
Prologue

As a direct result of federal pressure on the states to continuously improve their instructional program and ensure that all students are being reached in the teaching process, teachers are being called on to meet professional standards and base their work on research-proven methods of teaching. Educational research, often conducted at universities or on educational sites by university researchers, is reported in educational journals and is most often read by other researchers. All too often the style in which research reports or articles on research findings are reported is not friendly or appealing to the classroom teacher. The very community—classroom teachers—that could benefit enormously from the findings of many of these educational initiatives rarely learns about these endeavors. It is the objective of this book to bring some of the more useful research findings to the classroom teacher. In our quest for the most salient research findings we were guided by the National Council of Teachers of Mathematics (NCTM) standards. Rather than merely presenting the research findings that support the standards, we have attempted to convert them into useful classroom strategies, thus capturing the essence of the findings and at the same time putting them into a meaningful context for the practicing mathematics teacher.

This book is to serve as a resource for mathematics teachers. It should provide a portal to access the many worthwhile findings resulting from educational, psychological, and sociological research studies done in Europe and in the United States. Heretofore, teachers have had very few proper vehicles for getting this information, short of combing through the tomes of research reports in the various disciplines. This book is designed to provide an easy way for the classroom teacher to benefit from the many ideas embedded in these academic exercises.

The book is designed to be an easy and ready reference for the mathematics teacher. It consists of six chapters, each with a theme representing one aspect of the typical instructional program. Each chapter presents a collection of teaching strategies, concisely presented in a friendly format:

The Strategy



This is a simple and crisp statement of the teaching strategy we recommend.

What the Research Says



This offers a discussion of the research project that led to the strategy. This section should simply give the teacher some confidence in, and a deeper understanding of, the principle being discussed as a “teaching strategy.”

Teaching to the NCTM Standards



Here we present the salient NCTM standard that we are supporting with the strategy.

Classroom Applications



This section tells the teacher how the teaching strategy can be used in the mathematics instructional program. Where appropriate, some illustrative examples of the teaching strategy in the mathematics classroom are provided.

Precautions and Pitfalls



This is the concluding section for each strategy and mentions some of the cautions that should be considered when using this teaching strategy so that the teacher can avoid common difficulties before they occur, thereby achieving a reasonably flawless implementation of the teaching strategy.

The Sources

These are provided so that the reader may refer to the complete research study to discover the process and findings in greater detail.

We see this book as a first step in bringing educational research findings to the practitioners: the classroom teachers. Perhaps teachers will see that there is much to be gained to enhance teaching by reviewing educational research with an eye toward implementing the findings in their instructional program. Furthermore, it would be highly desirable for researchers to make more of an effort to extend their publications/findings to the classroom teacher. To do otherwise would make the entire activity of educational research irrelevant.

As you read the many instructional suggestions offered in this book we hope you will continuously think of yourself as the teacher who might implement them. Remember, your personality plays a large role in mapping out an overall instructional strategy; nevertheless, the specific research-based tips and strategies offered here will help you focus on certain aspects of your teaching. Teachers who continuously self-evaluate their instructional performance will, undoubtedly, become master teachers.