

TOOLS AND
TECHNIQUES
TO INSPIRE
CLASSROOM
LEARNING

Barbara A. Cleary, Ph.D.
Sally J. Duncan

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ASQC Quality Press
Milwaukee, Wisconsin

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Library of Congress Cataloging-in-Publication Data

Cleary, Barbara A., date.

Tools and techniques to inspire classroom learning / Barbara A.

Cleary, Sally J. Duncan.

p. cm.

Includes bibliographical references and index.

ISBN 0-87389-411-1 (alk. paper)

1. School improvement programs—United States—Case studies.
2. Learning—Case studies. 3. Elementary school teaching—United States—Case studies. 4. Classroom management—United States—Case studies. 5. Teaching—United States—Aids and devices. I. Duncan, Sally J., date. II. Title.

LB2822.82.C54 1997

96-44602

371.12—dc21

CIP

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10 9 8 7 6 5 4 3 2 1

ISBN 0-87389-411-1

Acquisitions Editor: Kelley Cardinal

Project Editor: Kelley Cardinal

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For a free copy of the ASQC Quality Press Publications Catalog, including ASQC membership information, call 800-248-1946.

Printed in the United States of America

∞ Printed on acid-free paper



Quality Press
611 East Wisconsin Avenue
Milwaukee, Wisconsin 53202

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Preface

In the Babel of educational reform, teachers and administrators often find themselves listening to what seem to be multiple tongues. Not only are reformers speaking their own language, but they are talking so fast, they do not seem to have time to listen, to discern the patterns in others' language about schools, or to understand the connections between ideas and action. We have written this book because we know that teachers are going about the business of improving the learning process in their classrooms in spite of this often-emotional din that surrounds their profession.

Good teachers everywhere have common understandings and visions, whether they articulate them in the same words or not. Their common language is sometimes not words, but actions. After all, teachers tend to be doers. By piecing together what their actions *say*, patterns can be recognized. We wanted to find these patterns and help others benefit from them.

If someone were to suddenly blow the whistle on the interminable discussion of what is wrong with education and what schools should be doing, the ensuing silence might give us a chance to start from the beginning, to begin to identify a common language of improvement in schools, or at least to see common themes in the approaches to the complex problem of helping children to learn. We could even quietly tiptoe into classrooms and find out what teachers are really doing while the discussion rages.

This book is meant to tiptoe into the classroom and find teachers and their students doing what they do to advance their purpose. Such an intrusion may seem to lack context. It may seem disjointed from the larger purpose related to learning in the classroom, for it does not address the specific ways that the techniques described systematically relate to that purpose.

On the other hand, this work demonstrates through actual classroom examples the ways that good teachers are utilizing a variety of tools and techniques to advance learning. There is nothing new in that construct. What is new is the inspiration that always comes from visiting a classroom where learning is happening. It can take your breath away to hear children articulating ideas and to see their growth. This is the *doing* part of education—learning is, after all, active.

That is not to say that teachers only act, without the appropriate planning, study, analysis, and review that are fundamental to teaching and learning. Remember, we will be walking in on only one aspect of their learning cycle—the use of tools to bring about improvement in learning at all stages of the cycle.

An old Hebrew story tells of a man who was going crazy with all the noise in his house: His wife and children seemed to talk nonstop, and there was never any peace in his home. Looking for answers, he approached his rabbi. “My house is so noisy,” he said. “I can’t even hear myself think.”

“Do you have any chickens?” the rabbi asked.

“Yes, of course.”

“Put the chickens in the house with your family,” was the rabbi’s suggestion.

Since the man knew that one does not question the wisdom of a rabbi, he went home and did as he had been told. The din increased; however, now he heard not only the endless chatter of his wife and children, but also the pecking and chirping of the chickens he had brought into the house. He went back to the rabbi for further instruction.

“Do you have dogs?” the rabbi asked, when he heard the man’s plea.

“Yes, I have five dogs,” the man answered.

“Bring them into the house with the family and the chickens,” the rabbi instructed.

Dubious, the man nonetheless followed the rabbi’s instructions. What followed was the predictable cacophony of wife, children, chickens, and dogs—chattering, chirping, pecking, and barking.

On his third visit to the rabbi, the man received further advice. This time, he was instructed to bring his three cows into the house. Of course, the noise level increased with the addition of the cows’ mooing and bellowing, and the man was more frustrated than ever. Returning to the wise rabbi, he said he did not think he could live in the house with all the noise, and felt he would have to leave in order to get some peace.

The rabbi, hearing the man’s desperation, told him to take the chickens back to their coop, the dogs to their kennel, and the cows out to the barn. The farmer returned to his home and followed these instructions. Then he eagerly went back into the house.

Collapsing into his favorite chair, the man suddenly realized how quiet it had become. All he could hear now, he realized, were the voices of his wife and children, and he was grateful for the calm.

Perspective can alter things in unpredictable ways. We want this book to provide new perspective by focusing on what is happening in classrooms in all parts of the country. To do this, we need to eliminate the cacophony that surrounds these classrooms.

Using examples that show how specific problem-solving, planning, or improvement tools can help students learn, this is a handbook for that learning and for the improvement that can take place in the classroom.

In each chapter, a tool is briefly introduced. The heart of each chapter is the concrete examples of how students and teachers have used each tool to enhance their learning while improving processes. The cases cited demonstrate the creativity and flexibility that teachers and students can bring to bear in using the tools.

The examples are not business applications adapted to schools, nor do they relate to the administrative functions of school districts. Instead, they get into the classroom in fundamental ways: a lunchroom improvement project is undertaken not to improve the lunch process but to enhance students’ engagement in learning in the time period after lunch. Students who struggle with alphabet recognition, teachers frustrated by their students’ incessant questions about long division (“What do I do next?”), and professionals who want to bring about high-quality social studies learning are all subjects of this book.

We have drawn the examples from our experiences in our own classrooms and in those of others. Some have been used in specific quality improvement projects; others are applied to support the improvement process, but without using the terminology of quality improvement or total quality management (TQM). In every case, they are related to purpose—the advancement of the learning process—and are not taught as tools for their own sake.

The tools are arranged somewhat arbitrarily. We avoid classifying them as “statistical tools,” “problem-solving tools,” “tools for teamwork,” and so on, because we have confidence that good teachers can figure out how each of the tools will work best in their own classrooms. We have grouped related tools, such as affinity and relations diagrams, since

they are often used together. Some strategies, such as nominal group technique, are fundamental to the application of other tools in the collection.

Classroom benefits of using specific tools will provide a focus in each chapter. We do not want readers to forget the intimate connection between specific techniques and their purpose. Some of them support specific theories related to learning, such as Howard Gardner's research on multiple intelligences. Sources for further reading on various approaches are cited in the bibliography as well as the notes.

A feature that will enhance the applicability of the case studies is the occasional "Notable" observation, pointing out the rationale for a particular technique, giving a tip for applying it, or mentioning a caveat in using it. In this section, we will offer observations about possible next steps to get the most out of a particular tool and explanations about how the use of the tool has directly supported the learning process as it is currently understood. An "Application" section encourages readers to try out the tool on a process with which they are familiar.

In a way, this is a workbook. It is not meant to be read in a vacuum, however, or the applications simply filled in, so as to move on to the next tool. Instead, applications are meant to directly engage readers' classroom experiences. You may already have a situation or problem that is suitable for applying a given tool, or you may want to enlist the help of your students or colleagues in ferreting out a useful application.

In any case, we are eager for you to try these tools or to pick up on the tips offered by other educational professionals. And, we'd like to hear how you're doing.

Acknowledgments

We are grateful to those teachers and administrators who have given us the benefit of their experience. Our examples come from Ridgeview Elementary School, Ashtabula, Ohio; Norton Middle School, Grove City, Ohio; Marshall University Community and Technical College, West Virginia; Madison Street School, Ocala, Florida; Eighth Street School, Ocala, Florida; Silver Lane School, East Hartford, Connecticut; The Miami Valley School, Dayton, Ohio; Western Salisbury Elementary School, Allentown, Pennsylvania; and other schools in California, Ohio, Kansas, Kentucky, Tennessee, and Illinois that are not named because their stories are sometimes combined with other similar stories or are ones that we've heard from other teachers. By allowing us to use their stories, these teachers and students gave us permission to tiptoe into their classrooms and see what they are doing to enhance learning and to build knowledge. We are grateful to others who have contributed their ideas or reviewed the manuscript: Mike Cleary, John Duncan, Steve Kreitzer, our own students, and those at PQ Systems (including Linda O'Malley) who have supported our efforts to put this book together.

With them, we invite you to step into those same classrooms with us and see what's really going on.

Introduction

If learning lies at the heart of a school's purpose for being, any improvement that is to be substantive must address learning itself. As we are precipitously close to another century, we are fortunate to know so much more about how the brain functions in the process of learning than anyone could have imagined at the threshold of the last century—or even three decades ago. Once real-time magnetic resonance imaging (MRI) became possible, only three or four years ago, scientists could begin to actually watch the brain as it carries out various processes, including thinking. Neuroscientists, psychologists, and educators are all contributing to what has become known as the *cognitive revolution*.

Regardless of how much we know about the brain and its functioning, however, or what we can see as the brain goes about its business, this knowledge will have relevance to classrooms only when we have figured out what it means to the learning process. A scientist can identify the ways in which a dyslexic child is able to process sounds or symbols, for example, as Robert Sylwester (1995) has pointed out. What remains is to identify the strategies that will put this knowledge to use—currently uncharted territory in many respects.

Progress has been made in understanding how learning happens, and we will need to take this advancement into consideration as we envision classrooms of the future and in the present. Both the important theories that lie behind classroom learning and the tested processes that translate those theories into learning are critical to improving the learning process and its environment. We leave those discussions to others who have already approached them thoughtfully and to those who will continue to examine the important foundations on which learning is built and the context within which it happens.

It is up to classroom teachers to develop approaches to learning. As we have noted, teachers are already pursuing creative and interesting strategies to support learning in their classrooms. A variety of other strategies and tools exist as well, not only in the classrooms of other teachers, but also in the world of human resources and organizational development, including the world of total quality. Cumulatively, many of these strategies have advanced and supported learning for adults as well as children. Understanding their connection to learning—for many, an intuitive connection—will be enhanced as our understanding of the brain and its function expands. It is critical for educators to stay tuned to the research related to learning, so that their classrooms make sense with respect to the purpose of learning.

Problem-solving and analytical tools that have come to be associated with quality improvement have given demonstrated support to the learning process. Sometimes, however, these tools seem to classroom teachers to have little relevance. These teachers may feel that since their schools or districts are not really involved in total quality or continuous improvement, changing the system on their own is a far too daunting task. In the meantime, however, they are actually using these or other tools to advance their own purposes in the classroom.

These tools and strategies can indeed have a profound meaning to the teachers who are engaged in the everyday learning activities of schools, because the tools can be used to directly support the learning process in which teachers are so passionately immersed. Improving learning is something that teachers know about, regardless of their understanding of TQM or CQI and its implications. In fact, without ever calling

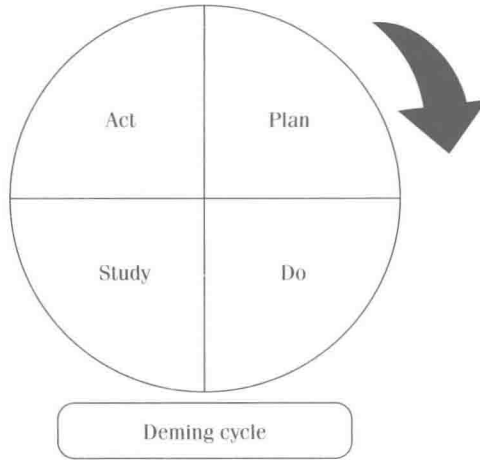


Figure I.1: PDSA cycle.

it process improvement, teachers are doing process improvement every day of their lives. TQM represents only one part of the system of learning. Although its theory, process, and tools can provide fundamental support to that system, it is nonetheless only a part of the process.

Common language of the classroom might begin with the idea of *purpose*. Teachers know why they are doing what they do. It is, after all, learning that lies at the heart of the classroom experience. The tools and strategies that are presented here—for that matter, all tools and strategies of the classroom—must advance that purpose. Otherwise, they can be seen only as busywork for educators and students alike.

Of course, neither the discussion of purpose or the use of tools and strategies alone offers a step-by-step process for carrying out the classroom purpose. One way to approach that process lies in understanding, as much as possible, about the learning process: how the brain functions in enlarging knowledge and making the vital connections among data, information, understanding, and wisdom that builds a system of knowledge.

Another process that is vital to improvement of classrooms and of learning is that of the plan-do-study-act (PDSA) cycle (Figure I.1) of W. Edwards Deming (1986). While discussion of this process lies outside the purview of this book, the PDSA cycle warrants close examination by those interested in systemic change and improvement in schools. An example of work undertaken by a school team within the context of the improvement cycle appears in the final chapter of this book. At that point, readers will have learned about the same tools and techniques used in the PDSA cycle.

It is not tools alone, but tools within the context of process, and above all of purpose, that will bring about lasting improvement in schools. The contribution of tools and strategies is that of supporting purpose and processes that advance the improvement of learning.

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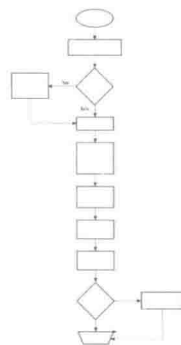
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Chapter 1

Going with the Flow



Introducing flowcharts

Walking into any elementary classroom, one is always struck by the colorful work of children posted on bulletin boards and walls. In some schools, though, this work is not just the usual set of drawings for Mother's Day or seasonal collages of bunnies and leaves. These are supplemented by equally colorful papers—flowcharts are everywhere. Some of these are accompanied by drawings or photographs of children. Children at the drinking fountain. Children lining up for music. Children putting away library books. The flowcharts and accompanying pictures are reminders that these young students have documented the everyday processes of their classroom experience, and these are the maps to those processes.

Children at the youngest levels of school can use flowcharts as they address the challenges and processes of their classroom experience. Even those who have not yet learned to read or write can create flowcharts by using photographs or drawings of the steps in a process. Older students can create flowcharts of increasingly complex problems and processes.

Flowcharts illustrate all the steps in a process. When more than one person is involved in a process, the appropriate tool is a *deployment flowchart*. When only one person is engaged in a process, a simple *process flowchart* can be used. Some standard symbols used in flowcharting are shown in Figure 1.1. While some of these symbols are usually associated with deployment flowcharts and others with process flowcharts, they are often used interchangeably.

Knowing when to use flowcharts becomes increasingly easy with experience. Flowcharts are used to help define a system and understand how a particular process works. They can also be used to review processes after they have been changed, as a way to document a standard procedure and record the improvement. For example, getting ready to leave a classroom for music class is a process that can be documented with a flowchart. If a step in that process is changed—lining up differently or leaving at a different time—a new flowchart documents that change.

Flowcharts can be used in classrooms at all levels, lunchrooms, administrative offices, homes, and teachers' workrooms. Flowcharts are useful wherever processes take place. Flowcharts are used because they provide valuable information about the way in which a process happens. All the steps in that process, the order in which they are undertaken, and the decisions that are involved as the process proceeds can all be seen on a flowchart.