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AUTHOR Clark, Richard E.
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ABSTRACT

Review of the materials which came to the attention of the Educational Resources Information Center (ERIC) Clearinghouse on Media and Technology at Stanford University in 1973 leaves one with mixed feelings about the current and future status of instructional technology (IT). It seems as if officials in schools and government have negative attitudes about the usefulness of IT, resulting from the negative findings of recent studies about technology's effectiveness and from the fact that government and foundation support for IT is disappearing. To combat this, instructional technologists must develop a clear sense of purpose, undertake intensive research in their field, and communicate their successes to those in powerful policy-making positions. On the other side of the ledger, some positive gains can be noted. Consumer information networks, such as the Educational Products Information Exchange (EPIE), provide educators with news of recent developments in instructional technology. In addition, special applications of IT for things like intensive instruction for disadvantaged students and for career education are becoming more prominent and progress is being made on the tailoring of IT to the special capabilities of individual students. (PB)

# INSTRUCTIONAL TECHNOLOGY: WHAT WORKS*

by Dr. Richard E. Clark

When Dr. David Guerin invited me to make this presentation, he suggested that I present a summary to you of the materials and programs which have come to the attention of the ERIC Clearinghouse on Educational Media and Technology at Stanford during the past year. ERIC, as many of you know, is an acronym for Educational Resources Information Centers. The Clearinghouse I represent is but one of 17 funded by the newly-formed National Institute of Education (NIE) in Washington, D. C. It is the function of the Clearinghouse to acquire, abstract, and store on microfiche, non-copyrighted papers dealing with topics in education. The Clearinghouses work together to produce the summary of non-copyrighted materials in education titled Research in Education (RIE). They also scan journals in various fields to produce the Current Index to Journals in Education (CIJE).

As I mentioned briefly a moment ago, our Clearinghouse at Stanford specializes in instructional media and technology. From that vantage point we receive many thousands of inquiries from teachers, students, and professional media people all over the United States each year, and seek out documents such as speeches, final reports of research and demonstration projects, position papers written by school administrators and teachers, scripts, evaluation studies, and so on, which describe the most up-to-date applications and results of instructional technology strategies.

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* Invited address to the New York State Educational Communications Association Convention, Grossinger's, New York, November 7, 1973.

The amount of information we receive every year is overwhelming. Therefore, I feel I must warn you that my promise to Dr. Guerin to summarize "what works" may have been excessively bold. At any rate, I will forge ahead, asking you to keep in mind that my conclusions are drawn from materials we have received from the contact we have had with people in the instructional technology profession during the past year.

My first but very strong impression of the status of instructional technology applications in American schools is that there is more bad news than good. Many of us at the Clearinghouse have received the firm impression that school administrators, federal officials in government agencies responsible for granting and monitoring instructional technology projects, and state officials who are currently organizing to spend tax dollars returned to the state for education have a very negative attitude toward the effectiveness of instructional technology in the classroom. Let me hasten to say that I believe they are mistaken in this impression. However, these are the people who will ultimately make the decision about funding for this very expensive undertaking and it may be worthwhile to examine the background of their conclusions.

## Dismal Results from Evaluation Studies

First, a number of large-scale evaluations of instructional technology effectiveness during the past year ended with dismal results. If I were asked to summarize the reason for those dismal results I would repeat what a colleague told me recently: "The reason instructional Technology is not more widespread is that its visible faults always end up being compared with the teacher's invisible virtues."

On the West Coast alone, two studies were completed this past year which strongly indicate that instructional technology is not meeting its promise in the classroom. One of those was conducted by Dr. Patrick Suppes and colleagues at the Institute for Mathematical Studies at Stanford. Suppes did a thorough review of the literature which compared various forms of instructional technology with more conventional types of instruction and concluded that there was essentially no difference in learning to be obtained in using one form of instruction over another. The Stanford Research Institute in Menlo Park, California (not connected with Stanford University) has recently completed but not released an evaluation study which found that instructional technology is not more effective than classroom teaching or traditional textbooks, that it will not save as much money as we expected when applied on a large scale, and most interestingly that instructional technology is not used differently now than it was ten years ago.

Government and Foundation Dollars Disappearing

As a result of these evaluation studies and others, government and foundation dollars for new instructional technology applications in American classrooms are rapidly disappearing. In the private sector this is not the case. During 1972 American corporations spent more than $300,000,000 on children's media advertising. Contrast that expenditure with the mere $53,000,000 spent by the entire educational, defense and science establishments in the federal government on instructional technology projects during 1972. Next year children's advertisers will increase their expenditures to approximately $400,000,000 while the

federal government will slash total instructional technology spending to about $38,000,000. Those of you in the audience today who have tried to acquire financial support for technology projects in schools during this past year have no doubt experienced increased resistance from those who hold the purse strings. It is my guess that this resistance will increase during the next year.

Why Are We in Trouble?

Why are we in trouble? I suspect it is because we have not been taking time to effectively tell the story of our successes. The evaluation studies which I described a moment ago and which loom so large in the minds of the educational decision maker find their way to the Clearinghouse by the fastest route and from there into the hands of federal and state officials who are seeking rationales for funding decisions. Often those evaluations are made with too little information. Those of you who are actively and exhaustively involved in making instructional technology work in projects in classrooms in New York State seldom have the time to write descriptions of your successes and failures. There is an old saying among television producers to the effect that "What you don't show them won't hurt you." I want to suggest to you today that what you are not showing them is hurting you very much and to further suggest that those of you who have seen or are directly involved with effective applications of instructional technology take the time to write complete descriptions of your ideas, methods and outcomes and send them to us c/o ERIC at Stanford. Of course, if you have additional time to polish your descriptions and send them off for publication in many of the journals that deal with your field, so much the better.

The second reason we are in trouble stems from an almost total lack of research in instructional technology. I doubt if any other area in education which enjoys such a high level of interest and activity on the part of competent professionals has been so totally devoid of basic and applied research. As the Ford Foundation underscored in its recent report on the status of instructional television in American classrooms, we desperately need research to stimulate new approaches and to weed out those which are not working.

The third reason for our present difficulties, I believe, is that we lack a clear purpose. All of us in the instructional technology field still experience a great deal of conflict over the scope of our endeavors. Some of us would like to continue defining instructional technology as movies, television programs, slides and so on. Others extend our scope into such areas as programmed instruction, evaluation of instructional effectiveness, systems approaches to educatior and so on. I believe that we all should give our active support to the efforts of the Association for Educational Communications and Technology in their effort to produce a coherent statement of purpose through which we can present ourselves to federal, state and local education officials as a single voice.

## What Works?

Now, after all this review of our problems and difficulties, I'd like to turn the discussion to my analysis of the instructional technology strategies and applications which seem to hold great promise. Some of what I will mention is new but many of the effective strategies already exist and perhaps need to be expanded.

Instructional Technology: Consumer Information Networks

First, I feel that we need a greatly expanded network of consumer information services for teachers, that is, information on the availability, evaluation, and strategies for use of instructional technology materials and devices. At least two models for this type of operation are available in the country today. On the national level the Educational Products Information Exchange (EPIE) under the direction of Ken Komoski has attempted to gather consumer-type information on educational products and processes. Another type of model is available in information resources centers such as the one managed very effectively by Dr. Frank Mattas, of the San Mateo County, California Board of Education. The San Mateo County Information Resources Center (SMERC) maintains constant contact with teachers in school districts on the West Coast and provides very fast service on teachers' requests for information about instructional materials and strategies.

It is most important that consumer information groups like these maintain constant contact with teachers and provide them with information which will enable them to make informed choices among different types of evaluated materials and strategies suitable for a given instructional objective. It is equally important that consumer information services remember that the ultimate consumer in American education is not the school administrator or teacher or media professional or librarian or parent. The final arbiters of the success of our efforts to deliver materials and processes to American classrooms are the students who populate those classrooms.

I feel it is necessary to add the caveat here that California has recently passed the Stull Act which requires that teachers and

instructional materials be evaluated regularly by some "objective" standards. If this new development in California is indicative of what will begin to happen in other states, and I believe that it is, it behooves us all to prepare for increased demands for tested and evaluated materials and strategies.

Special Applications of Instructional Technology

The second area which appears promising and workable is special applications of instructional technology as opposed to using it as a substitute for conventional instruction. One special application, for example, is intensive instruction for the disadvantaged and the handicapped, and for adult and continuing education, including career education. Another special application occurs when there is a necessity to reduce instructional time or to teach more content in a shorter period of time. In the first area I mentioned (instruction for the disadvantaged and handicapped and career education) the federal government is planning to make special funding available for instructional technology projects. Many people expect that the Emergency School Aid Act (ESAA) will make a considerable amount of money available early next year for educational television programs to help the disadvantaged. In career education, the National Institute of Education is expected to place special emphasis on instructional materials and strategies to assist in adult and continuing education. In addition, there seems to be a special interest among foundation supporters of instructional technology in the "schools without walls" concept similar to the project being undertaken by the Open University group in England.

Tailoring Instructional Technology for Students

A third area which holds promise is a strategy which involves the tailoring of instructional materials for the special capabilities of students. Because I see that my time is running short and I want to leave time for Kevin O'Sullivan's excellent presentation, I'll mention that I have discussed this tailoring of instructional strategy previously in an article I wrote for the Urban Review in November of last year. The strategy also will be discussed during a symposium titled "Aptitude Treatment Interaction Research" at the AECT annual convention in Atlantic City next year.

I want to close with an apology for being the bearer of bad tidings and a sense of relief that we are more civilized than the early Greeks in our treatment of messengers who carry bad news. Many of the problems I have described today which we all share as professionals in instructional technology could be greatly alleviated if we would only take the time to write descriptions of those projects which we feel are especially noteworthy and successful. Send them to us at the Clearinghouse at Stanford. We'll see that they are placed in the large data file which is available to people who make decisions about our future. Please also send us any suggestions you may have for ways in which the Clearinghouse can serve you more effectively.

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The ERIC Clearinghouse on Educational Media and Technology referred to in this presentation became part of the newly-formed ERIC Clearinghouse

on Information Resources, still located at Stanford University, as of January 1, 1974.

The new ERIC Clearinghouse on Information Resources is responsible for the scope of the previous ERIC Clearinghouse on Educational Media and Technology, as well as the scope of the former ERIC Clearinghouse on Library and Information Sciences previously located at the American Society for Information Science in Washington, D. C. Therefore, the new Clearinghouse is responsible for collecting information concerning print and non-print learning resources, including those traditionally provided by school and community libraries, and those provided by the growing number of technology-based media centers.

Reports and articles concerning these areas may be submitted to ERIC by sending two legible copies to: Director of Acquisitions, ERIC Clearinghouse on Information Resources, Stanford Center for Research and Development in Teaching, School of Education, Stanford University, Stanford, California 94305.