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ABSTRACT

Outcomes of doctoral education at a private, urban university were studied, and a questionnaire was developed. A total of 707 Ph.D. and Ed.D. recipients from 16 departments who had graduated between 1963 and 1984 were surveyed to determine: the impact of doctoral education on career development, the perceived influence of the institutional values on graduates, and the frequency and type of research or scholarly activities engaged in during and after graduate school. Data from the 168-item survey were analyzed by department, degree, and four general academic fields, and a number of indices were developed. The career development index included the following variables: relationship of degree to job and career, and postgraduate career path. Variables included in the institutional values index were: concern for ethical values, interest in religious beliefs, and influence of the university on personal values. Activities to indicate scholarship included: submitting grant proposals and articles for publication, receiving external funding for research, and delivering papers. The analysis includes comparisons for graduates in the fields of education, humanities, social sciences, and medical sciences. (SW)

The Outcomes of Doctoral Education:

An Institutional Study

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Ann K. Dickey, Chair
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The Outcomes of Doctoral Education:

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Abstract This study sought to establish base-line data on the outcomes of doctoral education at a private, urban university. Through the use of a survey instrument developed by the researchers, Ph.D. and Ed.D. recipients from 16 departments who had graduated between 1963 and 1984 were contacted. Three primary areas were examined: 1) the impact of doctoral education on career development, 2) the perceived influence of the institutional values on graduates, and 3) the frequency and type of research/scholarly activities engaged in during and after graduate school. Data provided by 707 respondents to the 168 item survey were analyzed by department, by degree and by four general academic fields, and a number of indices were developed. The main thrust of this paper is the development of the instrument and the indices.

Introduction

Attitudes about the benefits of a college education are changing. At the undergraduate level, a "return-on-investment" standard has become the measure of the quality of a baccalaureate degree. How important is that criterion at the graduate level? The answers are important not only to the individual graduate but to administrators in higher education as well. For one private, urban university, the need to identify the perceived outcomes of doctoral study precipitated a year long investigation of 16 doctoral degree granting departments and their graduates.

Perspectives

While much research has been done on the outcomes of undergraduate education, the same attention has not been given to graduate education. With this concern in mind, the dean of the graduate school and the dean of the school of education sponsored a study to determine the outcomes of doctoral education at a private urban university in the Midwest, classified as a Research University II by the Carnegie classification.

The measurement of outcomes is by nature an imprecise endeavor, even if we know exactly which dimensions to assess (Kinnick, 1985; Pace, 1985). Because the main "product" of universities is the educated person, there are innumerable problems in the evaluation process that other organizations do not face. Distinguishing between inputs and outputs is difficult. Problems arise in comparing individual graduates in one university and across institutions and in simply identifying desired outcomes. Since the majority of outcome studies have concentrated on undergraduates, there are few reliable models to use. Because of these inherent problems in evaluating outcomes of universities, theory has an important place in trying to understand outcomes in academic organization. Development of a conceptual framework for studying outcomes of

academic organizations, however, also poses difficulties.

There is no single right way of measuring educational outcomes because different kinds of outcomes are the results of different educational experiences and intentions. Measurement involves careful consideration of the match between assessment and setting (Ewell, 1985). In general, there are two distinct levels of congruence between setting and assessment design that are integral to the study of outcomes. First, the form and content of assessment should be consistent with the institution's distinctive mission and educational objectives. Second, the tools and techniques that are used in assessment must correspond to what the student has actually experienced.

In addition, the demand for specificity affects the units of analysis to be used. For studying the outcomes of graduate education, the appropriate unit of analysis is the college or the department, not the institution as a whole. The department level is where experiences actually occur and the unit with which students actually identify. The college level is the administrative level which most directly affects departmental objectives.

Purpose

This study sought to identify and understand the relationships between the self-reported values and activities of graduates of doctoral programs and three broadly-defined outcomes of graduate school.

The three outcome areas examined in this study were:

1) The impact of doctoral education on the career development patterns of Ph.D. and Ed.D. graduates.
2) The perceived influence of the value orientation of the institution on these graduates.
3) The frequency and type of research/scholarly activities engaged in during and after graduate school by Ph.D. and Ed.D. recipients.

Conceptual Framework

Much of the conceptual framework of the study was derived from contemporary empirical research on college effects at the undergraduate level (Astin, 1984; Feldman and Newcomb, 1969; Tinto, 1975; Weidman, 1984). Three general constructs were used to develop the outcome assessment. The first construct, career development, was defined as the fit between the individuals' intentions or expectations for graduate study and their subsequent career patterns. The second construct, institutional value orientation, focused on indicators of the influence of the institution's liberal arts orientation and tradition of moral and humanistic education on the individuals' graduate school experiences. The last construct was scholarship, the spirit of either adding to the body of existing knowledge in an academic field or disseminating new knowledge, which is the central outcome of the research-oriented doctoral program. Indicators of this construct were type and frequency of various scholarly activities of the graduates during graduate study and currently. This construct was further categorized using Gouldner's cosmopolitan-local typology. Those activities that increased the knowledge base and/or that were more traditional forms of dissemination were labeled as cosmopolitan.

Questionnaire Development

After a search of the literature on the outcomes of a college education resulted in a preponderance of undergraduate studies and a few single-program studies, several months were spent in the development of a survey instrument. The instrument has four basic sections which deal with the following topics: career development, research and scholarly activity, values and life style, and demographic information. Questions were used from completed studies of undergraduate career patterns and those concerned with the effect of institutional values on student development. The questions centering on

scholarly or research activities during and after graduate school were developed after soliciting input from the chairs of the 16 departments with doctoral programs.

The first section dealing with career development contains 23 questions. This section concentrated on identification of characteristics specifically related to the graduates' current employment positions and on determination of perceived relationships between career characteristics and graduate studies. Thus, questions about type of employment position, setting of employment, and current gross annual salary were asked. Questions about perceived influence on career, quality of graduate preparation for career responsibilities, impact of graduate studies on mobility and advancement, and reason for obtaining a doctoral degree elicited the information to complete the career development component.

Section two deals with scholarly and research productivity and contains 65 questions which are arranged in three main groups. The first group requests information on activities engaged in during doctoral studies. Since the professional activities of faculty mentors is seen as an important factor in professional socialization, the second group of questions deals with respondents' perceptions of faculty advisor activities and attitudes toward research. The final group of questions is focused on present activities of the respondents. The construction of this section relied heavily on input from various departments, since different disciplines value different activities, for example, publishing books versus articles, receiving research grants, serving on study groups for government agencies, and so forth.

The third section included a variety of topics ranging from general satisfaction with life to the perceptions of the graduates about the impact of specific institutional values on their own values and subsequent behavior. The

institution's undergraduate curricular emphasis is the liberal arts. Questions investigated the influence of this curricular mission on the doctoral education. For example, the respondents were asked to determine the impact of each of the specific humanistic goals on their doctoral experiences, using a Likert scale of positive to negative. The impact of the institution's tradition of moral education was the second institutional value measured. Questions in this set included degree of concern for ethical issues and justice, and the impact of the university's orientation on personal goals. There were 43 items in this section.

The final section of 37 questions was designed to collect demographic information about graduates' current status and the conditions under which they pursued their studies. There was also a place for respondents to make general comments concerning their doctoral education.

The survey went through five revisions based on responses from current graduate students, doctoral degree holders and experts in questionnaire construction. Two forms were used in order to check on the reliability and validity of the instrument. The order of the questions varied on the two forms. Form A was distributed to 75% of the graduates, and Form B was distributed to the other 25% of the population. A t-test performed on the Form B responses and a sample of the Form A responses showed no significant difference in the responses on the two forms. A test of equivalence on the two forms resulted in a coefficient of .71. Analysis and follow-up interviews of a stratified sample of non-respondents suggest that the data are representative, reliable, and valid.

In February 1985, the 15 page questionnaire was sent to 1050 alumni who had received doctoral degrees in 16 departments between January 1963 and January 1984. The questionnaires were pre-coded so that a follow-up mailing could be

done. The follow-up mailing three weeks later resulted in 707 responses, and an additional 28 surveys were returned because of bad addresses. Seventy percent of the 1022 questionnaires were returned, with the departmental response rates ranging from 46% to 80%.

Data

A data set of 168 variables for the 707 respondents contains a wealth of information. The typical respondent in this study is a white (91%) male (67%) between the ages of 41 to 50 (39%) who is currently married (73%). During graduate school, he went full-time (57%), received financial assistance (68%), and took five years to complete his doctoral studies (25%).

The 16 departments were categorized into one of the four academic fields in the following manner (numbers indicate total number of respondents): social sciences (172) included psychology and sociology; humanities (108) included classics, English, history, and philosophy; sciences (117) included anatomy, biochemistry/physics, chemistry, microbiology, pharmacology, and physiology; education (298) included administration, foundations, curriculum, elementary, counseling psychology and higher education.

Indices

Three general indices were developed to measure (1) the impact of the degree on career development, (2) the impact of the institutional values on graduates, and (3) the scholarly orientation of graduates to their fields. The basic process of constructing the indices consisted of six steps. First, a question was formulated which expressed the dimension the index would measure. Then the research team used face validity to choose variables which related to each of these questions. The responses to these questions were then re-coded, usually using a positive (+1), neutral (0), negative (-1) framework.

Next a coefficient of reliability (Cronbach's alpha) was computed. This

coefficient is a measure of the intercorrelation of the variables. The goal of the index construction was to obtain a maximum α with the fewest variables, and variables were manipulated until this goal was reached. Once the variables in the index were determined, the sum of their values was computed.

The career development index is a measure of the contribution doctoral education has made to the accomplishment of career goals. It consists of nine variables, including: the relationship of degree to job, the impact of the degree on career, the post-graduate career path, graduate preparation for career responsibilities, recommendation of the program to others, and the contribution of the doctorate to salary, advancement, job security, and career mobility. The reliability coefficient for this index was .7687 and the index has a possible range of -8 to 9. For the 707 responses in this study, the range was -7 to 9 with a mean of 4.55 and a standard deviation of 3.16.

The second index was constructed to measure the influence of the institutional value orientation. The items selected here relate graduates' perceptions of the impact of institutional values on their own values. Twelve variables were identified as appropriate to this construct. The 12 items are: concern for ethical values; interest in religious beliefs; influence of the university on personal values; the influence of each of these university goals on doctoral experience: be a Christian influence in the world, be a partner to the city, develop a passion for justice, confront major problems of the day, foster a spirit of inquiry, serve the neighborhood and community, emphasize the development of the whole person, value gathering and disseminating knowledge, and uphold the institution's tradition of moral and humanistic education. The reliability coefficient was .8792 and the range for this index was a score from -26 to 29. For the 707 respondents in this study, the range was -13 to 29, with a mean of 9.64 and a standard deviation of 7.76.

The third and final construct was developed using indicators of scholarship reported by the graduates of these doctoral programs. After reviewing the literature on productivity and surveying the 16 department chairs and graduate program advisors, 18 activities were identified as representative of scholarly behavior. In constructing an outcome index for scholarship, however, the behaviors were categorized as either those activities of the more traditional notion of adding to the body of knowledge in a field or those activities of disseminating knowledge to the field. The cosmopolitan scholarship index included 10 activities, namely: submitting articles for publication, having articles published, having articles published in referred journals, submitting grant proposals, receiving external funding for research, delivering papers, being an invited participant in a symposium, serving on a government study group, participating in a research grant, and serving on an editorial board. The reliability coefficient for this index was .8891. The possible scores in this index ranged from 0 to 48. For the group of respondents as a whole, the mean was 11.78 and the standard deviation was 11.26.

For the local scholarship index, eight activities were included: consulting in the field, teaching seminars, receiving professional awards, attending conferences, holding office in a professional organization, organizing a symposium, participating in a research project, and reading books in the field. The reliability coefficient for local scholarship was .7793, and the index has a range of 0 to 24. The resulting mean for the group was 10.83 with a standard deviation of 5.11.

Results

This study has allowed the researchers to examine a wide variety of issues. Table 1 gives responses from a sample of departments to the question of whether graduates would recommend their doctoral program to others.

Table 1

Recommend Graduate Program to Others

Department	Yes Enthusiastically	Yes	Probably Not	No
A	17.6%	64.7%	17.6%	---
B	25.0	50.0	20.8	4.2%
C	18.5	55.6	25.9	---
D	20.6	50.0	14.7	14.7
E	15.8	57.9	15.8	10.5
F	56.3	43.8	---	---

This item alone does not constitute a program evaluation, but it does highlight areas to be examined.

In reviewing doctoral programs, it is important to understand student motivation in pursuing advanced study. Table 2 summarizes reasons for pursuing the doctorate reported by academic field. The majority of graduates of the social sciences and education shared "credentialing" as their primary reason for pursuing a doctoral education while humanities and medical sciences graduates gave an academic or research interest as their reason.

Table 2

Reason for Pursuing Doctorate

	Education n=298	Humanities n=108	Soc Sciences n=172	Med Sciences n=117
Credentialing	61%	23%	67%	29%
Scholarly/ Research interests	27	58	24	58
Commitment to the Institution	6	8	6	9

Note. Columns do not total 100% due to missing data and rounding errors.

Analysis by degree allowed comparison of Ph.D. and Ed.D. recipients within the field of education. While there are some differences in the pre-graduate school employment and part-time, full-time patterns of graduate school attendance, the two groups show remarkable similarities in almost all other aspects. Ed.D. graduates are somewhat more concentrated in school (grade and high) settings and, as Table 3 shows, are twice as likely to work as administrators.

Table 3

Current Employment Position by Degree

	Ph.D. n=145	Ed.D. n=148
Teacher	28.3%	18.9%
Ed administrator	23.4	49.3
Researcher	4.8	---
Management	6.9	6.8
Professional staff	27.6	19.6
Self-employed	4.1	2.7

Note. Columns do not total 100% due to missing data and rounding errors.

As part of the set of indicators of scholarship, respondents were asked to indicate the amount of faculty emphasis on scholarship and/or research they perceived in their departments while in graduate school. A strong faculty emphasis was perceived by 70% of the medical sciences respondents (Table 4). In education only 32% reported a strong emphasis on research/scholarship by faculty and 25% perceived minimal to no emphasis during their studies.

Table 4

Emphasis on Research/Scholarship by Faculty of Graduate Department

	Education n=298	Humanities n=108	Soc Sciences n=172	Med Sciences n=117
Strong emphasis	32%	45%	52%	70%
Some emphasis	40	36	39	22
Minimal emphasis	18	10	8	4
No emphasis	7	3	2	3

Tables 5 through 8 report the results of one-way analysis of variance using the three construct indices and academic fields. Tables 5 and 6 show that there were significant differences among the four academic fields for both indices of scholarship. Medical science graduates have the highest average for current cosmopolitan scholarship and graduates in social science have the highest average on the local scholarship index.

Table 5

Cosmopolitan Scholarship

Academic Field	n	Mean	SD	df	F ratio
Education	298	10.02	9.85	3	10.673*
Humanities	108	11.06	9.72		
Medical Sciences	117	16.76	13.37		
Social Sciences	172	11.90	11.88		

*p<.001 was chosen because of the relatively large sample size.

Table 6

Local Scholarship

Academic Field	n	Mean	SD	df	F ratio
Education	298	10.81	5.32	3	8.781*
Humanities	108	9.06	4.61		
Medical Sciences	117	10.64	4.78		
Social Sciences	172	12.20	4.91		

*p<.001 was chosen because of the relatively large sample size.

A one-way ANOVA was done using the career development index and academic field. Table 7 shows that social scientists reported the highest positive impact averages on career development, and those in the humanities reported the lowest. There is a correlation between these results and the reasons given for pursuing the degree (Table 2).

Table 7

Difference in Career Development by Academic Field

Academic Field	n	Mean	SD	df	F ratio
Education	298	4.36	3.22	3	13.205*
Humanities	108	3.55	3.45		
Medical Sciences	117	4.22	3.18		
Social Sciences	172	5.74	2.45		

*p<.001 was chosen because of the relatively large sample size.

The index for the institutional value orientation was analyzed by academic field. Those in the medical sciences reported a significantly lower score than those in the other three fields (Table 8).

Table 8

Difference in Institutional Value Orientation by Academic Field

Academic Field	n	Mean	SD	df	F ratio
Education	298	9.79	8.13	3	8.672*
Humanities	108	11.29	7.97		
Medical Sciences	117	6.70	7.21		
Social Sciences	172	10.74	6.70		

*p<.001 was chosen because of the relatively large sample size.

Discussion

The effect of the Ph.D. on career patterns was generally positive for all respondents. Social science respondents perceived the greatest positive influence of the degree on their careers. The largest number of graduates in this academic field came from psychology and they identified credentialing as their primary reason for pursuing a doctorate. Their subsequent career choices as professional staff in hospitals and universities and as private consultants help clarify the view of the Ph.D. as a positive influence. Those in education also perceived the doctorate as a career advancement credential. Over a third of the respondents in this academic field are currently administrators in K-12 school settings where the terminal degree has not until recently been an entry level requirement. This may account for the positive perceptions of the degree's influence on career development. The humanities have suffered in recent years with an oversupply of Ph.D.s, so it is not surprising that the respondents in this field, who are predominantly academicians, were the least positive about the impact of their Ph.D. on the development of their careers. Most of the respondents in the medical sciences are currently working in two areas, teaching at the university level or doing research in private industry. In both settings, having a doctorate is a valuable asset in career advancement.

The impact of the specific institutional mission on the values or behaviors of doctoral recipients seems slight. Within the choice process, prospective graduate students look for indicators of academic departmental quality and reputation, not for general institutional values. While university administrators might hope for a greater impact of institutional values, the index itself is not an absolute measure. What does become clear is that the medical sciences graduates perceived little influence of the institutional

values while the other three fields were more positive about the effect of these values. The medical sciences campus is removed from the other campuses, and there is almost a total absence of contact with the other segments of the university. This may partially explain the differences in this index.

The last outcome studied, scholarship, is specific to the doctoral degree. In examining the commitment of graduates to scholarly values and activities, several issues are relevant. Most important is the effect of the academic discipline upon the type of scholarly behavior the graduates observed in their doctoral programs and the importance of scholarship within their academic field. The medical sciences had the highest score on cosmopolitan scholarship while the social sciences scored highest in local scholarship. It is difficult to determine if the philosophy of this university, or the expectations of the disciplines, or the orientations of these specific departments are responsible for the differences in scholarly productivity. An analysis of variance was done on the departments within each academic field for both indices of scholarship. Education was the only field in which a significant difference existed. The departments within the field of education showed significant differences both in the cosmopolitan and the local indices of scholarship.

Conclusions

As a result of this study, the institution has a much clearer picture of its doctoral graduates. A follow-up study will be conducted in five years in order to compare results and depict trends. In addition, new doctoral students in the same 16 departments completed questionnaires in the fall of 1985 designed to elicit appropriate entry level data. This process will be followed each subsequent fall. When the information obtained at the point of student entry into a program is combined with the results of the five year follow-up

study, the institution will have a better understanding of the impact it has ondoctoral students. This is the first phase of the graduate school's effort to measure outcomes.

It would also be helpful to be able to compare results from this study with outcomes research done at other universities. It is only through the use of a wide variety of comparative data, both longitudinal and across institutions, that meaningful outcomes information will be accumulated.

Implications for Institutional Research

Little work has been done to assess the outcomes of doctoral education. Two primary contributions of this study are the design and testing of an instrument to evaluate outcomes at this level and the development of indices to measure the impact of the doctoral program on career development, values and socialization to the academic field. The data collected has given the institution new insights into the strengths and limitations of its doctoral programs. There are many other ways in which this data can be analyzed, and the process of analysis and interpretation continues. While the study deals only with one institution, it makes a contribution to instrument development and measurement of the three constructs involved.

In addition to studies that focus on program design and curricular and research requirements, outcomes studies have a significant contribution to make to educational evaluation and planning. Any attempt to redesign or refocus graduate programs should be informed by knowledge of the impact of the previous and current practices of the institution.

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