

● Research in Review

Column Editor: James B. Macdonald

Product Research: A New Curriculum Specialty

W. JAMES POPHAM

ALTHOUGH some deplore and others delight in the tendencies toward specialization currently seen in almost all fields of endeavor, it is a fact that the infusion of new knowledge in a profession usually results in increasingly varied forms of professional specialization. The curriculum field, fortunately, has experienced a marked expansion of technical knowledge in the past several years. Thus, it is not surprising that to the collection of specialties and subspecialties that form the field of curriculum a new career focus has recently been added, that of *product research*.

The Product Researcher

Generally speaking, the product researcher is concerned with the systematic improvement of curricular programs and materials. More specifically, he works with reproducible sequences of instructional events, whether presented to the learner by textual materials, films, audiotapes, or "living" teachers. Reproducibility is a key feature of materials treated by the product researcher, for *systematic* improvement demands trial-revision-trial-revision, which is possible only with instructional sequences which can be replicated.

The methods of the product researcher are empirical rather than judgmental. He forms conclusions regarding the efficacy of an instructional program on the basis of pupil performance data, not because of his intuition. He is a master of field-testing procedures. His conclusions need not be supported by rhetoric. His yardstick is always *external* evidence in the form of the post-instruction behavior of pupils.

Where did this curriculum specialist come from? How many such individuals now exist? Where do they work? Who trains them? These and other questions will be treated in the remainder of this paper.

Origins of Product Research

For years many profit-making business concerns have engaged in product research. The motive for this research, of course, was to increase their revenue. It is well known that infinitely more financial assets are expended by private industry on research than are spent for all of educational research, but it may not be realized that a considerable portion of this industrial research has in the past gone not only to the discovery of new products, but also to the rigorous improvement of currently existing

products. Yet, it may be because the educator has not used a clear criterion, such as financial profit, as an index of his success that education has lagged far behind in the testing of its own products. Most of these products are instructional materials.

Undoubtedly the greatest impetus to product testing in education occurred as a consequence of recent developments in the field of programmed instruction. With B. F. Skinner's articles on programmed instruction and teaching machines in the 1950's, the attention of many behavioral scientists turned toward the possibility of modifying human behavior through systematic, sometimes machine-controlled instruction.

In general, those individuals working in the field of programmed instruction readily accepted the principle that an instructional objective, operationalized in terms of student behavior, was the only reasonable goal for a sequence of instructional events. In other words, operationalized goals became the rule rather than the exception in the field of programmed instruction.

In education, generally, more nebulous and, in most cases, untestable instructional objectives prevail. The advantage in having operationalized goals is, first, that one can draw up a learning sequence designed to accomplish a specified behavior change and *then* on the basis of empirical data determine whether, in fact, the change is accomplished by means of the learning sequence. Programmed instruction enthusiasts, therefore, represented the first large cadre of truly product oriented researchers in the field of education.

Possibly as a consequence of this pro-

grammed instruction activity, some educators are becoming convinced that the only effective means of changing the behavior of large numbers of learners is through the production of tangible instructional artifacts or products which, in the first place, have demonstrable capacities to change learner behavior and, secondly, can be widely distributed for use in many instructional situations.

Recent curriculum reform movements in the fields of mathematics and science give ample testimony to the fact that if usable curriculum materials are produced for classroom teachers, these materials are likely to eventuate in actual curriculum modifications. Classroom changes are far more likely as a consequence of such materials, in fact, than because of strong recommendations by learned societies regarding how affairs in the classroom should be altered.

Current Status

At present there are relatively few product research operations in the field of education. One might anticipate that product research would be a focal concern of the many publishers of school textbooks. Yet the extremely high cost of product research has characteristically been too great a financial burden for such publishing houses to bear. In the traditional publication of texts, an author submits a manuscript which may be reviewed for a nominal stipend by one or more experts designated by the publisher. Their judgment, along with that of the publisher's editorial staff, is usually sufficient to warrant the publication of the volume. Thus, the material is ready for printing after only a modest financial investment.

Product research, on the other hand, requires the amassing of empirical evidence which demonstrates that a set of instruction materials actually accomplishes its intended objectives. Student performance data must be acquired. Early trials of the materials will undoubtedly necessitate revisions. And such revisions and elaborate field testing are expensive. The prohibitive costs of this operation have prevented most publishers, as well as universities and school districts, from supporting many full time product researchers.

This is particularly unfortunate since so many curricular decisions are made without evidence. Usually adoptions of curricular materials are made on the basis of the pooled judgment of several experts. The indefensibility of this approach has been vividly demonstrated in several recent studies where a significant *negative* correlation was revealed between the judgment of experts and the degree to which different sets of instructional materials were able to accomplish their intended objectives. The addition of evidence-oriented curriculum workers would be remarkably beneficial to the schools.

Future Prospects

The probability that more and more product researchers will be needed in the next few years is more than that, it is almost a certainty.

A question is often raised regarding the possible conflict between the interests of the basic researcher and those of the product researcher. Quite clearly, product research is a thoroughly applied technology, which must use rather than discover new knowledge. Basic research is, of course, conducted in order



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to produce that new knowledge. Rather than any conflict existing between the two, there is an obvious need for both types of endeavor in the field of curriculum.

It is certain that at any given moment in time we know less about education and curriculum concerns than we will a few years hence. Thus, the basic curriculum researchers must continue to probe for the knowledge which can be brought to bear on educational problems.

In essence, we need to apply as quickly as possible what we now know about how people learn. The product researcher is devoted to applying basic research findings and testing their efficacy in a real life instructional situation. He produces materials which may well be revised in subsequent years because of new findings by the basic researcher but which at the present time represent the best bet for accomplishing our curricular goals.

A Growing Technology

The increasing scientific emphasis on all fields should not pass by the efforts of curriculum specialists. For too long we have answered crucial questions on the basis of hunches or unclarified value assumptions. There is now a growing instructional technology which can permit us to discover whether given curricular materials accomplish their clearly stated goals. The new technology is the modus operandi of the product research specialist. This new specialty in curricular work is one which has been long overdue.

—W. JAMES POPHAM, *Assistant Professor of Education, University of California, Los Angeles.*

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