasting contribution to the lives of students.