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ABSTRACT

Research is a method of systematically looking at what we are doing--or should be doing-- and determining how we can do it better. Consideration must be given to the how, the who, and the what of conducting research. The best guide for deciding how to carry on research is the underlying principle that the broadest involvement possible in the research effort will result in the broadest acceptance. The more people we can involve in the planning, the execution, and the analysis of the research effort, the more effective our efforts will be. Vocational research must be directed more toward programatic kinds of investigations to answer questions facing practitioners day by day. If research is to contribute to an ongoing program of vocational and technical education, it must be used. A system is needed to combine, package, and deliver information to state and local administrators in the form and at the time it is needed to assist in the administrative decision making process. The application of research findings to classroom operations is even more difficult. Effective strategies must be used to bring about acceptance of research information and resultant change in administrative decisions or program operations. (GB)

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RESEARCH IN VOCATIONAL AND TECHNICAL EDUCATION

Presented To
The Western Regional Conference of Education
Professions Development Act Fellows

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INTRODUCTION

For the purposes of this talk, Research is considered in its most generic sense, as a function--a function of program planning and development. In this broad sense, research projects must consider not only the rationale for the need for the investigation but the potential implementation of the findings as well. The research process can assist in (1) setting objectives, (2) developing procedures to reach those objectives, and (3) thoroughly testing the products developed. This view conceives research not as a narrow discipline project-oriented activity, but rather as a broad function of the educational system itself. The objective or goal of this function is to facilitate change and improvement in vocational-technical education. Obviously, there is a need for continuing change and improvement; therefore, the goal becomes a part of each new research plan or idea which is proposed. I would like to talk today, not so much about what you can do for research, but what research can do for you if you will allow me to use that expression. Research must be much more than indulging in the process of writing proposals and seeking funds--it must be much more than the collection of data and the formulation of tables--it must be much more than developing rationale and testing null hypotheses and the writing of reports, although this is the way we learn to do research. Research may be more a state of mind than it is the development of specific kinds of expertise. Research is a method of systematically looking at what we are doing--or should be doing--and determining how we can do it better. Research must have the right to fail--it must have the right to ask embarrassing questions--it must be outside the realm of direct influence of those interested primarily in maintaining the status quo. Research will always ask more questions than it will answer--but it must answer some questions if it is to be of benefit. The research component in the State Department must become a constructively abrasive agent of change and a talented engineer of consent. The researcher must feel secure enough to challenge present methods and to ask the question, "Is this activity really contributing to the objectives of the organization?" He may insist that we state our objectives before activity is begun and that we rate our effectiveness based on accomplishment of those stated objectives.

But on the other hand, the researcher must always be responsible to the administrative leadership of the organization and must constantly strive to assist in improvement of programs. The researcher's most critical look must be reserved for himself and his own activities. He must constantly strive to locate and identify the cutting edge of new activities, and stand with his fellow practitioners in trying and evaluating new approaches to doing the job better.

The researcher must always be conscious of a need to avoid being too sure of his facts. He must be his own severest critic and questioner. He must involve himself in decision making, but not in making decisions. He must remember that he can be only one input into the decision making process, and he must avoid, at all costs, the danger of being the only source of information upon which decisions are based.

There is a need for research. The State and National Advisory Councils, The National Panels on Vocational-Technical Education, the U.S. Office of Education Investigations, all have pointed out a need to know more about the process, the product and the results of vocational and technical education. At the state level, there is always the need to know more about what we are doing and how well we are doing it. There has been, in the past few years, an ever-accelerating increase in the amount of information and data required for decisions related to programs of vocational and technical education. Concomitantly, there has been a rapid increase in the amount of information and data which is available to decision makers in vocational and technical education. The rapid expansion of programs, the wide diversity of programs, and the flexibility required of state departments to move in the direction indicated by the need has vastly complicated the responsibility of state leaders in vocational and technical education. A few years ago decisions facing administrators of programs were relatively simple in that they consisted primarily of the allocation of resources to a relatively few traditional programs of training. That set of alternatives has increased so rapidly and the complexity of the choices which are available has so increased that the administration is now faced with a myriad of decisions unthought of only a few years ago. The choice now is not only between the traditional subject matter divisions, but has been expanded to levels of secondary, post secondary, and adult and has further been complicated by alternatives which include short-term programs, programs of longer duration or one-shot skill training programs for industry. Cutting across

all of these possible decisions is the further mission of programs to develop special sensitivity to the disadvantaged, the handicapped, and the underemployed and unemployed. These complicating circumstances matched with increased numbers of students to train, increased resources to be allocated and greatly increased knowledge--knowledge not only about training for occupations, but those specialized areas of investigation such as mobility patterns, longitudinal development, and the need for lifelong training and retraining--have made it absolutely necessary that the administrator have at his fingertips many sources of information and many types and formulations of data.

We must somehow find the way (and by we I am including those in research and those in administration) to allow the past to guide us to the future, but not to limit us to the horizons we have known in the past. We must be able to organize what we know, that is, the information and data that we are able to gather into a guide, for the future--a guide which is modified by long experience--which is shaped by good judgment--which is strengthened by common sense and which is expanded by a dedication to the youth of America.

CONDUCTING RESEARCH

Let our look at conducting research be brief because I would like to put the major emphasis on the using of research. I do think, however, that we need to consider the how, the who, and the what of conducting research. How should research be conducted? I think that our best guide to deciding how to carry on research is the underlying principle that the broadest involvement possible in the research effort will result in the broadest acceptance. The more people we can involve in the planning, the execution, and the analysis of the research effort, the more effective our efforts will be. The administrator should be willing to give some time to an in-depth analysis of the problems which he faces and which research may have some input to solving. Teachers should be involved, not just as suppliers of data or responders to instruments, but in understanding the need for research and analyzing the nature of the problem to be investigated and the procedures to be used. Our experience in Oklahoma with funding mini-grants ($500 - $1,000 for testing of special ideas) which are available only to vocational teachers, has demonstrated to us that teachers are vitally interested in the conduct of research and are willing to extend

efforts to test new ideas. The people in the researcher's own division as in Oklahoma, the data analyst, the planning specialist, and the evaluation specialist, should all have an opportunity to make their input to the research effort. Their questions about applicability and usability of research, their questions about design and method may be most beneficial to the final results of the research. So it is the responsibility of the researcher to involve as many individuals as possible in the planning, execution, and analysis of the research effort.

The question of "who" comes up again if we talk about the specific idea of designing the research project. In this area there is a need for strong expertise in design and methodology and statistical analysis. While these terms may strike a discordant note to the sensitive ear of the graduate student or to the practice-oriented thinking of the practitioner, they are a vital and essential part of research. If what we do is to have validity--that is, if it is to be believable, it must be based on sound common sense approaches to investigation. And so we need that research expertise, we need that statistical analysis, we need that methodology approach, we need all these competencies which can be used to assist us in the logical search for solutions to problems.

And now the question of what should be researched. This is probably the strongest cause of difference of opinion of any of the questions asked about research. What kinds of research should be done? We need basic research. We must have those scientists who look in depth at questions which to us may seem entirely irrelevant at the moment. We need the man who is fiddling with electricity while others were building a better kerosene lamp, but basic research cannot be the responsibility of state funds for vocational research. Our efforts must be directed more toward programatic kinds of investigations. We must answer the questions which face the practitioners we work with day by day. We must find better ways of doing what needs to be done in vocational education today. So let us move forward with both kinds of research being strongly supported. The basic science departments of our universities are probably most capable of doing basic research while the more action-oriented kinds of research may be best placed in state departments or in teacher education departments of the university.

USING RESEARCH

Now let us take a look at the other side of the research coin--the contribution that research can make to an ongoing program of vocational and technical education. Perhaps the most concentrated effort to establish a research implementation program within vocational education was the establishment of the Research Coordinating Units. As you may recall in 1965, 20 Research Coordinating Units were funded in 20 states to coordinate, to conduct, to stimulate, and to disseminate research and research findings within their particular state. The following year, additional units were established and the 1968 Amendments made provisions for Research Coordinating Units in each state. I believe one of the essential strengths of the RCU's was the fact that they were allowed to develop in whatever direction appeared to be most beneficial to the state to be served. This meant that many different organizational and operational patterns and procedures were developed; however, this also meant that in most cases whatever the states appeared to need was what the RCU's became. About half of the Research Coordinating Units were established in universities and about half in State Departments. The 1969 appropriations divided the research monies and the State Departments became the agencies through which funds were distributed to the RCU's. This meant in most instances that the State Department became the agency which would determine whether or not the RCU's should remain as they had been. In most instances, the units pretty much remained as they were. In a few instances the units were moved from the university to the State Department and in at least one instance the people were moved physically but the funding procedures remained through the University. As the State Departments of Vocational Education exerted stronger influence over the Research Coordinating Unit because of the funding arrangements, some different patterns began to emerge.

In most instances the responsibilities of the units were expanded. In Oklahoma, we eventually became a Division of the State Department responsible for research, planning, data analysis, and evaluation. This State Department oriented type of research is the type I would like to discuss with you this morning.

We have in Oklahoma in the Division of Research, Planning, and Evaluation become managers of information for management. This term means that we perform the following kinds of functions within the State Department.

1. We assess the present supply of information matched against the kinds of problems identified by both local and state level administration.
2. We determine the best procedures for obtaining the information needed to bear on the problems identified.
3. We identify the most appropriate individual or agency to gather the needed information. (This may be an in-house operation or we may look outside the unit for this activity.)
4. We gather, analyze and summarize the information.
5. We identify the potential users of this information and determine the most appropriate form in which the information may be presented.
6. We determine the most strategic procedure for infusing this information into the system.
7. We evaluate the effect of our efforts and modify our procedures.

This management of information for management really means that we begin to use knowledge and information as a product. A product to be produced, to be processed, to be packaged. This process takes a fourth P--people. And so we have knowledge and infomation as a product to be produced, processed, and packaged by people and for people.

This essentially means that when you delete all of the administrative routine of our work, what we are really trying to create is a complete information system. What should a complete information system look like? It should be a SYSTEM. It should be COMPLETE. It should be CURRENT. It should be IMMEDIATE. It should be FLEXIBLE. And it should be COMPATIBLE with systems developed by other agencies. It should contain information on (1) Costs--program operation - budgetary - reimbursement, (2) Trainees and trainers and administrators, (3) Needs and production--present and future, (4) Effectiveness--by programs - statewide, (5) Projections--needs - assessments, and (6) Additional information to be designated.

We now have in Oklahoma fairly complete information on the following items (1) Costs by program and by individual trained for each occupation under the present various instructional and program arrangements, (2) Demand and supply of trained manpower

for most occupations by state and by economic regions, (3) Trainee enrollments by program under present institutional and program arrangements; follow-up as to placement, continuing education and so forth; and student characteristics relating to special needs and special programs, (4) Professional personnel descriptive characteristics by any specified designation--needs and demands data, (5) Program specification by equipment, facility, and effectiveness, (6) Research on innovative and exemplary experiments which may point toward program improvement, (7) Population demographic characteristics, census tract data and welfare recipient data. What we do not have is a system for combining, packaging and delivering this information to state and local administrators in the form and at the time it is needed to assist in the administrative decision process.

I am not entirely sure what is needed to build such a system, but I think that we in research and others must have the imagination to visualize such a system, and those that are charged with administration and operation of programs must see and express the need for such a process and support the development of such a system.

I have thus far talked about the easiest part of the research effort, that is, the supplying of needed information to administrative personnel both local and state level. What is even more difficult is the application of research findings to classroom operations. How do we use research and research findings to change the way teachers teach, to help teachers develop materials, to help teachers/classroom organize and shop work and to improve the processes of instruction in the way that research indicates? People just are not that willing to change. There is no particular motivation for teachers to change other than their own sense of accomplishment. Usually the teacher who changes, the teacher who innovates, the teacher who tries new methods is subject to considerable suspicion and criticism by his peers and his administrator as well as students and parents.

We do know this one thing about the dissemination of information--teachers are willing to use information to help solve problems. They use the information which is readily available even though they may consider this not to be the best information. Our research has also shown us that there must be face-to-face, person-to-person contact in the dissemination of information. Taking these two factors, (1) information must be readily accessable and usable and (2) information spread must involve person-to-person contact, we begin to get a picture of an effective research dissemination procedure.

We have attempted, as have many research units throughout the country, to develop systems which will infuse the research knowledge into the classroom procedures. Our

system, called Selective Dissemination of Information, analyzes the reports which appear in the ERIC System and sends abstracts of appropriate reports to selected vocational teachers. This means that Vocational Home Economics Teachers receive abstracts of those materials in the ERIC System which may be most appropriate for Home Economics Teachers. The teachers are then asked to review the abstracts and may order from our Division the full report of any research materials in which they have an interest. We have had considerable response from teachers who have indicated an interest in receiving full reports of research. I imagine that this system serves more as an alerting and information system than a system that might really begin to cause teachers to change the way they teach or what they teach.

The mini-grant program which I mentioned earlier that provides funds for teachers to try out their own new ideas seems to be an effective way of bringing about change in individual teachers. This year, we are funding 24 mini-grant projects for a total of $14,206. This means that on the average teachers are receiving something over $500 to test out new and innovative ideas that they have. Teachers have responded to this program. This year we had some 75 proposals and our teachers have shown that they are interested and that they are willing to make special efforts when these small amounts of funds are provided. The question still remains as to how effectively we will be able to disseminate the findings of these projects and get them adopted in other programs throughout the state.

The strategies used to bring about acceptance of research information and resultant change in administrative decisions or program operations are many and varied. But, do not be deceived--it is a matter of strategy. It is a matter of infiltration and infusion. It is a matter of seeking ways, by whatever means necessary, to impact on programs of vocational education. I freely admit that I would be willing to conjure, to threaten, to persuade, to be devious, to be unpleasant, to be embarrassing, to be whatever it is necessary to be to have the views of research felt in the decision making areas. But on the other hand, I strongly support the input of experienced practitioners, efficient administrators and knowledgeable social and political analysts into the decision making process. Research should be only one voice, but it should be a strong voice which speaks logically, which speaks with validity, which speaks with relevance to the problems of vocational and technical education.

In summary let me say research wishes to be a member of the team--a team made up of practitioners, of administrators, of curriculum specialists, of program and subject matter specialists, of finance personnel--this type of a team can meet the complex and unexpected problems which inevitably seem to occur. And we can all move forward toward a better program which will serve more and more of the individuals of our nation with the kinds of occupational education that they need and profit from.