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How Do Teachers Use Textbooks?
A Review of the Research Literature

Jeanne Moulton
Academy for Educational Development

Technical Paper No. 74
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Health and Human Resources Analysis for Africa Project



Human Resources and Democracy Division
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Acknowledgments

This paper was originally written in 1994 to assist education researchers in South Africa as they embarked on a project to find out how textbooks and other instructional materials were being used in classrooms. What they learned would help educators better train teachers to use these materials.

The paper was revised and updated in 1997 to include reports on research produced in the intervening years, particularly in Ghana and South Africa.

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Executive Summary

There is a striking contrast between the kinds of questions asked in developing countries about how teachers use textbooks and those asked in the United States. Research in developing countries stems largely from interest among World Bank staff—taking the economist’s perspective—in determining the relative impact of textbooks on student achievement. In the United States, the questions come from the perspective of a pedagogue who asks what influences teachers’ uses of textbooks and how use varies among teachers.

Based on their analyses of existing data and experimental studies, the World Bank researchers are concluding that textbooks make more of an impact on student achievement than other inputs. Yet their research methodology was based on the *availability* of textbooks in the classroom and rarely established links between availability and *use*. This is especially interesting because other studies in which use is examined reveal a wide gap between the availability of textbooks and their use by teachers and students. The policy implication of the World Bank research is that limited resources should go to textbooks prior to other inputs, such as teacher training.

Research in the United States, where resources for schools are not as scarce and the issue of prioritizing inputs is less critical, asks different questions about the value of textbooks in the classroom. The questions addressed in the literature we reviewed are:

▫ How pervasive is the use of textbooks?

▫ How do teachers use textbooks to plan and make decisions about instruction?

▫ How do they rationalize their use textbooks during the teaching-learning process?

▫ What use do they make of teachers’ guides?

▫ What do they learn about textbooks during their pre-service training?

We pay particular attention to the research methodology used in the studies we review. We also describe findings, which, in brief, are that:

▫ Teachers develop their own patterns of using textbooks, which they keep from year to year and textbook to textbook.

▫ The patterns vary considerably from teacher to teacher, as do the reasons teachers adopt them.

▫ While politicians and others outside the classroom tend to think textbooks dominate the classroom, teachers often view them as only one of several tools. Some use them effectively; others may misuse them.

▫ It is difficult to find out how teachers use textbooks without actually observing them and to find out what they think about their use without actually asking them.

Because the availability of textbooks does not assure their use, and because their use varies considerably from teacher to teacher, observing how teachers use textbooks and asking them why they use them as they do will reveal significant information about the teaching-learning process and how it can be improved.

How Do Teachers Use Textbooks?

A Review of the Research Literature

Introduction

When educators conduct research on textbooks, they most often look at the quality of the books—their content and format—and their appropriateness for students in terms of level of vocabulary and ethnic and gender biases. Assuming that textbooks dictate the content of most instruction, educators, parents, and politicians want to know what the books have to say. But what does it matter what the books say if students do not learn from them? Educators must know, based on evidence, how teachers use textbooks and how their use aids student learning.

This review of the literature looks both at what researchers have found about how teachers use textbooks and what empirical methods they have used to get these findings. The review was instigated by educators with USAID's Improving Educational Quality project in South Africa, who wanted to learn more about how teachers in the public elementary schools for Black children were using the textbooks furnished by the government and, in some schools, newer materials produced and made available by non-governmental organizations (NGOs). Not until shortly before the inauguration of the new South African government in 1994 were people outside the Ministry of Education allowed to work in the schools and to see what was actually taking place in the classrooms.

To inform this effort we reviewed the literature on the availability and use of textbooks in both developing countries and the United States. Researchers have concluded that the availability of textbooks in developing countries is associated with student performance: students do better on tests when

there are textbooks in the classroom (Heyneman et al., 1978; Fuller, 1987; Fuller and Clarke, 1993). Yet, we know very little about how teachers actually use these textbooks to help students learn. Research in the United States is worth exploring because it raises questions rarely asked in developing countries about textbook use.

Guiding questions

The guiding questions for our review of the literature are:

- ∩ What questions do researchers pose on the availability and use of textbooks?
- ∩ How do they gather and analyze data to answer these questions?
- ∩ What are the contexts within which they have conducted research (what kinds of schools, what countries, what subjects)?
- ∩ What findings are emerging, particularly with regard to teachers' planning and instruction and to student achievement?

Organization of the report

We begin with a section on research on the availability and use of textbooks in primary schools in developing countries. The next section reviews research on textbook use in elementary schools in the United States. At the end of this section we summarize the kinds of research questions that have been posed and the methods used to answer them. We conclude with a discussion of the applicability of this review to planning research in Africa.

Research in developing countries

By the early 1980s educational researchers had begun to find impressive results from their studies of what “inputs” into students’ education affected their performance on tests. World Bank publications, in particular, stated that the availability and use of textbooks was one of the more consistent indicators of achievement (Heyneman, et al., 1978; Heyneman and Loxley, 1983; Fuller, 1987). More recently, Fuller and Clarke have charted research in eight countries showing positive achievement effects from textbook supplies and utilization in primary schools (1993).¹

These researchers looked at both “availability” and “use.” But how did they operationalize these two terms, and what did they find out about how textbooks are actually used in the classroom? We reviewed a number of studies in order to answer these questions.

What indicators of “availability” are linked to student achievement?

First, we will look at three studies primarily concerned with the “availability” of textbooks—their presence in the classroom.

Uganda: Heyneman and Jamison (1980) studied a sample of 61 schools in Uganda, where they created gauges of school quality and compared those to student achievement, which they measured by testing seventh graders. Availability of textbooks was one indicator of school quality. They determined availability by counting the number of reading materials (textbooks, readers, pamphlets, workbooks, library books) in first and seventh grade classrooms and dividing that number by the number of children in those classrooms. The researchers found that “school quality, of which textbook availability was one indicator in an aggregate, was a powerful determinant of student achieve-

ment, though textbook availability itself was not a significant predictor.” Yet, any indication that materials were actually used was lacking. While we might assume that teachers did make use of textbooks and other materials, they might also have kept them locked in the cupboard.

Nicaragua: Jamison and others (1981) conducted a controlled experiment in the context of the Radio Math project in Nicaragua. They studied the first grades of 88 schools, 20 of which were supplied with textbooks. Their purpose was to assess the impact of increased textbook availability on student learning. The researchers in Nicaragua were primarily interested in radio, not textbooks. They had already set up an extensive experimental situation to evaluate the impact of radio lessons, and the textbook experiment was carried out in this context. They attempted to “establish naturalistic conditions” by giving teachers “some encouragement and support that might be expected without the intervention of the experiment.” This included a three-hour orientation session before school started. They gave a textbook to each child and a teacher’s textbook and supplementary support materials to each teacher. While the researchers made a good effort to encourage teachers to use the textbooks, they did not observe their use in the classroom.

In addition to their findings that the presence of textbooks (and even more so radio) appeared to increase student achievement, the researchers learned, from a survey of 20 classrooms prior to the experiment, that teachers often used textbooks as resources for themselves but did not make them available to the children. After the experiment they asked teachers whether they had always, sometimes, or never used the textbooks. Four of the 20 teachers reported using them little, if at all. The researchers found no differences in student achievement between classrooms reporting that textbooks were always used and those reporting that they were sometimes or

never used. Though the researchers suggested the lack of difference might have been methodological (small sample), the finding is relevant to how the actual use of textbooks affects student achievement.

Philippines: Heyneman and Jamison (1984) reported on another controlled experiment in the Philippines in which, during one year, students in grades one and two were given new, high quality textbooks, and teachers received training before the school year began in how to use the textbooks. This experiment was performed within the context of a major textbook project funded in the Philippines by the World Bank. Unlike the conditions in Nicaragua, where the main interest was radio, in the Philippines the government as well as the World Bank had a vested interest in the success of the project. Thus efforts were made to help teachers use the books.

They found in this large-scale study of 52 schools that students' achievement test scores in science, mathematics, and Pilipino were strongly influenced by having been in classes that had received textbooks. While the government and its benefactor made a strong effort to assure that the textbooks were put to good use, the researchers never actually observed what happened in the classroom.

What indicators of "use" are linked to student achievement?

While Heyneman and Jamison were not primarily interested in variations in teachers' use of textbooks, Lockheed and her colleagues examined existing data that provided some information on use.

Thailand: Lockheed and others (1986) reported on their analysis of longitudinal data (entailing pre-tests and post-tests) to study textbook use in Thailand. They analyzed data from the Second International Mathematics Study (SIMS) conducted by the International Association for the Evaluation

of Educational Achievement (IEA). In this study, textbook *use* was a variable in a multivariate analysis. Teachers reported how often they used published textbooks and material inputs in their instruction of the target class. Their forced-choice options were: rarely or never, sometimes, or often. Sixty-two percent of the teachers reported they often used published textbooks in their instruction of the target class. Twenty-nine percent reported they did so sometimes, and eight percent reported never that they never did.

The researchers created a dichotomous variable for textbook use by combining sometimes with rarely or never. They found that students of teachers who reported using textbooks "often" scored significantly better on achievement tests. Using other data collected in the study, they were also able to suggest that:

∅ Textbooks substitute for teacher education. (In classes lacking textbooks, teacher education was significantly related to student achievement. In classes with textbooks, teacher education was a negligible factor.)

∅ Teachers who use textbooks do not necessarily use time more effectively. (There was no correlation between the textbook use and instructional time variables.)

∅ Textbooks do not necessarily encourage teachers to assign more homework. (Again, there was no correlation between these variables.)

The researchers did not support any of their conclusions about how teachers use textbooks in Thailand with observations of classrooms or interviews with teachers.

Nigeria and Swaziland: Lockheed and Komenan (1989) analyzed the use of textbooks in Nigeria and Swaziland. As in Thailand they used the SIMS data collected by the

IEA. The researchers found different results in the two countries. In Nigeria use of published materials was positively related to achievement; in Swaziland material inputs were unrelated to achievement. They surmised that the differences might have been methodological (sampling, data quality, and reliability), although they might also have been substantive (“effective teaching practices in one country setting could be entirely ineffective in another one”). Again, it is important to note that the researchers relied on forced-choice-option surveys of teachers for their data on textbook use and did not actually observe teachers using books.

Summary: In these five studies, researchers used three different methods to define the availability and use of textbooks:

- ∩ Counting the number of books and other materials in the classrooms;
- ∩ Making books available and encouraging teachers to use them; and
- ∩ Asking teachers to respond to forced-choice questions about their use of books.

In none of these studies did the researchers actually observe teachers using the textbooks. We will look next at the literature that is emerging on the use—in contrast to availability—of textbooks in developing countries.

How have classroom observation methods been used?

The research on textbook availability has played a dominant role in some of the major donors’ decisions on how to invest in education during recent years. Yet textbook availability may not be causally linked to student achievement, because availability does not necessarily mean use. If we are to understand more about how textbooks affect learning, we need to observe when and how teachers

and students use them, and how they fit into the teaching-learning process.

Toward this end we look first at four studies in which the researchers used classroom observation as a method of data collection. Three of these studies (Botswana, Ghana, and South Africa) have been conducted recently, as educational researchers in developing countries begin to place more importance on accounting for the cultural context of instructional inputs. The other (Chile) was conducted nearly 15 years ago.

Chile: Sepulveda-Stuardo and Farrell (1983) studied how teachers in Chile use textbooks. The researchers were interested in more than whether or not teachers had textbooks available; they wanted to know why they did or did not use them.² “The presence of textbooks may not be sufficient since if the teachers think that the textbooks are not useful, they will not use them. The effectiveness of textbooks depends upon the use made of them by teachers.”

The researchers sampled 900 eighth-grade students and 400 teachers in 72 schools (none were in rural areas of poverty). To collect data, they used three instruments: a written questionnaire for all 400 teachers, a written questionnaire for 900 students, and observation of 30 teachers during 20-minute periods in three different sessions. The variables they constructed included teacher preference (do they like to use textbooks?), teacher’s experience, teacher’s training, and subject area.

For our purposes the most striking outcome of this study is the conflict between how teachers reported their use of textbooks and how they were observed using them. Teachers were asked whether they requested textbooks for use, either in class or at home.³ Twenty-three percent of the teachers said they always requested books, 60 percent said they did sometimes, and 17 percent said they never did. Yet, when teachers were observed, some who said they sometimes requested textbooks were never observed using them.

In fact, observation showed that teachers tended to exaggerate their use of textbooks when they answered questionnaires.

Sepulveda-Stuardo and Farrell caution that:

Unfortunately the category “sometimes” may contain large differences in interpretation. This was an unexpected finding; most teachers were anticipated to either rely heavily on textbooks or not use them at all. The study was not designed to explore the “sometimes” response in detail. It is clear that more research into the actual and obviously varying patterns of textbooks use is needed

This discovery has implications for not only the Chile study, but for others such as the analyses of SIMS data, in which data was generated only by teacher questionnaires, and the Nicaragua study, which also used teacher questionnaires. The researchers also gained some insights from their survey of teachers about their use of textbooks.

- n Seventy-eight percent expressed an ambivalent attitude toward textbook use;
- n Fifty-two percent said they do not use textbooks because they are not the best didactic material or they are not necessary; and
- n Only 49 percent claimed they had had some training or retraining on how to use textbooks in the teaching-learning process.

In analyzing their survey data, the researchers found a “significant relationship between [teachers’] exposure to training in textbook use and the propensity to use textbooks.” Also, there was a “slight tendency for more experienced teachers to use textbooks more often than inexperienced teachers.” In addition, teachers seemed to use textbooks

more often in language than in math or science.

In surveying students the researchers asked, among other things, about students’ perceptions of the usefulness of textbooks in the teaching-learning process. They learned that, generally, students had a positive perception of textbooks, more so than their teachers, and that about half used them when they did not understand what the teacher had presented. About one-third, however, did not resort to them for assistance.

Botswana: Fuller and Snyder (1991) studied how teachers use class time. In this study the primary method of investigation was classroom observation. The researchers were following up on an ethnographic study of classrooms in Botswana (Prophet and Rowell) to see if the findings from that study held up across a broader sample of classrooms. They observed 127 primary and 154 junior secondary school classrooms on three separate occasions over a three-month period. They devised observation instruments to quantify teacher and student behavior, including students’ use of textbooks and other books or papers.

During 12 percent of the time researchers were in the classroom, students were observed using a textbook, and during one percent of the time, they were observed using other written materials. In junior secondary schools, during 11 percent of the time researchers were in the classroom, students were observed using a textbook, and during five percent of the time they were reading other written material. Using regression analysis of their data, the researchers discovered that textbooks were more frequently used when English (not math) was being taught, and they were more often used in smaller schools (as defined by the number of teachers on the staff).

While this study presents information about *how often* students actually used textbooks, it does not tell us *how* they or their teachers used them.

Ghana: The most specific study to date on how teachers in an African country use textbooks comes from Ghana. In 1997 Harris et al. reported on their intensive study of teaching practices in 14 schools. A survey conducted in 1991 (University of Cape Coast Centre for Research on Improving Quality of Primary Education in Ghana, 1993) revealed that most teachers were not using textbooks in the classroom because they feared they would be held responsible for losses and damage. Teachers also knew that children could not communicate in English (the language of the textbooks) and that the books were not aligned with the children's reading ability. The teachers did not have the skills to adapt the books to children's skill levels.

For two and a half years, Harris and her Ghanaian colleagues worked in 14 rural and urban schools to improve English language learning. All the schools received a good supply of textbooks, and teachers and supervisors in seven schools received supplemental instructional materials, participated in ongoing professional development workshops, and received on-site instructional support. As part of a larger effort the researchers traced the path of textbooks from the head teacher's office to the students and studied how teachers used textbooks. Their methods included interviews with teachers, head teachers, circuit supervisors, parents, and students; classroom observations; longitudinal assessment of individual student performance; and an inventory taken late in the process of the condition of available textbooks.

The research team found that simply managing the movement of textbooks within the school and between school and home was a major effort. Because the books had high value on the open market, neither school officials nor parents wanted the responsibility for their security. The Ministry had to announce clearly to all teachers that they would *not* be asked to pay for lost books before most teachers would let the books out

of the cupboard. In addition, some students and even teachers did not appear regularly at school, so it was difficult to entrust those individuals with books. And because the books were not durable and were subject to rough treatment, they were easily damaged while not easily repaired or replenished.

In the classroom the gap between students' skill levels and that which the books required was large in rural schools, while in urban schools, the books were better matched to the skills of most students. Teachers in rural schools, then, had to devise strategies for bridging this gap, and most were not prepared to do so. The assistance offered to teachers in seven schools proved successful in showing teachers how to group students in reading and to prepare supplementary materials to help students improve their language and reading skills.

The study concluded that merely putting textbooks into the hands of students was not enough to guarantee their successful use. The researchers suggested that:

- ∩ Teachers used to communicating by writing on the chalkboard need explicit training in moving toward the use books as the medium of reading and writing;
- ∩ Enough books must be available for students to use them individually, at least in language and math;
- ∩ Teachers need written materials to supplement the books—remedial materials for those whose skill level is too low and enrichment materials for those who master the material easily;
- ∩ Teachers also need training in how to conduct group work using books;
- ∩ Head teachers, parents, and students need guidance in managing textbooks. (Schools where head teachers set forth clear policies

on book management fared better than those where guidance was vague); and

▮ Students and parents need to understand how to use books at home and how to take care of them.

South Africa: A study conducted just after the inauguration of the post-apartheid government in 1994 differed from the others in that the researchers studied teachers' use of newly produced, innovative materials rather than textbooks. Video tapes, audio tapes, and comic books were introduced to present an integrated science curriculum called Spider's Place. The materials were based on lively, colorful, and comical characters (puppets in the videos) who lived and worked in a social context familiar to the students. The curriculum presented lessons that were parts of the standard curriculum.

Though the purpose of the research was formative—to improve the instructional materials—their evaluation also had much to say about how teachers used them. The researchers observed 22 classrooms in 18 schools and interviewed 17 teachers before and after they were observed teaching. Two schools were rural, and teachers' qualifications varied. The researchers found that teachers required intensive training in use of the materials, and that the single workshop given was not adequate. Not all understood the subject matter of the lessons, fewer knew effective pedagogical strategies, and even fewer understood how to use the materials in the context of the standard curriculum. To improve skills and knowledge in these three areas, they needed ongoing support.

The materials introduced teachers to methods of teaching science that encouraged students to think creatively about the subject and to depend less on the teachers' directions. Yet because teachers were not skilled in these methods, they often failed to exploit the materials and continued to use more teacher-

centered questions and directions. For example, they looked for "correct" answers rather than listening to students' ideas and promoting meaningful discussion. Nevertheless, teachers observed and students commented that the comic books were well-liked because they were easy to read, contained pictures, and had stories related to the children's own experience. Without teachers' guidance, students could not easily follow or understand the content of the videos and audios. Teachers also faced language problems in many schools where English was not often used, but the materials seemed to facilitate a bilingual (moving between languages) approach.

Summary

The large-scale, well-publicized research on textbook use in developing countries could be, until the past few years, better characterized as research on textbook availability. The studies of textbook use are smaller and much less well known. Though the research studies in Chile, Botswana, Ghana, and South Africa are surely not the only ones of their kind on schools in developing countries, such studies are rare and not readily available. All of them, however, question common assumptions about the connections between the availability and use of textbooks. They also raise important questions for research in all countries:

- ▮ To what extent do teachers actually use textbooks and other materials available to them?
- ▮ How do they use them, and how does use vary among teachers and among schools?
- ▮ How are teachers trained to use instructional materials, and how effective is that training?

These kinds of questions have been addressed through empirical research in the

United States, and we turn now to that research to see how it might inform future research in Africa.

Research in the United States

Reports on research on textbook use in the United States are scattered among the research on other topics, such as that on how teachers make decisions and how teachers teach reading, math, and science. Even though Cronbach (1955) pleaded four decades ago for more research on textbook use in the classroom, this has never been a topic of keen interest. Yet, as we will see, it deserves more attention in both the United States and developing countries.

We have summarized the research on how teachers in the United States use textbooks in elementary and middle school classrooms according to five questions:

- ∅ How pervasive is the use of textbooks?
- ∅ How do teachers use textbooks to plan and make decisions about instruction?
- ∅ How do they rationalize their use of textbooks during the teaching-learning process?
- ∅ What use do they make of teacher's guides?
- ∅ What do they learn about textbooks during their pre-service training?

How pervasive is the use of textbooks?

We searched for nationwide studies of textbook availability and use in the United States comparable to those done in developing countries. The large-scale survey cited most often was conducted by the Educational Products Information Exchange Institute (EPIE) in 1977. The researchers selected a

representative sample of principals and teachers across the country, and mailed them a questionnaire concerning their use of textbooks and other materials in the classroom. From a sample of about 12,000 teachers, the researchers learned that

- ∅ An average of 62.5 percent of class time is structured around print materials, with little variation across school districts;
- ∅ Fifty-one percent of teachers received some training in the use of the materials they use; 25 percent from publishers' representatives, 15 percent from a school district consultant, and 14 percent from some other source; and
- ∅ Few use commercially available supplementary sources, though 30 percent use "locally developed" materials, e.g., worksheets and tests.

The EPIE researchers confirmed the data taken from the written survey with visits to two full-class meetings in 150 classrooms at 56 schools across the country.

Woodward and Elliott (1990) in an essay on the lamentable reliance of many teachers on teachers' guides, summarized their findings that "textbooks are ubiquitous and widely used in classrooms."

- ∅ In a survey of 1,580 elementary school teachers and 141 elementary school principals, Barton and Wilder (1966) found that 98 percent of first-grade teachers and 92 to 94 percent of second and third-grade teachers used basal readers on "all or most days of the year."
- ∅ Turner's (1988) survey of 339 teachers found that 85 percent of them used basal readers, and that 56 percent of districts represented by the teacher sample required basals to be followed strictly.

∅ Weiss (1987) found that 90 percent of science and math classes at each grade used textbooks.

A more recent (1996) though less thorough survey conducted by the Association of American Publishers and the National Education Association revealed that 70 percent of teachers who responded said they use textbooks at least weekly and most said they use them almost every day.

Characterizing the teachers who rely heavily on textbooks, Woodward and Elliot concluded that the teacher's role becomes "that of an administrator of a preplanned lesson." Other writers also concluded that the increasing availability of textbooks and supplementary materials packaged commercially for teachers had reduced teachers' professional role, with unfortunate consequences for student learning (Shannon, 1987; Duffy, 1987).

These conclusions are in sharp contrast to Botswana and Ghana, where teachers' use of textbooks in the classroom seems to be minimal, and evidence in the United States that some teachers rely too heavily on their use.

But who are the teachers who depend on textbooks? Woodward and Elliott looked at studies that ask what might account for the range of dependence among teachers on textbooks and accompanying guides. They found that less experienced teachers and those whose subject-matter expertise is weak rely more heavily than do other teachers on textbooks. Other variables they suggest are: teachers' and administrators beliefs that textbooks hold content expertise and authority; expectations by parents; cultural support for their use; seemingly high-quality design; and apparent congruence with local curricula.

McCutcheon (1982) studied a school in central Ohio, observing several teachers for over half a year. Her tentative findings included a list of "factors that seem to account for teachers' widespread, extensive use of textbooks":

∅ Beliefs that because the school board ordered the texts they must be used;

∅ Peer pressure;

∅ Parent pressure for homework and bringing books home every weekend;

∅ State-required locally-written courses of study;

∅ Beliefs about what school should be like;

∅ Ease of use, clear organization;

∅ A lack of many other materials;

∅ Beliefs about the need for uniformity and continuity;

∅ Previous education courses; and

∅ Responsibility to plan and teach multiple subjects to multiple ability groups, yet rich understanding of fewer subjects and little planning time.

To summarize, U.S. teachers are expected by their mentors, peers, bosses, and clients (parents) to use textbooks extensively. This does not seem to be the case in developing countries.

How do teachers use textbooks in planning and making decisions about instruction?

Teachers use textbooks outside the classroom as aids in planning lessons. We found five studies in which the researchers' primary interest was in how teachers use textbooks to plan and make decisions about instruction. Three of these are separate reports on a large study of what influences teachers' decisions on what to teach in mathematics.

McCutcheon (1981) studied how 12 teachers in three school systems in Virginia (one

city, one smaller city, and one rural) planned lessons over the course of the year. She concluded that teachers did little long-range planning because they believed the textbook did this for them “by selecting and sequencing topics and concepts.” She also found that while most teachers (85 to 95 percent) relied on textbooks as the major source of planning activities in math and reading, decisions about social studies and science stemmed from other factors. This is largely because teachers had relatively less time to teach those two subjects and could not rely on a comprehensive curriculum presented in a textbook.

Finally, in 1989 Freeman and Porter re-examined data they had collected in 1979 to look at math teachers’ decisions about what content of the textbook to teach. Their main interest was the extent to which teachers relied on the textbook to dictate what and how they would teach.

The researchers concluded that textbooks are limited in how they can direct teachers’ activities. They noted that textbooks are largely silent on how much time should be devoted to a subject matter over the course of the year, how to vary content for different students, and what standards of achievement to hold. On the other hand, textbooks do provide guidance on other content decisions: what topics to cover, how much time to allocate to each, and in what sequence to teach them.

To learn more about how textbooks influence teachers’ decisions, the researchers studied styles of textbook use.⁴ As part of a comprehensive series of studies of how teachers decide what to teach, they conducted year-long case studies of seven elementary-school teachers. These teachers demonstrated three distinct styles of textbook use:

▮ The “textbook bound” teacher began the school year with the lesson on page one and progressed page-by-page through the book over the course of the year. In order to get

through the book, some omitted selected chapters;

▮ The “basics” teacher focused on chapters that reviewed addition, subtraction, multiplication, and division, and introduced fractions; and

▮ The “management by objectives” teacher worked in a school district that required teachers to ensure that all students acquire minimal competencies. As an aid to teachers, the district provided a list that coordinated textbook exercises with each instructional objective.

The researchers looked for differences among the three styles of teaching in the relative strength of the teacher’s view of the textbook as a content authority and the teachers’ own content convictions (e.g. the need to master basics). They found that both the “textbook bound” and the “focus on objectives” teachers viewed the book as high in authority (the others viewed it as low or moderate), and that the “focus on the basics” teachers had high strength of convictions (the “textbook bound” was moderate, and the “focus on objectives” was low).

They found differences in the amounts of time teachers allocated to concepts, skills, and applications, their grouping practices, and their standards of achievement. They also saw differences in the degree to which teachers presented the content of the textbook around each topic. The “textbook bound” teacher “not only taught a higher proportion of lessons, she also was more likely to present these lessons in a style that conformed to the textbook.” The “basics” teachers were more selective in deciding which sections of each lesson to use, and the “objectives” teacher used selected sections suggested by the school district.

Freeman and Porter concluded with two implications of their findings:

n First, “textbooks are not the content control policy instruments they are billed to be. Rather, teachers’ content decision-making is a function of several other factors, including student aptitude, limits in instructional time, and teachers’ own convictions.”

n Second, “we question whether students are typically better served by teachers who go beyond their textbooks than by those who follow their books closely. In this study, the teachers who followed their textbooks most closely were the teachers who placed the most emphasis on applications and conceptual understanding. The teachers who deviated most from their textbooks did so to augment an already heavy emphasis on drill and practice of computational skills.”

In an earlier report, Freeman, Belli, Porter, Floden, Schmidt, and Schwille (1983) examined their data to find out the degree to which the match in textbook-test content vary as a function of how a teacher uses the book. The researchers had been studying the match between the content of material presented in fourth-grade mathematics textbooks and the content of items on standardized tests for that grade level. Their general interest was in whether all students across the country had the same “opportunity to learn” (or exposure to the curriculum—in this case defined as what is covered by the aggregate of nationally used fourth-grade standardized tests) based on the content of their textbook.

In their research they conducted intensive year-long case studies of seven classrooms in three Michigan school districts, two rural and one urban, selected for differences in type and strength of district policies that could influence content decisions in mathematics.⁵ They asked teachers to keep detailed daily logs of what they taught, including their use of textbook and other materials, and how they allocated time within math lessons. Researchers collected these logs each week,

at which time they interviewed the teachers, including asking questions to clarify any ambiguities in their descriptions of what they taught.

This study expanded the three distinctive styles of how teachers used textbooks. The “textbook bound” teacher style was broken into groups of those who omitted nothing (except what they failed to reach at the end of the book) and those who selectively omitted sections. Likewise, the “basics” teachers were subdivided into those who included a unit on measurement and those who did not.

Applying these five teaching styles to a single textbook, Holt’s *School Mathematics*, the researchers used data collected from classroom observations to determine what portion of the textbook content each style of teaching covered and the match between that portion and each of five standardized tests. They also determined what proportion of time each type of teacher devoted to each unit of content. For example, they found that teachers who used the management by objective style spent a considerably greater proportion of time on each of the units they taught, but they did not cover nearly as many units as did the other four types of teaching styles. The researchers found that “instructional validity” (or the match between what was taught and what was tested) did vary among the different teacher styles using the same textbook.

While it is not relevant to our interests to elaborate on these findings, we do gain some useful information from this study. First, we see that researchers were able to distinguish between different styles of textbook use and to develop quantitative measures that correlate these styles to students’ opportunity to learn. Second, we find that, in the cases examined here,⁶ different styles of textbook use did affect student achievement on some (though not all) standardized tests.

This study does not tell us anything more about how teachers used textbooks in the

classroom than that they covered chapters selectively and that some teachers spent more time on some chapters than did others.

Alvermann (1987) distinguished between "preactive decisions" (in planning lessons) and "interactive decisions" (during the teaching-learning process). She asked how the textbook figured into teachers' decisions about adjusting during class their planned discussions of textbook reading assignments.⁷

The subjects of Alvermann's study were teachers in grades six through eight in the subjects of social studies, science, literature and language, health and human development, and remedial reading. The ability groupings of students included gifted, regular, and multiple disabled. The teachers and students "represented a mix of socio-economic levels within rural, suburban, and urban settings of four county school districts located in northeast and south central Georgia. The 24 teachers were mostly female (14) and white (14), but also included males and blacks.

The study's elaborate qualitative methodology is of more interest to us than its findings. The teachers volunteered to participate extensively in the preparations for data collection and analysis. They agreed with the researchers on a time that they would present a lesson for which the students would be ready to discuss their assigned textbook reading. The researchers set up video and audio tape equipment in the classroom the day before the lesson, and then taped the lesson the next day at the scheduled time.

After all participating teachers at a site had been videotaped, the investigator . . . met individually with approximately one-third of the teachers for the purpose of jointly viewing the videotapes and collecting data in the form of stimulated recall protocols. The investigator held informal interviews with the remaining two-thirds of the teachers.

In analyzing data collected on videotape, the researchers took pains to maximize reliability and external validity. They coded categories and properties of the discussions by allowing patterns of textbook use in interactive decision-making to emerge through the "constant comparative" methodology of Glaser and Strauss (1967) rather than by pre-selecting categories of phenomena. They also adhered to the design features of Goetz and LeCompte (1984): "low-inference descriptors," including field notes and transcriptions of the videotaped data, and "multiple researchers and participant informants," including the participation of teachers in stimulated recall sessions and informal interviews. In their report, the researcher provided direct quotations from exchanges with teachers, both in class and in recall sessions, which add to the meaning of their quantified data.

Alvermann and her colleagues found four ways in which teachers used textbooks during a discussion to make decisions about how to manage the lesson:

By far the greatest use by most teachers was to refocus discussion—to come back to the text that was the subject of the lesson when students strayed from it. "Perhaps their propensity for using it to refocus a discussion was an indication of their students' inability to sustain a line of verbal inquiry." In some instances, "the textbook appeared to be acting as a mediating agent that helped teachers deal successfully with unacceptable student behavior."

Only the teacher of "gifted" students in literature and social studies used the textbook to verify points of disagreement.

A few teachers of "regular" students used it to refer indirectly to previously read text, and, except in one case, not very often.

One science teacher used the text to prompt

answers. Students in this class “were conditioned to waiting for the teacher’s numerous textbook prompts. They knew he had one and only one answer in mind and that the answer could be found verbatim in the text. As a result, they rarely ventured forth with their own complete answers, preferring instead to let the teacher drag the answers from them.”

Though the wide variety of content areas and of student groupings (gifted, learning disabled, regular), may have hampered the researchers’ ability to find meaningful patterns in textbooks use, the study offers an interesting research methodology and a set of categorical descriptions of teachers’ textbook use.

How do teachers rationalize their use of textbooks during the teaching-learning process?

A few studies looked not only at how teachers used the book during the process of instruction but also considered the teachers’ thinking and rationale behind their use of those books.

Stodolsky et al. (1989) examined the assumption that “textbooks drive instruction because they are ubiquitous.” They looked closely at how fifth-grade teachers use textbooks in math and social studies and how their uses differ between these two subjects. The researchers observed nine teachers in Chicago schools serving lower-class, working-class, middle-class, and upper-middle class pupils. The teachers, whose years of experience varied widely, were observed during two consecutive weeks of instruction in mid-year.

The researchers asked questions about three aspects of use:

∩ To what extent did teachers cover topics presented in the textbooks?

∩ What sections of the book and/or supplementary materials were used?

∩ To what extent were suggestions in the teachers’ editions followed?

In mathematics they found, as did Freeman, et al., that teachers covered only the topics in the books, though not necessary all of those topics nor in the order presented. But their findings go deeper than those of Freeman. Stodolsky categorized the contents of the textbooks and examined how teachers used each category: introductory or developmental, exercises, maintenance, review, tests, and enrichment. The researchers constructed a table showing each of these categories on one axis, each of the six teachers on the other axis, and indicating in each cell whether the teacher used the content and, if notable, how.

They found wide variation in how teachers used each of these sections. Overall the introductory and exercise sections got more consistent use than the maintenance, review, test, and enrichment sections, which hardly got any use. Teachers did not seem to consider the suggestions in the teachers’ editions when they planned or presented their lessons.

In summarizing their findings in math teaching, the researchers reported that:

Our cases suggest that teachers are very autonomous in their textbook use and that it is likely that only a minority of teachers really follow the text in the page-by-page manner suggested in the literature. Use is much more varied than usually suggested, particularly when one considers more than just the topics contained in the books

Developers of teachers’ editions might be sobered by our findings that suggest a weak link between their suggestions and actual classroom

practices. However, it should be noted that we studied highly experienced teachers.

In social studies, Stodolsky and colleagues focused first on the topics taught in class and their match with the textbook and supplementary materials. They found that, in contrast to math texts, social studies texts “do not define the maximum range of topics covered during instruction.” Teachers frequently bring in topics not covered by the textbook, related or unrelated to its curriculum content. Again, they found variation among teachers, half adhering rather closely to the curriculum of the textbook and the other half deviating widely from it.

Ironically, the two teachers that stuck most closely to the content of the book were in schools using innovative curricula that included small group work and other less traditional activities. Teachers in traditional classrooms drew more on multiple sources of materials—workbooks, other texts, newspapers, and films—drawing from other publishers than those of the textbooks.

In the use of social studies textbooks, the researchers observed that “as in math, enrichment suggestions in teachers’ guides were ignored rather consistently as were most instructional suggestions. Our teachers used texts in the styles they felt most appropriate for themselves and their students, consistent with general school policies.”

Stodolsky concluded by suggesting that:

the common wisdom about textbooks pervading instructional decisions and actions must be tempered with more deliberate analysis of the specific ways in which such an assertion is valid and the conditions under which it is true. The popular vision of slavish adherence to texts does not seem supportable and may have arisen in part

from over generalization of knowledge about primary reading instruction. The faulty assertions have also been bolstered by a lack of direct observation or other systematic data with which to verify or refute them.

Sosniak and Stodolsky (1993) pursued Stodolsky’s earlier research. This is the most exciting study in terms of both methodology and findings. The researchers begin by pointing out that “systematic attention to textbooks and their use by teachers and students is long overdue” and “their role in education frequently has been either overlooked or assumed.” Although others have addressed textbook use, they have not considered “how teachers view textbooks within the framework of their instructional plans and actions, both within and across specific subjects.”

Sosniak and Stodolsky first posed a question they could answer by observation: How often and in what ways do teachers use textbooks and other materials in the course of teaching language arts (reading), mathematics, and social studies, and how consistent is textbook use within and across these subjects? They then went beyond this descriptive information and asked what teachers *think* about textbooks and their use within and across subjects, how their thoughts relate to instruction, and how consistent their thinking is about textbooks.⁸

The researchers carried out their investigation in four fourth-grade classrooms in the Chicago school district, studying two pairs of teachers in two different schools. One was a neighborhood school in a mixed-ethnic neighborhood. The children came from low-income families; many were Hispanic. The other was a magnet school in a neighborhood with a changing population and upgrading in housing; the children were balanced across racial and ethnic lines. The school had a “history of student achievement well above national norms.”

They collected data over the course of a year, including two week-long visits to each class. During these visits they kept narrative records (Wright, H. F., 1967). Using an informal interview guide (Patton, M. Q., 1990), they also conducted three semistructured, tape-recorded, hour-long interviews with teachers. They analyzed the observation data and transcribed tape recordings separately, using the "constant comparative method" (Glaser, B.G., 1965).

Sosniak and Stodolsky presented their findings in a richly detailed description of each teacher's practices and how they differed. They summarized their observations about use as follows:

Use of textbooks in their designated sequence was, typically, a teacher pattern, largely independent of the materials themselves, the subject, or the culture of the school. For example [two teachers] used most of their textbook materials in the sequence designed by the publishers. In contrast, [the other two] typically chose sections from the various books without apparent concern for textbook-designed sequence.

They also found that:

None of the four teachers used textbook materials in the same manner across subjects (considering, e.g., how much instructional time was spent with textbook materials, how the materials were used, which aspects of the materials were used, and how much and what sorts of materials were used in addition to the text). Instead, the teachers worked with materials and subjects in distinctive ways.

Even more revealing is teachers' explanations of their uses of textbooks and other

materials. "Observations are easily amenable to misinterpretation." While two teachers may be observed to use the textbook in a similar way, or while one teacher may seem to use textbooks in the same way across subjects, their thoughts about why they behave in these ways may differ dramatically, from teacher to teacher and subject to subject. In contrast, teachers who appear to use materials differently may not be very different in the thinking that underlies their behavior.

In asking teachers their views of textbook materials, the researchers learned that textbooks do not necessarily play the dominant role that is often assumed. The teachers see themselves as teaching knowledge and skills to a group of children, not teaching a book or a specific set of materials:

Textbooks apparently were something akin to props these teachers used in putting on the play of fourth-grade education. They were essential to the action but did not demand or receive focused attention or analysis in most instances.

Because the subjects of this research were limited to four teachers in a single school district in Chicago, the particular findings cannot be generalized. But the observations that there is great variation among teachers' use of textbooks and that teachers' own explanations of their behavior often confounded what was observed, highlight the importance of examining how *and why* teachers use textbooks in other specific contexts.

The researchers concluded the report of their study with a practical implication:

Our research suggests that helping teachers become more aware of their patterns of textbook use, their own selectivity, the alternatives available to them, and the consequences of the choices they make for instructional

activities is an important avenue to pursue.

A recent in-depth study of teachers' use of textbooks, in this case social studies textbooks, is an unpublished doctoral dissertation (Kon, 1993) that asked how important the textbook is as an instrument of educational reform. Does a textbook that embodies a reformed curriculum guide really change a teacher's decisions about what and how he or she teaches, or does the teacher use the textbook selectively, without regard to the reformed curriculum?

Kon addressed the question by studying seven fifth-grade teachers in California who had just received a new social studies textbook and were beginning to use it with their students. This allowed her to find out whether or not, as assumed, introducing a new textbook would change the curriculum in the direction the state desired. She identified seven teachers in one school district who were willing to participate in the study. They kept daily logs of their activities in social studies and were interviewed once a week. The researcher observed each of their classrooms at least twice and conducted lengthy preliminary and follow-up interviews.

The research is based on a conceptual model of teachers whose instructional "agenda" is based on "a) educational backgrounds and affiliations, b) beliefs about how a subject should be taught, c) understanding of the classroom and school teaching contexts, and d) assessment of the needs of the particular students in their charge." It assumes that these variables will intersect with the introduction of a new textbook. This model adds a new and important dimension to studies of textbook use, because it highlights their use not only as instructional tools but also as definers of curricula.

Several of the conclusions of this study reiterate what we have already presented from others, such as the different styles among

teachers in their use of textbooks. Other findings relate more closely to the role of textbooks in reform:

▮ Teachers, not textbooks, are the key to implementing reform. "This research has once again documented and confirmed the difficulties of guiding educational change from outside of the classroom and affirmed the central role of the teacher as the key to the curriculum that gets enacted."

▮ Teachers' prior experience influences how they think about textbooks. "Just as current learning theory suggests that teachers need to attend to students' prior knowledge and understanding and provide opportunities for them to construct new knowledge, it seems prudent to recommend that curriculum reformers attend more closely to teachers' prior knowledge and beliefs, and the ways in which their knowledge and beliefs are modified."

▮ The most favorable views of reform (as manifested in the new textbooks) are held by teachers who have active professional affiliations outside of the classroom.

▮ The amount of diversity among teachers in how they use new textbooks is surprising and reflects teachers' willingness to adapt materials to the needs of their own students. The diversity also indicates, however, that what outside policymakers view as "clear, radical, and momentous" changes are filtered by teachers' diverse agendas and do not often result in radical changes in their teaching behavior.

▮ Reforms that aim to "teach for understanding" appear to conflict with the introduction of textbooks to achieve this goal. "There appears to be a paradox or conflict between the admonition to 'teach for understanding' by having students generate their own

knowledge of a concept or situation and the use of a textbook—a book that by its very nature implies external authority and codified knowledge.”

Kon summarizes her conclusions:

It is simplistic to assume that the texts are the key to curriculum reform The *teacher* is the key. Realization of this fact makes the prospect of educational change more complicated, but also, perhaps, more suited to the kinds of changes the reformers seek to engender.

Although this statement moves us somewhat outside the focus of this report, we include it because of its important implications for our study: Teachers’ use of textbooks is influenced by their own experience, training, and support probably more than by the textbooks themselves, and improving textbook use requires improving teachers.

How do teachers use teacher’s guides?

Two studies looked at how teachers use teacher’s guides, both focusing on basal readers.⁹ Barr and Sadow (1989) zeroed in on the use by reading teachers of basal programs. The researchers asked three questions¹⁰:

- To what extent are the materials available in basal programs actually assigned to and read by students, and how does the design of the program influence this selection?
- How does the balance of skill practice and contextual reading in a basal program influence the use of time during instruction?
- To what extent are the recommendations in the teacher’s guide followed by teachers during prereading and postreading activities?

As part of a larger study, the researchers studied seven fourth-grade classrooms. These classes were in four schools in two districts in Chicago. One school was in a very poor area, one in a lower-middle class area, and two in an affluent, all-white suburb. The researchers did not “detect a monopoly on teacher competence” in either district.

Their methods of data collection included observing and audiotaping each class eight times during the school year. They used a coding form to measure how time was spent on a range of instructional activities, categorized as word identification, word meaning, and comprehension. They used audiotapes to determine the nature and source of teachers’ questions about the reading selections. They interviewed teachers during the summer preceding the observation to collect information on their background, plans, and expectations. And they interviewed them after each observation to collect information on the coherence of observed activities and teachers’ daily logs, which they used to extrapolate observation data to year-long practices.

In effect the basal program used by these teachers constituted their entire curriculum in reading. Teachers did not give any lessons in reading that used other materials or that did not use any materials. The decisions they made about the curriculum cum textbook, were, first, what to omit—if anything, and second, what sequence to follow.

The researchers found variation among teachers using the same programs in how they used the textbooks. For example:

- Teachers’ use of selected readings ranged from 26 to 99 percent.
- Their use of skill practice materials provided ranged from 35 to 100 percent.
- Their use of post-reading questions suggested by the teacher’s guide ranged from zero to 98 percent, and the percentage of

questions asked that they generated themselves ranged from 10 to 75.

Perhaps their most interesting finding is that, as evident from their use of textbooks, teachers vary in their use of the teacher's guide. The guide suggests a pattern to follow in each reading lesson, including what to do before assigning the reading selection and afterward. Few teachers took the time to do all the activities suggested. This research:

suggests that teachers develop routines to solve the problem of what to select from the teacher's guide. They do not seem to make a new decision in response to the demands of each selection; rather they appear to rely on generic solutions as efficient means for dealing with a complex set of materials.

Elaborating on the implications of their findings for teacher training, the researchers state that "basal programs form the backbone of instruction in most schools; yet they are simply tools, which can—if used mindlessly or unwisely—result in ineffective instruction." Thus, teachers need to be taught to judge which reading materials have the most value for their students, which teacher's guide selections are most appropriate, and how to generate their own, more appropriate questions. In other words, when a package of textbook materials permits teachers to pick and choose, teachers need training in how to do so.

Durkin (1984) asked a similar but more limited set of questions:

□ Is there any pattern in, or conscious reason for, what teachers use, skip, or alter from among the many suggestions in basal reader manuals?

□ Are there differences in the way manuals function at different grade levels?

□ Why do teachers use or not use manual recommendations?

She observed 16 teachers in grades one, three, and five on two successive days during their scheduled reading periods.¹¹ She recorded for 10 responses to activities suggested by the guide whether teachers did these activities and whether they altered their form or sequence. She also interviewed teachers after each observation to confirm the accuracy of her observation records and to get some explanation of their uses of the guide's suggestions. She accepted their explanations at face value and rarely probed for more information.

Durkin found that most teachers used some suggestions generously (primarily those for assessment questions and written practice assignments), but others had only minor influence (background information, vocabulary, and prereading questions). Across the three grade levels, there was much similarity in how teachers used the manuals.

Durkin speculated about *why* teachers spend so much time on oral reading and written exercises and so little on background information, vocabulary, and prereading questions.

It could certainly be conjectured that oral reading at all three grade levels was as much a device for controlling students as for teaching them. The same motive applies to the time given to practice assignments, where all the teachers said that one goal was to keep students occupied.

Durkin did not, however, interview teachers to confirm this conjecture.

What do teachers learn about textbooks in their pre-service training?

Ball and Feiman-Nemser (1988) studied student teachers to find out what they had learned about textbooks in their pre-service training. This study, though at first glance

slightly tangential to our focus, sheds light on how teachers use textbooks. It does so by describing what teachers are taught in teacher-training programs about textbooks and how this knowledge affects their earliest experiences in the classroom.

The researchers asked three questions about the student teachers they studied:

- n What did their teacher-education programs convey about textbooks, planning, and curricular decision making?
- n What did the prospective teachers come to believe about the use of textbooks, about planning and curricular decision-making?
- n What did they do with textbooks and teachers' guides during student teaching?

The data came from a longitudinal study of six elementary education students through two different two-year undergraduate teacher education programs. Teachers were selected to be generally representative of students in those programs. They were all women; two were returning to school after having a family; one was Black. Two had strong academic records, three appeared average, and one had a weaker record. Data were collected through observing the student teachers in their college courses and later in their practice-teaching situations, both in the classroom and in conversations with cooperating teachers and university supervisors. The researchers also interviewed the student teachers, four times during their course work as well as during their practice teaching,¹² and they studied their papers and other assignments. They tape recorded and transcribed the interviews and analyzed the data in terms of a series of questions about the student teachers and textbooks, curricular decision-making, planning, and practical experience.

Ball and Feiman-Nemser found that students in both programs were taught that

“good teachers don't follow textbooks.” In one program, this was emphasized from a “learning” point of view: good teachers focus on students' thinking, and at best textbooks are used as a limited resource. In the other program, it came from a “teaching” point of view: good teachers rely on their own professional knowledge of subject matter and of students to develop instructional programs, not on other individuals, including textbook authors. “Abandoning their common sense notions about textbooks, teacher candidates in both programs came to see textbooks in terms of their programs' ideology.” They learned that “their personal ideas and knowledge were a better source of content than anything in the textbook or teacher's guide.”

During their student teaching, however, most of the students were placed in classrooms where they were required to use textbooks to teach reading, math, science, and social studies. They were unprepared to do so. Some of them did not understand the subject matter well enough to make sense of the teacher's guide. One student teacher had trouble following suggestions for a lesson on representing length, which included having the children make paper chains to measure themselves.

[Her] problems in understanding the teaching suggestions in the guide stemmed from insufficient knowledge about math, pedagogy, and children, not surprising for a beginner. A more experienced teacher, who understood measurement as a mathematical topic, who knew something about how kindergartners make sense of it, and who could visualize ways of orchestrating such activities, would probably not find the teaching suggestions mysterious or underdeveloped.

While textbooks are widely criticized for their content, biases, and implicit views of

teaching and learning, most novice teachers are required to use them. Moreover, these new teachers lack the subject knowledge, knowledge about children, and the pedagogical skills to rely on their own resources. The authors suggest that in college courses prospective teachers be taught how to use textbooks and teachers' guides, and that these be considered as "instructional scaffolding" (to use the constructivists' term). New teachers can use the support of textbooks and guides until their own subject knowledge is stronger and they know what to expect from children and how to develop their own pedagogical skills.

This article says a lot about teachers' proficiency with textbooks. While other studies appear to assume that teachers are skilled enough to use textbooks and teachers' guides in whatever manner they choose, this one makes it apparent that many teachers, especially beginners, lack the innate ability to make choices about textbook use and need help in learning how to use them effectively as a reliable support.

Textbook use and student performance

We came across only two discussions of how variations in textbook use affect student performance on achievement tests. One of these was in a footnote. Barrow and Sadow (1989) tested for student performance using the Degrees of Reading Power test (New York: College Entrance Examinations Board, 1979). Among the seven teachers they studied using two different basal programs, they found no significant differences in student performance. The other was in Freeman, et al. (1983), whose purpose was not to measure effects on performance *per se*, but to correlate patterns of use with scores on a variety of standardized tests. Thus, they drew no conclusions about student performance.

Teachers' use of textbooks does not appear to be included in process/product re-

search, which examines variables in teacher behavior to determine which behaviors have positive effects on student achievement. Brophy and Good (1986) reviewed the literature on empirical research on teacher behaviors and student achievement. Their categories of research did not include anything close to textbook use. Most researchers we reviewed were, in fact, cautious about making judgments on the effectiveness of teachers' patterns of use. They preferred to remain descriptive. Sometimes their judgments were apparent, as when they discussed patterns in terms of "teacher-centered" and "learner-centered" instruction. But even at those times, they hesitated to draw judgmental conclusions. Stodolsky pointed out that one cannot make easy judgments about correct and incorrect ways to use a textbook.

Teaching by the book has often been taken as synonymous with teacher-centered lessons. There has been a facile and unwarranted equating of teacher-directed instructional techniques with textbook-driven instruction. Particularly in subjects other than the basics, a variety of instructional arrangements are called for in various curricular programs. An image of teacher-led lessons, frequent recitations, and seatwork is invoked to describe the textbook-driven classroom. But all books do not call for these arrangements. The existence of a teacher-centered program does not necessarily mean that the textbook is being followed. Conversely, the creation of a student-centered environment does not necessarily signal departure from a textbook program. Some books and curricula require establishment of peer work groups, games, laboratory exercises, or computer-aided instruction.

For the most part, the research in the United States on teachers' use of textbooks is ethnographic, attempting to relate the use of textbooks to other aspects of the teaching-learning process, not to demonstrate correlations between patterns of use and student achievement. Kon (1993) recommended that further research focus on how teachers' use of textbooks affects student learning:

Whereas I selected seven teachers and relied on self reports in an effort to get some sense of the breadth of instructional practices that could occur within a limited setting (one grade level, in one school district), I now feel that more attention should be paid to investigating the educational implications of these differences. What do such differences *mean* for what students learn in and about social studies? This kind of study might usefully compare teachers who used the text as a primary resource with teachers who used it as an active or limited resource. Rather than relying strictly on teacher reports, this study would benefit from more intensive observations of practice and interviews with selected students over time.

Kon's recommendation is attractive because it obviates the need for pre-test and post-tests of achievement and the many intervening and other variables that are difficult to control. Instead, it uses data from observations and reports by students and teachers, which help to explain behavioral changes.

Summary

From our review of the literature on how teachers in the United States use textbooks and other print materials we have generated

a list of research questions about teachers' use of materials¹³:

- ∩ How do teachers use textbooks, guides and other materials?
 - What parts of texts, guides and supplementary materials do teachers use and delete? What do they emphasize and what do they cover in less depth?
 - How do teachers use the texts? Do they distribute them to students and use them in class? What do students do with them?
 - Do teachers follow the order presented in the textbook? Why or why not? Do they supplement textbooks with other materials?
- ∩ What reasons do teachers give for these decisions? How is the nature of the content changed or adhered to when activities are altered? How do teachers change the intent of authors of texts?
- ∩ What options do teachers perceive they have? In what ways do they supplement the textbook or replace it? What do they report are their reasons for these decisions?
- ∩ Do teachers use textbooks differently according to different subject areas? If so, in what ways, and why?
- ∩ How does their use relate to teachers' views of how children learn and their own roles in children's learning?
- ∩ What psychological value does reliance on textbooks have for teachers (for instance, the need for certainty about what to teach)?
- ∩ What other factors influence their use? (training, comfort with the book, subject matter knowledge, knowledge about children, pedagogical skill, preference for other resources, and so on)

▮ What are the apparent influences of the textbook and its use on the curriculum (i.e., on what children have the opportunity to learn?)

—What is the nature of the curriculum emerging from the use of textbook materials?

—In what ways do parts of the curriculum conflict or support one another due to the textbook materials (For example, do they conflict in their assumptions about how children learn or about the teacher's role in children's learning)?

—How do teachers' beliefs and attitudes intersect with their use of new textbooks intended to reform the curriculum?

▮ What are the effects of different kinds of use (in-class assignments, reading aloud, use in homework, and so on) on student performance?

▮ What is the role of new textbooks in education reform?

We have also described a number of different research methods used to study how teacher use textbooks. In contrast to research methods used in developing countries, which are predominantly large-scale surveys based on written questionnaires, we find that classroom observations are used frequently in the United States. These vary in how long and how frequent the observations are. Most of them entail audio or videotaping of classes in action. Researchers also use interviews to supplement their observations, and we have seen that these result in data that provides rich information about why teachers behave as they do—information that cannot be derived from observations alone.

We have seen some consistency in findings across these studies:

▮ Teachers seem to develop their own pat-

terns of using textbooks that they keep from year to year and textbook to textbook.

▮ Teachers vary considerably in what these patterns look like and why they adopt them.

▮ While policymakers and others outside the classroom tend to think textbooks dominate the classroom, teachers often view them as only one of several tools. Some use them effectively; others may misuse them.

▮ It is difficult to find out how teachers use textbooks without actually observing them do so. Likewise, it is difficult to find out what they think about their use without actually asking them.

We have looked at studies that take place in a variety of contexts, including rural and urban schools, and those with experienced and inexperienced teachers. But the context of the classroom in the United States is, in most cases, significantly different from that of the classrooms in other parts of the world. And how teachers in the United States use textbooks and other materials is a function of many factors:

To study teachers' use of textbooks one should not merely examine teachers' classroom practices. Rather, comparisons must be made of their practices with the requirements, recommendations, and content of their textbooks. The particular nature of the textbook or curriculum package must be considered more systematically in determining its impact on instructional processes (Stodolsky).

Thus, many of the findings and issues reported on here may not pertain to other contexts. What, then, is the relevance of our review to potential research in Africa?

Conclusions

The ultimate research question is: What effects do textbooks have on student achievement? “Effective schools” research, using quantitative methods of data analysis, has attempted to answer that question by correlating data on the availability of textbooks with data on student performance. We question the validity of findings that textbook availability affects student performance, because the little research that has been conducted on textbook *use* in developing countries demonstrates that, while textbooks may be available, teachers either do not use them or do not use them effectively.

In the United States where the availability and use of textbooks is taken for granted, no one asks, in general, how they affect student performance. Instead, researchers ask what can be done to make their use more effective.

Comparing what we have learned about how teachers in the United States use textbooks with how those in developing countries use them, it appears that the former may “over use” textbooks, in the sense that many use them almost exclusively as the curriculum and source of all instructional materials. Teachers in Botswana, Ghana, and Chile, in contrast, appear to “under use” them; they do not use textbooks during large portions of the lessons. We have also learned that, teachers in the United States may have well-conceived rationales for their use of materials and that observation alone of the extent to which textbooks are used does not necessarily tell us anything about the quality of the instruction.

Based on what the literature tells us about how researchers have investigated teachers’ use of textbooks and other instructional materials, we recommend that research on this topic in Africa include the following questions and methods:

∩ Observe systematically how teachers use books in each subject.

∩ Interview teachers; ask them why they use books as they do, in order to understand their assumptions and rationale.

∩ Observe or otherwise investigate how teachers are trained to use books, in order to see the impact of training on their classroom practices.

∩ Observe how teachers use guidance materials, in order to see whether they exploit, ignore, or misuse these resources.

∩ Observe how teachers use textbooks and other materials in the context of the curriculum; if the curriculum and materials are part of an instructional reform, find out if teachers recognize the change in orientation.

We suggest that a research design include the following parameters:

∩ Limit the sample to a size that allows in-depth probing.

∩ Include rural and urban schools in the sample and note the differences.

∩ Include experienced, inexperienced, trained, and untrained teachers, and observe notable differences.

Textbooks and other printed materials are expensive resources that are used far from optimally in industrialized as well as developing countries. Research in Africa on how teachers use textbooks should be designed to affect improvements in teacher training as well as in textbooks themselves. Textbooks are important to learning, yet we cannot assume that because they are avail-

able in the classroom, they are actually used. Textbooks alone do not improve student learning. Books must be well used by teachers, and their use must be supported by the

larger instructional system. Research that looks at the correlation between textbook use and student performance needs to be undertaken in view of this larger context.

Notes

1. The theoretical underpinnings of research on basic education in developing countries have been dominated by the production-function model, according to which learning, or student achievement, is an “output” of a system that processes a number of “inputs,” such as teachers, textbooks, and school facilities. Although this model has recently been challenged (see Samoff, 1993; Fuller and Clarke, 1993; and Jansen, 1994), it is important to look at the relevant research literature, not only because of its dominance in the field, but also because of its significant limitations. Jonathan Jansen has written an historical account of the “effective schools” literature in both the United States and developing countries, in which he points out its limitations in accounting for what affects learning (Jansen, 1994). Samoff, Fuller and Clarke, and Jansen’s critiques of the production-function model and their recommendations for alternative theoretical models very much supports our findings here in regard to what we can find out from classroom observations about what contributes to learning, or student achievement.

2. The authors had conducted a previous study with findings suggesting that textbook availability influenced student learning more than other school variables. In this study they measured textbook availability by using a questionnaire to ask students whether they owned a textbook in each of their five academic subject areas.

3. In Chile, the school does not furnish textbooks. Students must purchase them.

4. They also studied the match between content presented in textbooks and content covered in instruction. Because this question has more to do with selection and organization of material

than with the use of textbooks in the process of instruction, we will limit our coverage to the first question.

5. The information about the sample comes from Freeman and Porter, 1989.

6. The authors point out that due to the limitations on their sample and on their arbitrary standards for describing the content of instruction, the data should be viewed as illustrative, not definitive.

7. Content area textbooks are those that cover specific subjects such as science, reading, social studies, in contrast to basic readers.

8. The researchers asked a third question, which we will not consider here: How do teachers’ views about textbooks and other materials fit in the larger body of influences (e.g., testing programs, district guidelines for curriculum and instruction) teachers may consider in planning instruction?

9. Though we did not find any studies of how teachers use guides to content-area textbooks (as opposed to basal readers), this is touched on in the next section.

10. They also ask about the basal programs themselves—how they are organized and what kinds of materials are included. But for our purpose, these questions are only preliminary.

11. The report does not tell us anything about the schools, teachers, or students, though they were probably near the University of Illinois in Champaign.

12. The researchers comment that they regret

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