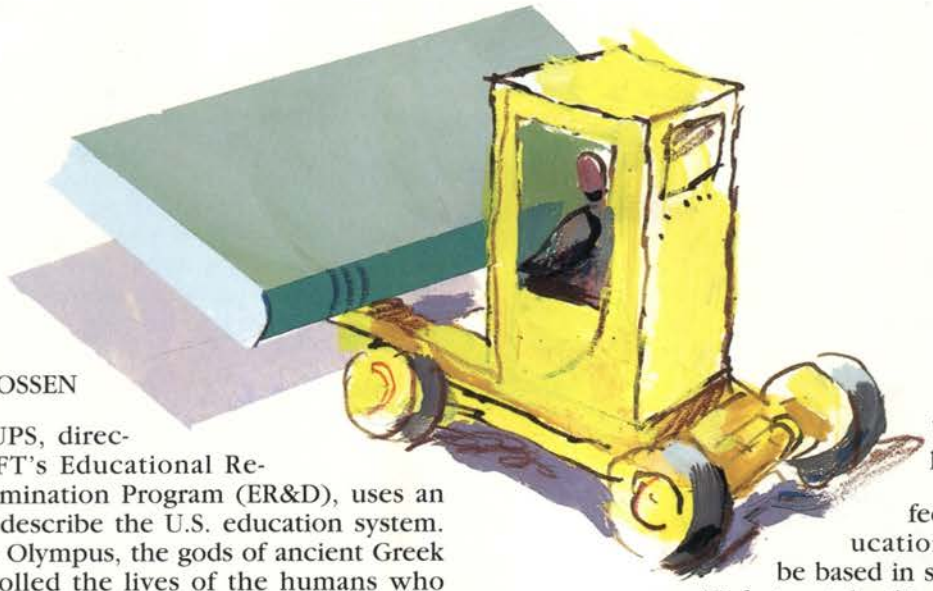
MAKING RESEARCH SERVE THE PROFESSION



BY BONNIE GROSSEN

LOVELY BILLUPS, director of the AFT's Educational Research and Dissemination Program (ER&D), uses an apt metaphor to describe the U.S. education system. From atop Mount Olympus, the gods of ancient Greek mythology controlled the lives of the humans who dwelled below. As Billups tells it, modern education is not much different.

Students, teachers, administrators and local school district officials live at the base of education's Mount Olympus. About half way up, a layer of clouds obscures their view of the educational hierarchy on top: publishers, university professors, state department of education officials, teacher trainers, education consultants and national interest organizations (e.g., early education, mathematics, English, reading and so forth). Every so often, like a bolt of lightning from above, a new education fad will strike the nation's schools. Many of these lightning bolts will come in the form of a state mandate, followed by the roar of publishers promoting their packaged implementation materials. Knowing that a positive evaluation of the school may depend upon compliance, administrators send scarce education dollars streaming up through the clouds.

This Mount Olympus metaphor illustrates one of education's most serious problems. Unlike other research-based professions, our mechanisms for distinguishing fads that will probably fail from effective innovations are weak and ineffective. In fact, there may be more incentives for faddism than for the dissemination of proven practices.

To ensure its effectiveness, any education reform should be based in scientific research. Unfortunately, this seemingly logical goal is undermined by many gods on Mount Olympus, who resist the necessary emphasis on objective tests and measurements. Yet this complex dispute may boil down to just this: If the American system of public education is to survive, it will have to convince a skeptical public that it can provide a quality education to all children, and then it will have to do it. To improve schools' performance, the instructional practices that are shared widely across the profession should be limited to those most likely to produce the best results. And scientific research is the best method for predicting the results that different practices are likely to produce.

In other words, what is needed is a professional knowledge base, composed of those practices which can be shown to work well for a large and diverse population of students and teachers. While there may be additional practices that can be shown to work for some students and some teachers in a limited number of cases, these should not be disseminated on a large scale until their success upon replication can be accurately predicted.

What Makes It Research?

With all of the competing "reforms" and conflicting advice that is now being thrown at educators, how can we tell which prescriptions for success to follow? Whose predictions are most accurate? Research arrives at reliable predictions using a scientific method of inquiry that works something like this:

Let's say that we have a box that contains a mysterious and infinite universe. It's impossible to examine every item in the box, just as it's impossible to exam-

ILLUSTRATED BY BRU ASSOCIATES

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ine every child in the world. But it is possible to take a careful sampling. If we see a pattern emerge, we can use it to try to predict the contents. The goal of the scientist is to use what can be seen to understand what remains unseen as accurately as possible.

Let's say the researcher, at random, draws a drinking glass from the box. It's impossible to draw any conclusions about the nature of the other things that may be inside from just one item—say, a case study. Out of context from other research, a case study may be interesting, but it's not very informative.

But let's say the next item that the researcher pulls from the box is another drinking glass. A good working hypothesis, then, would be that this is a box of drinking glasses.

In making the next selection, a researcher may be tempted to look inside the box and select another item that "confirms" this hypothesis. Or she might want to discard an item that doesn't fit. Both actions would diminish the reliability of the research.

Let's say the next item is a cup. The original hypothesis was shown to be at least somewhat inaccurate. So we might revise our hypothesis and predict that the next item will be a drinking container, but perhaps not a glass.

Another item, randomly drawn, is a canteen. This object would tend to confirm our hypothesis. With two glasses, a cup and a canteen, it appears that the box contains all types of drinking vessels.

But let's say that the very next object taken from the box is a rock. A rock doesn't fit the pattern at all. Must we now throw out our entire knowledge base to account for the rock? No; to reject or focus solely on the rock would be a mistake. Based on the samples that have already been taken, we can still make a prediction with some degree of accuracy.

The hypothesis now is that four out of five objects in the box are drinking vessels. While keeping the rock in mind, there is a significant probability that the next item taken from the box will also be a drinking vessel.

The consumers of educational practice—teachers and administrators—are increasingly aware of the importance of research and have begun to ask for it. But, while most of the education gods have obliged by producing what they claim to be research, these claims can be deceiving. The first problem is one of terminology. Unlike the hard sciences, education tends to refer to its working hypotheses as "theories"—a term that most fields of scientific research reserve to describe hypotheses that have already undergone some level of testing.

Secondly, while most education literature is now written with citations, including names and dates in parentheses, what is being cited may not be research at all, but opinion:

> A small number of prolific professionals with strong beliefs can write a great deal and quote each other's ideas (Back and Forth, 1994; Grossen, 1982). This creates a circular knowledge base that may appear to be research (Forth, 1963), but which can, in fact, just be "bull" (Ruggles, 1970).

As a consequence, many influential recommendations for teaching practice are really academic musings, devoid of any real research base—a fact that too many practitioners only find out the hard way: in the classroom. For example, from a principle such as, "In a democratic society, people should make responsible choices," some theorists might conclude that children should be given the responsibility of making their own choices, without too much direction from the teacher. Researchers, on the other hand, might approach the issue like this: "We want young adults in our society to learn to make responsible choices. Educationally speaking, how do we best accomplish this—by introducing choice to students through a teacher-imposed structure, or by giving them free choice?" By sampling the effects of these interventions in various classrooms, researchers would document which one results in more young adults making more responsible choices. Theorists develop theories to *describe reality*. Researchers use classroom evidence to test theories against reality.

And finally, educational literature can mislead by referencing data that have nothing to do with the teaching practices under discussion. For example, there is research documenting that many students aren't good at critical thinking. This is often cited in support of particular teaching strategies which are said to help turn students into critical thinkers. But the data that exist only describe the problem; they say nothing about any specific instructional procedures that might help to solve it. Until an instructional practice has been implemented, evaluated and found to produce better results than its alternatives, there is no research basis for recommending it.

Building a Professional Knowledge Base

Educators are not alone in these problems. All professions grapple with similar questions: How do you separate quackery from best practice? How do you encourage innovation, yet maintain high standards across the profession? At what level of evidence will new research be incorporated into the professional canon?

Many other professions have dealt with these issues by establishing impartial procedures, agencies and institutions to help screen information before it enters the professional knowledge base. Observation of the chemical reactions of a new compound, for example, might suggest its utility in the treatment of cancer. Yet, before an experimental study could be conducted on a few patient volunteers, extensive animal studies and tissue tests would be conducted. Only afterward would its effectiveness be tested on humans, probably against a placebo and/or an alternative treatment using randomly selected patients in a "double-blind" study. This research might then be submitted for publication in a professional journal, ensuring that it is subjected to an extensive peer review process. Independent researchers could then try to replicate or disprove the

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