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ABSTRACT

Three factors are considered that contribute to the perception that the higher education research effort has done a poor job in dealing with problems confronting academe. The first factor is the magnitude of the higher education enterprise and the number of problems and issues inherent in it. The second factor is the level of support for research, and the third is potential weaknesses and faults in the research process. The manifestations of these weaknesses and faults include research results that are different from those desired by funding agents, may not be useful to intended audiences, and never reach intended audiences even when they overcome the preceeding two problems. Attention is directed to the following dimensions of the research process: interpreting research issues and problems; the contextual component of the research problem (i.e., the variables that need to be identified, examined, and controlled for in order to properly interpret research results); the primary audience for the research results; the type of research (applied, basic, development); representativeness of the study group; comparability of data; analysis of aggregated data; the research methodology; and factors that mediate research utilization. A 19-item reference list is appended. (SW)

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RESEARCH ON HIGHER EDUCATION

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RESEARCH ON HIGHER EDUCATION

Research on higher education has been criticized for doing a poor job of dealing with the problems that confront the enterprise. To the extent this may be true, this paper suggests three factors that may contribute to the problem. The first has to do with the magnitude, and the unique problems and dynamics of the enterprise. The second concerns the level of support for research intended to serve national needs. And, the third has to do with potential weaknesses or faults in the research process. In addition, in discussing the third factor, this paper will suggest a model for thinking about the research process that should benefit researchers, funding agents, and practitioners.

The Enterprise

The first factor is simply the magnitude of the higher education enterprise and the number of problems and issues inherent in the system. For example, in 1982 there were about 3300 colleges and universities in the United States. These schools enrolled about 12,000,000 students. Some forty-percent, or 5,000,000 of these students were enrolled part-time. The schools employed almost 900,000 faculty. Total expenditures by colleges and universities in 1982 were approximately $70 billion. If the indirect costs of education (including forgone earnings, tax expenditures, depreciation, implicit rent, etc.) are included, total expenditures on higher education are estimated to range between $100 billion and $130 billion dollars.

While these numbers provide some sense of the magnitude of the higher education enterprise, they provide little insight into the breadth, diversity, and complexity of the system. Capturing and

understanding the complexity is not simple. This is illustrated, for example, by current efforts of the Association for the Study of Higher Education. A committee established solely for the purpose of defining the "domain" of higher education has been unsuccessful at developing an acceptable taxonomy after two years of working on the problem.

One of the committee's fundamental problems is simply trying to decide who qualifies as a "provider" of higher education. They are confronted, for example, with trying to decide whether the category should be limited to the 3300 colleges and univeristies in the country, or expanded to include all institutions that provide any form of post-secondary education. The expanded definition might include such organizations as the military, business and industry, or religious groups--the so-called "shadow" educational system. The shadow system is estimated to currently serve between ten and twenty million people (Manpower Comments, 1983), and to involve expenditures of more than $60 billion (Frances, 1984).

The definition of who constitutes a provider of higher education illustrates the difficulty of the problem confronting committee. However, as previously noted, their primary objective is to develop a taxonomy or classification system that can be used to organize the administrative, research, and teaching components of the system. They recognize, for example, that the classification system must be able to incorporate the list of research and teaching interests shown in table 1. This list was taken from the Directory of Higher Education Programs and Faculty (1982).

This list provides a sense of the range of topics and issues that fall within the purview of higher education. system. The reader is

encouraged to think about the multiplicity of issues and questions that fall within any one category on the list. For example, the "College Student" topic (B) entails issues related to student retention and attrition, recruitment, evaluation, development, attitudes, financial aid, outcomes, and many other things. The "Faculty Issues" topic (H) entails issues related to evaluation, compensation, development, training, tenure, and morale.

Such topics and issues illustrate the range and breadth of issues and problems that (1) confront members of the higher education community on a daily basis, (2) research on higher education has addressed and will continue to deal with, and (3) differentiate higher education from all other systems in either the profit or nonprofit sectors.

Research On Higher Education

The second factor that may contribute to research's failure to successfully address, if not resolve, the problems confronting higher education centers on the level of support for such research. In 1983 NCHEMS conducted a survey to determine the nature and support for separately budgeted research on higher education that was intended to serve national needs during 1982.* The study was done for three reasons. First, no current information existed about the level of financial support for, or the character of research now being conducted. Second, our guess about current levels of support suggested

*The National Science Foundation's "Survey of Scientific and Engineering Expenditures at Colleges and Universities" defines separately budgeted research as activities specificly organized to produce research outcomes and commissioned by an agency external to the institution or separately budgeted by an organizational unit within the institution.

that they were seriously inadequate relative to the problems and magnitude of the enterprise. Third, discussions with senior researchers in the field suggested that the 1982 support level was probably representative of funding levels during the past decade.

The study solicited information about funding for research from all higher education programs and research centers affiliated with colleges and universities, all members of the Association Council for Policy Analysis and Research (ACPAR), all regional educational laboratories, and major research organizations listed in the Directory of Research in Higher Education. In all, 150 organizations were sent questionnaires.

The results of the survey suggest that about $10 million was spent on all facets of research on higher education in 1982. Approximately 60% of these funds came from federal grants and contracts. While $10 million may not seem to be a small number, we note that it includes research on "all" topics--including, for example, the assessment of institutional and program effectiveness, adult learning processes, financial aid, university-industry relationships, vocational education, and the other topics suggested in table 1. Parenthetically, if we hypothesize that our estimate of R&D expenditures was low by as much as 500 percent, the resulting estimate of $50 million equals almost 90% of the entire budget of the National Institute of Education for 1982.

Second, the "national R&D effort" may be defined as the ratio of total R&D expenditures (estimated at $10 million) to total expenditures by colleges and universities (approximately $70 billion). This yields an estimate of .01 percent (.0001). The rate for business and industry (National Science Foundation, 1982) was approximately 2.4 percent in

1982. Comparing these percentages indicates that the R&D effort in business and industry was more than 150 times larger than the effort in higher education.

To broaden the context we might consider the entire national R&D effort on all facets of education. The most recent estimate of this effort comes from a 1977 study by the Bureau of Social Science Research (Sharp and Frankel, 1979). The estimate for 1977 was $734 million. Adjusting this estimate for inflation using either the Consumer Price Index (CPI), or the Higher Education Price Index (HEPI), puts the 1982 estimate over $1 billion. Hence, even at the high $50 million estimate, separately budgeted R&D on higher education intended to serve national information needs constituted less than 5% of all educational R&D performed in 1982.

To the extent the 1982 estimate reflects the (1) level of support, and (2) research effort during the last decade, it suggests that one of the reasons the R&D effort may have had such little impact is because it has been very small relative to the problems and magnitude of the enterprise.

The Research Process

It is rumored that a foundation once funded an R&D lab to develop strategies or techniques that might be used nationally to reduce costs in colleges and universities. Two-years and two-million dollars later the lab presented the foundation with a TV commercial that was designed to quell the passions of even the most ardent lovers. The rationale was that if there were less children in the world there would be fewer students to go to college, thereby reducing total expenditures. When college administrators were queried about their knowledge and effects

of the strategy, five of ten had never heard of it; three thought it wouldn't work in their communities; and the remaining two didn't know how it was affecting others, but could personally vouch for its effectiveness.

This story is certainly apocryphal. However, it illustrates the third problem area--potential weaknesses and faults in the research process. The manifestations of these weaknessses and faults include research results that (1) are different from those desired by funding agents; (2) may not be useful to intended audiences; and (3) never reach intended audiences even when they overcome the preceeding two problems.

Guba and Clark (1974) wrote that during the 1950s an argument persisted as to whether it was the responsibility of practitioners to read the research literature and then make whatever applications it implied; or, whether it was the responsibility of the researcher to make the implications of their work sufficiently clear so that practitioners could apply them to the operational problems with which they were confronted daily.

Irrespective of how researchers in higher education feel about this idea today, it,s unlikely that they will receive financial support for their research interests if they are unable to readily suggest how the results of their work can be used. However, numerous other problems confront the researcher even when they can successfully address questions of application. Funding agents have become increasingly concerned with the dissemination, implementation, and impact of research endeavors. It has become apparent that the existence of

credible results with clear recommendations for practice does not guarantee they will ever be employed.

The remainder of this section will be concerned with identifying the types of faults and weaknesses that can arise in higher education related research. These will be approached through the development of a model that should serve all parties having vested interests in the research effort.

The model, illustrated in figure 1, has seven interrelated dimensions. The questions and answers associated with any one dimension affect and are affected by the questions and answers associated with the other dimensions. The "audience" dimension, for example, is concerned with identifying who the results of research are intended to serve. If a project is supposed to develop procedures that can be used by college administrators to assess institutional effectiveness, then a research effort that produces complicated and/or high-cost procedures would be inappropriate for most of the parties it was intended to serve. The nature of the primary audience for the results of research significantly affects how one addresses the problems associated with the other dimensions of the research process. However, I will defer discussion of this component until after I have outlined the research problem dimension of the model.

Research Problem

Defining the primary issues and problems seems to be a straightforward matter. However, the interpretation of a given problem is (1) often open to debate, and (2) subject to the biases of the researcher. More generally the primary research focus affects and is affected by all other dimensions of the process. The fundamental

question that must be addressed from the onset is, "What must the results of the research effort look like?" Without such specification, the primary research problem may reasonably be pursued in a number of ways--many of which may be inappropriate given the requirements of the other dimensions of the process.

The contextual component of the research problem refers to the aspects of the problem that need to be identified, examined, controlled for, or at least recognized in order to properly interpret or utilize the results of the research effort. In a statistical context, they would be referred to as intervening variables or covariates. Failure to identify, recognize, and to the extent possible, control for contextual factors will undermine the validity, reliability, and generalizability of any results.

One of the most difficult yet frequently encountered situations in which contextual factors must be controlled is in comparative studies--particularly comparative cost studies. For example, institutional comparisons of expenditures per student are essentially meaningless without accounting for program differences and the mix of graduate and undergraduate students.

Much of our own work is concerned with determining what factors contribute to perceptions of effectiveness in colleges. Among other findings, the results of our research indicate that there are significant differences between institutions as a function of control (public or private), institutional type (two-year,four-year,major doctoral,comprehensive, or general baccaulaureate), size, selectivity, and other structural factors. Other research (Krakower and Zammuto, 1984) indicates that enrollments in these groups are differentially

effected by environmental and institutional characteristics. Yet these structural conditions have been ignored in numerous studies. Our research suggests that failure to control for these factors may invalidate the results of many studies.

Audiences

The "audience" dimension is concerned with identifying who the results of research are intended to serve or benefit. As such, questions related to this dimension are generally raised during discussions of the primary research problem. The primary audience includes everyone who, if dissemination were adequately planned, would receive a copy of the research report and perhaps act on it. The primary audience may include members of any of the groups shown in figure 1--funding agents, other researchers, practitioners, etc.

While all the dimensions are interrelated, the primary audience for the results of research is probably the single most influential component relative to the research problem. By definition, they directly influence (1) the interpretation of the primary issues or problems; (2) the factors that will mediate the utilization of results; and (3) the methodology that may be employed.

The results of research may also reach numerous secondary audiences--people whom the research was not primarily intended to serve, but whose vested interests are related to the end product. The secondary audience is frequently comprised of members of groups that are directly affected by the outcomes of research. Their criticisms and impact on the utilization of the outcomes of research are likely to be strongest when research is concerned with (a) determining the feasibility or advisability of new programs or policies, or (b)

assessing the effects of new or existing programs. If the outcomes of research are not in their interests, it is not unlikely that they may try to undermine the credibility and utilization of results.

The question remains as to what response or precautions the researcher can take to address the concerns likely to be raised by primary and secondary audiences. Two possible actions include (1) involving representatives of these groups in the research process, and (2) to the extent possible, identifying all the criticisms that might be leveled at the research, and then taking all possible precautions to insure that the research design minimizes these problems.

Type of Research

The "type of research" dimension describes the relationship between the primary issues or problems and the planned outcomes of research. One of the most commonly employed distinctions between types of research is that of applied, basic, and development. Identification of the type of research seems to involve a straightforward extrapolation of the problem and planned outcomes. However, the process does not always work this way.

First, the research problem may be stated in a manner that allows for different interpretations regarding what the outcomes of the research effort should be. For example, research on institutional effectiveness might focus on (1) identifying the concommitants of the construct ("descriptive research"), (b) developing instruments for assessing effectiveness ("developmental research"), or (c) actually assessing effectiveness ("evaluation research").

Second, there may be a good deal of slippage between the planned and actual outcomes of research. This suggests that mechanisms must be

established within the research plan to ensure that the effort stays on course. This might entail project monitors, advisory committees, interim milestones, and the like.

Third, the proposed outcomes of research may be more influenced by what the researcher thinks the funder wants to hear than by what can actually be done, or what the researcher plans to do. This suggests that funders need to use critical and highly experienced people both to evaluate proposed efforts, and to monitor ongoing efforts in order to maximize the likelihood that they will achieve intended objectives.

The "type of research" dimension in figure 1 contains four sets of terms that are frequently used to describe research. As might be expected, the descriptions of these terms overlap. Rather than argue for any one set, all four are presented. What's important is that all parties to the research process clearly understand the type of research to be undertaken and the nature of expected outcomes.

As previously noted, one of the most frequently used distinctions is that of applied, basic, and development research. The "Survey of Scientific and Engineering Expenditures at Universities and Colleges" conducted by the National Science Foundation provides the following definitions:

> Basic Research is directed toward an increase of knowledge: it is research where the primary aim of the investigator is a fuller knowledge or understanding of the subject under study rather than a practical application thereof.
>
> Applied Research is directed toward the practical application of knowledge. The definition of applied research differs from basic research chiefly in terms of the objectives of the investigation.
>
> Development is the systematic use of knowledge directed toward the design and production of useful prototypes, materials, devices, systems, methods or processes. It does not include quality control or routine testing.

The most current national study on the character of all educational R&D in the United States (Sharp and Frankel, 1979), simply divided research into two categories: development research, which included all efforts designed to invent new or improve existing solutions to educational problems; and evaluation research, which included efforts designed to assess the effects of existing programs or determine the feasibility of new ones.

In Policy Research in Social Science, James Coleman (1972) divides research into two categories: disciplinary research, which is primarily intended for the accumulation of knowledge and theory about a certain group of phenomena--and thus for the further development of the discipline; and policy research, which includes research intended to provide guidance for action and policy development

The NCHEMS study reported earlier combined selected aspects of the three typologies, requesting organizations to assign their separately budgeted research projects to one of five categories:

1) Developmental Research: primarily concerned with inventing new solutions or improving existing solutions for higher education problems

2) Fundamental Research: primarily concerned with establishing new facts or principles

3) Evaluation Research: primarily concerned with assessing the effects of existing programs or determining the effects of new ones

4) Descriptive Research: primarily concerned with describing some important facet of higher education

5) Policy Research: primarily concerned with determining the feasibility or advisability of new programs, strategies, or policies

Two lessons that may be drawn from this discussion include (1) that a clear understanding and agreement must be established between

the sponsoring agent and the researcher as to what type of research is to be undertaken and, hence, the characteristics or properties of the results of the research effort; and (2) that the practitioner must be clear about what type of research best suits their needs. That is, for example, practitioners looking for specific procedures on how to compare their institution's performance with others are unlikely to find what they are looking for in descriptive research concerned with general issues in comparative data analysis. At the same time, however, descriptive or fundamental research on comparative data analysis may provide practitioners with critical information and insights essential to making valid institutional comparisons.

Unit of Analysis

If the research problem is clearly specified, the unit of analysis should be obvious. Oftentimes, however, one can reasonably approach the same problem from several different perspectives--each of which entails a different unit of analysis.

Several problems exist with respect to employing a given unit of analysis, even when there is no question as to what the appropriate unit should be. The first concerns the representativeness of the study group. Representativeness is concerned with the extent to which a given sample adequately and accurately reflects the characteristics of the actual population of interest. There are numerous ways in which a given set of units may be selected for participation. These include selection through (a) true random sampling, (b) probability sampling, (c) surveying "accessible" units, (d) self selection, and (e) mandated inclusion. Good research practice values some of these methods more

than others, but the situation does not always permit researchers to use a preferred method.

Both the validity and generalizability of a study's outcomes are a function of the extent to which the study sample reflects the characteristics of the population of interest. Hence, while there may be good reasons for using one or more of the last three procedures noted above, it is far more difficult to assess the extent to which the sample and results of the study are representative of the population generally.

A second problem concerns the comparability of data. The problem centers on the extent to which individuals' scores may be appropriately compared either within or between samples. This is a particularly insidious problem for researchers in higher education. Frequently the unit of interest is the department or institution and the criterion measure is influenced by contextual factors that make direct comparisons inappropriate. For example, numerous efficiency measures have been suggested for assessing departmental or organizational performance. However, most of these measures do not allow for differences in program mix, selectivity, mission, and the like. Failure to include these factors in assessing efficiency will lead to invalid comparisons.

The comparative data problem is discussed at length from the administrator's perspective in Comparative Data Analysis for Administrators in Higher Education (Brinkman and Krakower, 1983). While the book is written for administrators, the issues, problems, and procedures suggested will be useful to researchers, funding agents, and

other parties with vested interests in the outcomes of comparative research.

A third problem concerns the analysis of aggregated data. The problem has two components. The first and most commonly discussed aspect is referred to in the literature as the ecological correlation or ecological variable problem. It concerns the fact that the conclusions that follow from analyzing data aggregated to one analysis level may not apply when the same data are reanalyzed at a higher or lower level of aggregation. Work by Zammuto and Krakower (1984) show, for example, that very different conclusions follow from analyzing data for four-year institutions as a single cohort, as opposed to analyzing the major doctoral, comprehensive, and general baccalaureate sectors of the larger study group separately.

The second facet of the data aggregation problem centers on the representativeness of group statistics. As previously noted in the discussion on the problems of comparing individuals' performance, differences among individuals in the same study group can easily invalidate comparisons both within and between study groups. Similiarly, estimates of group statistics frequently ignore fundamental differences between members of the same study group. These differences may cause estimated statistics to seriously misrepresent the characteristics of individual members of the study group.

The representativeness problem referred to above is illustrated in a recent study by McCoy, Krakower, and Makowski (1982). The study was concerned with assessing the role and effects of federal R&D support in the 100 colleges and universities that received the most support. The average grant was estimated at $32 million. However, the grants

actually ranged from a low of $2.5 million to a high of $110 million. It seemed inappropriate to draw conclusions about the general effects of federal aid when there was such a large range between the support received by the highest and lowest members of the study group. For example, a twenty-percent cut in funds would have very different effects in the schools at the ends of the continuum--a cut of $500,000 versus a cut of $22 million. Hence, one must be seriously concerned about the extent to which estimated statistics reasonably represent individual group member performance.

Methodology

Whatever type of research is undertaken, it will require a set of systematic procedures for investigating the problem at hand. The methodology for conducting a research project generally requires:

1) a research design that addresses the objectives of research, and the needs of the primary audiences
2) the use of valid and reliable measures, instruments, and data
3) a formative evaluation component

As previously noted, there are numerous ways that one might approach a given problem. However, the number of viable approaches is far more limited if the investigator attempts to identify and work within the constraints of the research process discussed in this paper. The research design must be particularly sensitive to the audiences for research, factors that mediate utilization of results, practical considerations related to resources, and contextual factors that mediate any findings. As previously noted, failure to identify and control contextual factors will lead to results that are suspect, and

possibly spurious with respect to their generalizability or utility in other contexts.

The use of valid and reliable measures, instruments, and data are standard requirements for all research endeavors. Briefly stated, the concept of validity refers to the extent a given instrument or measure actually assesses or reflects the trait, characteristic, or quality its intended to measure. Reliablity refers to the extent which a given measure or instrument yields the same results when it is used on different occasions.

The identification and use of valid and reliable measures has been particularly troublesome in higher education research. This is especially true of comparative data studies, and studies concerned with assessing abstract constructs such as institutional effectiveness and vitality. The problems in the comparative data studies stem from differences in the accounting and record keeping procedures of different institutions. For example, financial data appear fairly accurate in the aggregate (Collier and Patrick, 1978). However, the results of studies by Minter and Conger (1979a,b,c) suggest that differences in interpretation and reporting practices may obviate inter-institutional comparisons. These problems are discussed at length by Brinkman and Krakower (1983).

Studies concerned with assessing abstract constructs such as institutional effectiveness or vitality may be problematic because there are no straightforward measures, let alone accepted definitions of these constructs. The use of such constructs always require operational definitions. The problem with having to resort to operational definitions is illustrated in a recent article by Gilmartin

(1981). The study cites more than sixty possible indicators of institutional viability--some of which produce conflicting assessments for the same institution.

A second concern related to the validity and reliability of research measures concerns equating the perceptions or opinions of participants about a construct (e.g., institutional financial health) with the construct itself. Research (e.g., Krakower and Zammuto, 1983) suggests that there may be little relationship between perceptions of institutional conditions and other operationalized empirical measures of those conditions. Hence, one must be cautious with respect to the interpretations drawn from perceptual data. Second, while it is possible to define any construct operationally, getting project participants and audiences to accept a given definition may be no simple matter. Failure to get consensus on such definitions may lead parties with vested interests in the outcomes to simply deny the validity of research findings when they are not in their favor.

Formative evaluation is generally concerned with providing project managers with short-term feedback regarding the implementation and effects of a new project. As used here, it is concerned with providing the research team with information regarding how new or existing projects are actually implemented. A formative evaluation component is critical to all research concerned with assessing the effects of new or existing efforts--such as policy and evaluation research. Failure to include such a component may lead to conclusions about projects or policies that may be very different than originally planned. Formative evaluation procedures include simple observation, examination of project reports and records, interviews of participants.

Practical Considerations

The practical considerations of the research process are essentially synonymous with the resource requirements for carrying out the research effort. They refer to such things as the staff, cost, time, data collection, analytical and other requirements necessary to do the research. From the funding agent's perspective, it will be a waste of resources if they are insufficient to adequately address the issues or problems of concern. Alternatively, the researcher must have the foresight, knowledge, and experience to accurately estimate the minimum level of resources required to do a thorough job.

Generally, this part of the research process is not of direct interest to the practitioner. However, when practitioners are one of the primary audiences for research results, they must concern themselves with whether the resources allocated to a given study were sufficient to produce valid, reliable, and appropriately generalizable results.

Factors that mediate the utilization of results

Scores of studies and articles have examined factors that mediate the utilization of research. A synthesis of empirical findings by Beyer and Trice (1982) references over 100 articles that address these factors. Another article by Corwin and Louis (1982) references more than forty articles that pertain to one type of mediating factor, organizational characteristics.

The factors that mediate the utilization of higher-education related research can generally be described as falling into one of two categories: those internal to the research effort, and those external to the effort. Internal factors refer to components of the proposed

research effort that can be directly influenced by the investigator. They include for example, the assumptions on which the research effort is based, the appropriateness of the proposed methodology for the primary audience and problem at hand, and the planned dissemination effort.

Along these lines, according to several studies (National Institute of Education, 1979; National Council on Educational Research, 1984), one of the most serious problems hindering the utilization of research is simply getting the results to intended audiences. Dissemination must be viewed as a critical component of research. To this end, funding agents and researchers must understand that adequate dissemination requires a commitment of both time and funds.

External factors refer to conditions over which the research plan seems to have little control. These include the predilections and biases of decisionmakers and the social, historical, and political conditions of the agencies or organizations that are the intended audiences of the research. The researcher is obliged to understand these factors generally, and to make the research design respond to and accomodate them specifically.

Successful research must seek to identify and, to the extent possible, develop a research plan that will mediate the problems likely to be encountered in attempting to act on the outcomes of the research. The description of external factors mediating utilization suggest that the researcher has little if any ability to overcome these factors. However, research which ignores these factors will fail to serve its intended purposes.

Closing Thoughts

This paper discussed three factors that may contribute to the perception that the higher education research effort has done a poor job of dealing with the problems that confront the enterprise. The nature of the first two factors suggest that extenuating circumstances beyond the control of the research effort may be partly responsible for the problem. The third factor, potential weaknesses and faults in the research process, is clearly under control of researchers and funding agents.

Two additional conclusions follow from this paper. First, the level of financial support for research on higher education seems critically low in view of (a) the problems and issues confronting the enterprise, (b) the direct and indirect costs of higher education, and (c) the role that higher education plays in maintaining the nation's vitality. Second, while greater support for research seems essential, the problem is not just more funds-- researchers and funding agents must do a better job of attending to all the dimensions of the research process.

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Table 1*

The codes for research and teaching interests are as follows:

A. Adult/Continuing Education
B. College Student
C. Community Colleges
D. Comparative/International
E. Current Issues
F. Curriculum/Instruction
G. Educational Policy
H. Faculty Issues
I. Finance
J. Foundations/History/Philosophy
K. Governance
L. Innovative/Nontraditional
M. Legal Issues
N. Management Information Systems
O. Organization/Administration
P. Public Policy
Q. Research/Evaluation
R. Sociology
S. Student Personnel Administration/Counseling/Human Development
T. Teacher Education
U. Vocational/Technical

* Taken from Directory of Higher Education Programs and Faculty, Third Edition, March 1982

Figure 1. Dimensions of the Research Process