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ABSTRACT

A study was conducted of faculty research productivity to examine differences in productivity based on gender and on employment status (tenured, tenure-track, and non-tenure-track). The research productivity of 63 full-time faculty members in the college of education at a public university were assessed, with productivity defined in terms of the number of papers presented at professional meetings, number of articles published in refereed journals, number of proposals submitted to external funding agencies, number of proposals funded, and total dollar value of grants and contracts awarded. Data were derived from university records for the 1986 fiscal year. Contract status and gender differences in research productivity measures were found to be not significantly different, and no interaction effects were observed. It is noted that gender differences were absent in spite of rank, salary, and experience differences, all in favor of the males. It is also noted that these results show non-tenure-track faculty to be performing much like their tenured and tenure-track colleagues. Three tables present the results of the statistical analysis. (KM)

EMPLOYMENT STATUS AND GENDER IN RESEARCH PRODUCTIVTIY

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INTRODUCTION

Talking about research productivity is akin to pondering the eternal question of whether falling tree makes a sound in the forest. It is highly dependent upon definition and perspective. Let's look at definitions first.

How research productivity is defined, at least in researchable/-operational terms is tough. According to Cresswell (1985), there are three ways of defining 'faculty research performance' (his term). These are; publication counts, citation counts, and peer/colleague ratings. Each is frought with difficulties. The fine artists want to know how we intend on looking at their exhibitions and performances. The teacher wants to know how we are going to look at the creativeness with which they approach their classroom work. Others want to know how we will assess their four-year long research effort (and its resulting monograph) versus the 'arm chair' pieces of some of their colleagues. Not easy questions to answer.

Now that we have agreed that it is tough, on to perspective. The perspective of the presenting researcher is that of a college of education administrator responsible for helping increase faculty research productivity. That perspective carries with it certain bureaucratic definitions. Obviously, external funding is a measure of productivity but not the only measure. Even within the notion of external funding there are sub-definitions. Publication counts are also part of the system, as are papers presented at professional conferences.

WHY STUDY PRODUCTIVITY?

Why would anyone be interested in increasing faculty research productivity? An obvious answer (if the traditional definitions of external funding, and publication counts stand) is that by so doing we will be bringing in more dollars and improving the reputation and visibility of our institions. In addition, some would add, we will improve the instructional mission of our institions if we increase faculty research productivity. One needs to be careful at this point, however. According to Jalongo:

> ...research that assesses and correlates indices of actual classroom competence with measures of faculty productivity is virtually non-existent. (1985, 173.)

In addition, Webster (1985) points out that the conventional wisdom among higher education faculty is that research does enhance teaching. He also points out that the vast majority of empirical studies fail to show any positive correlation. His discussion of reasons why the myth continues is fascinating and worth the time to read.

We would add our own caution that a lack of relationship doesn't necessarily negate our concerns for studying and understanding faculty research productivity. If that were true, we would be wasting our and your time. Even if there is no evidence tying research productivity to teaching effectivness, increasing revenues and institutional prestige are worthwhile ultimate goals.

THE PURPOSE OF THE STUDY

The purpose of this study was to investigate certain aspects of faculty research productivity. Specifically, stemming from earlier studies (Roddy, 1986; Roddy, Pettibone, and Maltby, 1987), we were interested in looking at differences in productivity measures based on gender (female versus male) and on employment status (tenured/tenure

track versus non-tenure track). In addition, we were interested in assessing relationships of these and other demographic variables.

RESEARCH PROCEDURES

Research productivities of 63 college of education full time faculty at a land grant public university were assessed. Productivity was defined in terms of the number of papers presented at professional association meetings, number of articles published in refereed journals, number of proposals submitted to external funding agencies, number of proposals funded, and total dollar value of grants and contracts awarded.

Several data sources were utilized. All were from the 1986 fiscal year. First, the office processing proposals for the college of education was able to supply detailed information regarding the numbers of proposals submitted, funded, and the dollar value of those proposals funded. Second, the university's management information system supplied salary data, contract status, years of service, and related data. Thirdly, the university's Annual Report to the President contained a detailed listing of papers presented, and articles published, by college, by deparment, and by faculty member.

The data were analyzed in terms of employment status (tenured or tenure track versus non-tenure track basis) and gender. A two-way ANOVA was conducted for each of the dependent variables. In addition, correlations were computed for the variates of interest. Lastly, regressions were performed for each of the productivity measures in an attempt to determine variables related to productivity. A supplemental analysis

was performed, assessing the degree to which journal articles were based on results from externally funded projects.

RESULTS

Results of the two-way ANOVAs revealed no significant contract status differences for any of the productivity measures (see Table 1.) As can be seen, no gender effects were found either. Nor were there any interactions effects found .

Insert Table 1. About Here

Correlations (see Table 2.) among the productivity measures varied from 0.074 (for articles published and dollar value of grants awarded) to 0.79 (for proposals submitted and proposals funded - not an entirely surprising finding). Four of the ten correlations were significant at the 0.05 level.

Insert Table 2. About Here

Regressions (see Table 3.) using salary, age, gender, contract status, and academic experience as independent variables resulted in R-Squared values ranging from 0.018 (for submitted proposals) to 0.14 (for papers published). None of the models tested were significant.

Insert Table 3. About Here

As a supplemental analysis, we divided the number of articles published which were based on funded research by the total number published. This resulted in a figure of 14.6%. Analysis of similar data at a second institution (also a land-grant university) resulted in a figure of 14.3%. Table 4. contains means of the various measures used by contract status and by gender.

CONCLUSIONS AND DISCUSSION

Contract status and gender differences in research productivity measures were not significantly different. No interaction effects were observed for these same measures. While such findings are generally disappointing, it is important to note that gender differences were absent in spite of rank, salary, and experience differences, all in favor of the males. In addition, one might point out that non-tenure track faculty, seem to be performing pretty much like their tenured/-tenure track colleagues, at least in terms of the productivity measures used in this study.

Correlations among the productivity measures were varied and unenlightening. Not surprisingly, the biggest correlation was between the number of proposals submitted and the number funded. (The presenting researcher has been telling that to faculty for several years!)

Regression analyses were disappointing in not showing variables associated with research productivity. Obvious explanations for that finding include a relatively small sample size, the single institution used in this study may not be typical, and the independent variables used just may not be good predictors.

Lastly, there appears to be a lack of relationship between funded research and publications. Or, possibly better stated, the publications of the colleges of education faculty examined in this study, do not appear to be substantially based on funded research projects.

Whatever the situation may be at other institutions, it seems to us that additional work aimed at understanding the dynamics of individual faculty research productivity is essential. We ask you to join us in these efforts.

TABLE 1. TWO-WAY ANOVAs FOR MEASURES OF RESEARCH PRODUCTIVITY

VARIABLE = 'PAPERS PRESENTED'

SOURCE	DF	SS/MS	F	P > F
TENURE	1	6.3	2.51	0.12
SEX	1	0.002	0.0	0.97
TENURE*SEX	1	1.29	0.52	0.48
ERROR	59	148.27/2.51		

VARIABLE = 'ARTICLES PUBLISHED'

SOURCE	DF	SS/MS	F	P > F
TENURE	1	9.23	3.1	0.08
SEX	1	0.03	0.01	0.91
TENURE*SEX	1	0.07	0.02	0.88
ERROR	59	175.45/2.97		

VARIABLE = 'PROPOSALS SUBMITTED'

SOURCE	DF	SS/MS	F	P > F
TENURE	1	0.60	0.78	0.38
SEX	1	0.09	0.11	0.74
TENURE*SEX	1	0.93	1.20	0.28
ERROR	59	45.50/0.7712		

VARIABLE = 'PROPOSALS FUNDED'

SOURCE	DF	SS/MS	F	P > F
TENURE	1	0.27	2.06	0.16
SEX	1	0.24	1.86	0.16
TENURE*SEX	1	0.04	0.32	0.58
ERROR	59	7.66/0.130		

VARIABLE = 'DOLLARS FUNDED'

SOURCE	DF	SS/MS	F	P > F
TENURE	1	2331441713	1.52	0.22
SEX	1	93072072	0.06	0.81
TENURE*SEX	1	15400593	0.01	0.92
ERROR	59	90665023396/1536695311		

TABLE 2. CORRELATIONS AMONG MEASURES OF FACULTY RESEARCH PRODUCTIVITY

	PAPERS PRESENTED	ARTICLES PUBLISHED	PROPOSALS SUBMITTED	PROPOSALS FUNDED	DOLLARS AWARDED
PAPERS PRESENTED	1.00	0.31*	0.21	0.20	0.07
ARTICLES PUBLISHED	-	1.00	0.15	0.21	0.25
PROPOSALS SUBMITTED	-	-	1.00	0.79*	0.52*
PROPOSALS FUNDED	-	-	-	1.00	0.69*
DOLLARS AWARDED	-	-	-	-	1.00

* Correlation significant at the 0.05 level.

TABLE 3. REGRESSION ANALYSES OF FACULTY RESEARCH PRODUCTIVITY MEASURES

PREDICTOR VARIABLES: SALARY; AGE; GENDER; CONTRACT STATUS; AND ACADEMIC EXPERIENCE

FOR VARIABLE = ARTICLES PUBLISHED;

R-SQUARE = 0.088 (P > F = 0.37)

FOR VARIABLE = PAPERS PRESENTED;

R-SQUARE = 0.14 (P > F = 0.12)

FOR VARIABLE = PROPOSALS SUBMITTED;

R-SQUARE = 0.018 (P > F = 0.96)

FOR VARIABLE = PROPOSALS FUNDED;

R-SQUARE = 0.064 (P > F = 0.57)

FOR VARIABLE = DOLLARS AWARDED;

R-SQUARE = 0.028 (P > F = 0.90)

TABLE 4. PRODUCTIVITY MEASURE MEANS BY CONTRACT STATUS AND GENDER (Figures refer to per faculty member average)

VARIABLE/	MALE n=43	FEMALE n=20	TENURE TRACK n=47	NON-TENURE TRACK n=16
AGE	49.28	42.55	47.38	46.44
SALARY	35,546	28,993	35,142	28,540
ACADEMIC EXPER.	16.09	9.05	14.66	12.06
PAPERS PRES.	1.06	0.87	1.18	0.46
ARTICLES PUB.	1.28	0.98	1.41	0.53
PROPOSALS SUBMIT.	0.41	0.43	0.47	0.25
PROPOSALS FUNDED	0.12	0.20	0.18	0.03
DOLLARS AWARDED	11536	10007	14600	625

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