REVIEWS

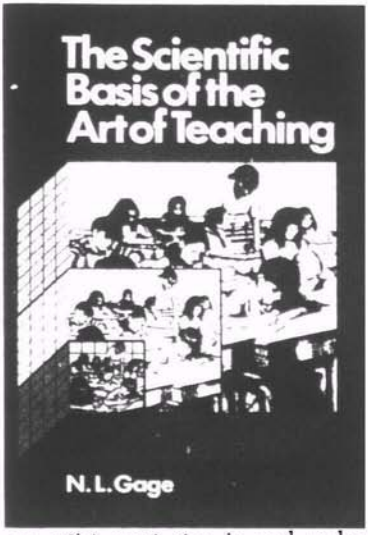
The Scientific Basis of the Art of Teaching. *N. L. Gage. Stanford, California: Teachers College Press, 1977.—Reviewed by Arthur Adkins, Associate Professor, University of Maryland, College Park.*

We are accustomed to Gage's masterly summaries of research, and to the quality of the research he performs and directs, but this time he has outdone himself. This little volume (122 pages, including an extensive appendix) is much more than a summary and review of research; it encompasses a synthesis of what we know about teaching, applications of that knowledge to teacher education, and how we can improve that knowledge through further research on teaching.

Gage is more than a researcher and critic of research—he's also an interpreter. Any teacher, from graduate school through preschool, or anyone who works with teachers—anyone, in short, who pretends to be a student of teaching—should read the first section.

He begins, with impeccable logic, by explaining his title. Teaching means "any activity on the part of one person intended to facilitate learning on the part of another," primarily in classes of 20 to 40. In a two-page discourse on "art," in which he touches upon Elliot Eisner's concept of connoisseurship, he pays tribute to artistry in teaching, and declares his intention of concentrating on ways in which science can inform the art of teaching.

By "scientific basis," Gage does *not* mean "a science of teaching," which, as he says, claims much more. After showing how art is crucial in any science, social or physical, he grants that the role of science in the art of teaching is limited, but critical. Teaching is so complex that there are many, many points at which "the teacher



as artist must step in and make clinical, or artistic, judgments about the best ways to teach." In this, as in the quality of his writing, Gage shows himself to be of the breed of Eisley, Einstein, Thomas, Capra, Bronowsky, and other philosopher-scientists.

The scientific basis of teaching, as of any field of practice, "consists of regular, non-chance relationships," not necessarily perfect, but better than random. As with the studies that established the relationship between cigarette smoking and lung cancer, these relationships need not be large to be important. And something can be learned from poorly designed studies; the difference in results between well-designed and poorly-designed experiments, he says, is small.

Because the independent variables are so many, inside school and out, and because they extend over so many years, we cannot expect large differences in achievement and attitude as a result of one experiment, or one teacher's efforts. Gage uses a statistical process to combine results of many studies in which sample sizes were small and expected correlations and differences were also small.

After describing how the procedure was used, with examples of the studies and clusters of studies that were analyzed, he makes the following suggestions for teachers:

- Teachers should have a system of rules that allow pupils to attend to their personal and procedural needs without having to check with the teacher.

- Teachers should move around the room a lot, monitoring pupils' . . . work and communicating to their pupils an awareness of their behavior, while also attending to their academic needs.

- When pupils work independently, teachers should ensure that the assignments are interesting and worthwhile, yet still easy enough to be completed by each —working without teacher direction.

- Teachers should keep to a minimum such activities as (orally) giving directions and organizing the class for instruction. Teachers can do this by writing the daily schedule on the board, ensuring that pupils know where to go and what to do, and so on.

- In selecting pupils to respond to questions, teachers should call on a child by name before

asking the question as a means of ensuring that all pupils are given an equal number of opportunities to answer questions.

• With less academically oriented pupils, teachers should always aim at getting the child to give some kind of response to a question. Rephrasing, giving cues, or asking a new question can be useful techniques for bringing forth some answer from a previously silent pupil or one who says "I don't know" or answers incorrectly.

• During . . . group instruction, teachers should give a maximal amount of brief feedback and provide fast-paced activities of the "drill" type.

This list of statements focuses primarily on third-grade reading and mathematics; it is my conviction (and, by inference, Gage's) that comparable statements would be credible at all levels and in most subjects. One could wish that he had made them.

Well, I have. At least, I have gleaned from this first section ("Reviewing What We Know: The Results of Recent Research") some general statements that may not be quite as firmly established as those just cited, but which are supported by research (at least by inference) and do have general applicability.

I have cast them in similar form.

• Teachers should not hesitate to supplement their knowledge of scientific bases for teaching with clinical, artistic, or intuitive judgments.

• Teachers should try things they don't do well; discussion, for example, as well as recitation.

• Teachers should solicit the opinions and ideas of pupils, apply and enlarge on them, praise and encourage participation, and accept their feelings.

• Teachers should pay attention to both achievement and attitude.

• More formal (though nonpunitive) procedures seem to produce better achievement than "open" or "innovative" modes of instruction and organization.

• Teachers should criticize, but infrequently, and primarily the academically oriented pupils and those of higher socioeconomic status.

• Teachers should optimize "academic learning time"—time during which pupils are actively and productively engaged in their academic learning tasks.

• When time is taken for exploration, creativity, self-direction, and games, it should not infringe upon "academic learning time," if achievement is desired.

• Characteristics of teacher behavior such as clarity, enthusiasm, and vividness correlate with pupil achievement.

It must be noted that these recommendations are based upon research, that they correlate positively with pupil achievement and attitude, and that they could not have done so "unless there had been substantial variability among teachers in the degree to which they behaved in these ways."

The familiar lists of instructional principles—usually including practice, sequence, individual differentiation, motivation, and reinforcement—are supported and strengthened by this treatise. There is no doubt that Gage has made his point; we do know quite a bit about teaching, and we need not apologize for what we know.

In "applying what we know" to teacher education, Gage points out that we have been influenced more by the power struggle among those groups that wish to influence the preparation of teachers than by the research, and that we have paid more attention to what teachers should know than what they should know how to do. The latter, of course, requires practice, as in: student teaching, microteaching, self-administered "minicourses," interaction analysis (Flanders), cognitive discrimination training, feedback from other observers, feedback from students, and the study and mental practice of teaching scenarios. Varying degrees of experimental and analytical support are offered for these.

Other developments described with favor, but as yet with less experimental research behind them, include teacher education products such as those listed in the Stanford Catalog (packaged, self-administerable materials) and teacher centers (conducted by teachers for teachers). Regarding the latter, Gage avers, "Just as practitioners of medicine, law, and engineering take responsibility for their own continuing education, so teachers should have the right to do the job for themselves."

The book has several other sections, but I have devoted my attention to the first two because they seemed most important.

The Literacy Hoax: The Decline of Reading, Writing, and Learning in the Public Schools and What We Can Do About It. *Paul Copperman. New York: William Morrow and Company, Inc., 1978.—Reviewed by James Howard, Editor,* CBE Bulletin, *Council for Basic Education, Washington, D.C.*

Paul Copperman didn't intend to write a book, he tells us in the introduction to *The Literacy Hoax*. Copperman is president of the Institute of Reading Development in California, and he set out to develop a profile of reading achievement in the United States. Along the way, he gathered the information and conviction to write this book about the American educational system, which he calls "a sick 130-billion-dollar-a-year social institution." The hoax is the deception perpetrated by educators on students, who are given to believe that they are doing adequate or excellent work, when in truth they are doing much less. "Many of these students suffer," Copperman writes, "from a delusion of adequacy, engendered by an edu-

cational system which is lying to them."

For a point of departure, Copperman purposes to present a historical record of the academic achievement of America's students from the 1800s to the early 1960s, followed by a detailed presentation of the evidence of the massive decline in the primary academic skills since the mid-1960s." Experts will argue as to whether he achieves his stated goal of presenting this record "accurately and completely"; but there it is, and few would deny that it tends to confirm the widely shared impression of deterioration in the quality of teaching and learning in present-day American schools. His analysis of contributing curriculum changes, philosophical shifts, and other conditions is perceptive, although he generalizes easily and makes no allowance for those who kept their heads when all about them were losing theirs.

Coming to the point he most wants to make, Copperman asserts that the decline in learning is a consequence of "the degeneration of authority relations in education." Certainly, the difficult question of authority is one that society has long been debating, and Copperman argues his point with thoughtful common sense. Again, few could gainsay him.

Copperman's diagnosis is plausible enough, but his prescription of a remedy for the sick institution has the ring of rhetoric. In a chapter entitled "Educational Leadership," he calls first for "a societal reaffirmation of traditional educational goals and the necessity for strong educational authority." But if he thinks that "a public-relations effort by America's educational leaders combined with the individual efforts of thousands of parents . . . joined to a legislative and legal offensive designed to reduce judicial and bureaucratic interference in educational policy decisions" is practicable or even possible, he has more thinking to do. He calls next for "the reconstruction of a badly deteriorated educational system, where teachers are saddled with a chaotic and inadequate curriculum, where they feel compelled to reduce performance standards and work demands, and where the only psychology many of them have learned equates authority with authoritarianism and confuses training with nurturing." Fine. But the profiles of effective teachers and administrators (deftly though they are drawn) are not enough to enable us to get on with the task of reconstruction. Nor is it likely that taxpayers will easily or soon be convinced that school boards should hire fulltime professional staffs, and school board-sponsored training programs for parents (to "help their children fulfill their educational and intellectual potential") will hardly have standing-room-only appeal.

The Literacy Hoax is a clearly written, informed, and earnest examination of public school education. It is not the prescription for a sick institution's cure.

Course Design: A Guide to Curriculum Development for Teachers. *George J. Posner and Alan N. Rudnitsky. New York: Longman, 1978. 213 pp. —Reviewed by Rosemary Barton Tobin, Chair, Department of Education, Emmanuel College, Boston.*

Posner and Rudnitsky in *Course Design: A Guide to Curriculum Development for Teachers* make a long awaited and much needed contribution to the improvement of course design. They provide us with an handbook that offers the two components essential to any kind of education: information and options—in this instance, the information necessary for engaging in course planning and the options that, if appropriately utilized, focus and order that information.

In this volume, the authors characterize cognitive skills as those that are "learned when they can be performed correctly, not when the learner can describe the steps." In so doing they underline the key question suggested by this topic: can students upon completion of their training actually formulate courses competently? My experience is that they *cannot* unless they are first exposed to cognitive process instruction. Potential teachers must learn the skills essential to clear and logical thinking, and then must act upon these skills. This book shows how. It demonstrates by its approach (performance based) and its rationale (that students will pattern an actual course themselves while working through the text) that curriculum development is, to a large extent, cognitive development. Posner and Rudnitsky have field-tested their book in courses at Cornell and Smith, and know how to obviate the all too frequent occurrence of potential or new teachers "planning" courses which they themselves do not understand. Reading this volume is analogous to observing an experienced teacher planning a course step-by-step—one then knows how to do it for oneself.

The bibliography is appropriately selective, and the appendices of student-created course outlines, accompanied by the instructor's handwritten corrigenda, are particularly valuable. The prefactory remarks indicate that *Course Design* is aimed at secondary or post-secondary teachers, but I believe it can and should be adapted also for use in elementary curriculum courses.

Five Essential Dimensions of Curriculum Design: A Handbook for Teachers. *Robert R. Gower and Marvin B. Scott, Dubuque, Iowa: Kendall/Hunt Publishing Company, 1977. 238 pp. —Reviewed by Maxine F. Fuller, Director, Westfield Preschool, Brockton, Massachusetts.*

At last a fascinating curriculum book, flavored with methodology that is refreshingly clear. In

this new text the curriculum is viewed in terms of major influences, subtle or obvious, that affect the learner. Teachers are expected to view these influences by focusing their inquiry using a method called "The Lens Theory." It is as though one had limited vision, observing only selected scenes one at a time. Each of these curriculum scenes represents an essential dimension of curriculum design, and together they constitute a comprehensive poly-focal analysis.

In the preface the authors have aptly stated, "The purpose of this book is to provide teachers with a mode of inquiry that will allow them to explore curriculum designs and consider how these influences might be used to achieve educational purposes." Indeed, because the most significant role of teachers is to shape classroom instruction from curriculum blueprints, the goal of *Five Essential Dimensions of Curriculum Design* aspires to help teachers become better designers of the classroom reality they create.

Any curriculum, piece of curriculum, text, or program can be analyzed in a poly-focal way that allows the viewer to gain added insights into his instruction. The essential lenses that Gower and Scott consider the fundamental realities of any classroom environment necessary for a thorough poly-focal analysis are identified as personal, moral, social, political, and operational. The authors draw heavily from experts such as Carl Rogers, George Isaac Brown, Lawrence Kohlberg, Emile Durkheim, William Schutz, Herbert Thelen, and Sidney Jourard. Their work is used extensively to present the various curriculum dimensions.

The Lens Theory helps teachers understand and appreciate the living reality that takes place for children in the classroom. Because it is so descriptive and penetrating, this poly-focal perspective puts teachers in a better position to make judgments and decisions about curriculum, and its function in their classrooms and in our schools. Here is how it works.

As stated previously, the educator is expected to view his curriculum through one lens at a time in order to gain a more comprehensive perspective. There are selected exercises and explicit guidelines for using them to analyze classroom curriculums by the Lens Theory. The tasks when viewing through each lens are: (a) identification of salient concepts from expert's writings; (b) organization and formation of questions for each of the concepts; (c) description of the exercises to provide an overview of the experience; and (d) determination of analytic findings from the previously formulated and organized questions. A sample page with topic headings as described is provided.

Dubious of any handbook that claims to do so much, the reviewer applied the Lens Theory to a well established preschool program in operation at the Westfield Preschool, Brockton, Massachusetts. The program, basically one of preventive mental health, emphasizes emotional and social growth and development for young children. Much to the writer's amazement, a thorough investigation uncovered all major dimensions of curriculum design—social, moral, personal, operational, and even political, which was unexpected. Some dimension overlaps were discovered such as social-moral and moral-personal. Also, as the brief description of the preschool program implies, an additional lens was used to detect yet another curriculum dimension, mental health.

Five Essential Dimensions of Curriculum Design provides educators with new ways of analyzing existing curricula. It enables teachers to discover a wealth of material and curriculum implications not previously seen. It is anticipated that confidence in learning how to analyze curricula through several lenses will make classroom reality more meaningful for teachers and children—to make education and classroom living more human. The book entices educators to flex their minds to look at programs in a poly-focal way in an effort to reshape the programs to accommodate the reality of school life and to respond to the needs of students intellectually, socially, morally, personally, and politically.

Reviewers

Arthur Adkins

James Howard

Maxine F. Fuller