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A Preliminary Investigation Into The Correlation Between Teaching And Research In The Florida State University System

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Introduction

There has been a long-term controversy concerning the issue of research productivity and teaching effectiveness. Many believe that university professors face a distinct trade-off between producing empirical research and providing quality instruction in the classroom. Others feel that research productivity adds significantly to both the quality and substance of the classroom experience, and rather than being at odds, these two factors are synergistic in nature. Porter and McKibben suggest that scholarly and applied research accomplishments enhance the business faculty member's ability to stay current in a functional discipline (Porter and McKibben, 1988). This article addresses the issue of teaching and research and utilises a recent action taken by the State of Florida to generate a method of testing for the relationship, if any, between these two variables. These efforts on the part of the state are consistent with recent literature suggesting a more important emphasis be placed on rewarding effective teaching (Reinstein and Lander, 1993). Furthermore, as suggested by Gribbin, *et.al.*, escalating tuition costs and static or shrinking higher education budgets have caused many legislators, governors, and higher education policy makers to call for more value to be placed on good teaching in higher education (Gribbin, *et.al.*, 1991).

In 1993, the Florida Legislature developed an innovative approach for providing monetary incentives for excellence in teaching. Through the General Appropriations Bill for 1993, an SUS Teaching and Departmental Incentive Programme (TIP) was implemented. This five million dollar programme was designed to reward state university system professors for undergraduate teaching effectiveness, productivity, quality and creativity.

Guidelines for individual \$5,000 stipends to faculty members were fairly straightforward. To be eligible for the incentive, faculty must have taught undergraduate students for each of the prior three years and should have a continuing undergraduate teaching responsibility for the foreseeable future. These awards were not designed to be merely one-time allocations to faculty members. Rather they represented \$5,000 increases in base salary rates for the recipients.

As stated in the 1993 Florida General Appropriations Bill, "the purpose of the state appropriation is to recognise, promote and stimulate high quality and productive teaching". It seems apparent that the state government initiated this programme to encourage innovative and effective teaching throughout the state university system. At the university level, research and publication are important components of a professor's overall yearly performance evaluation. While teaching responsibilities are also an integral part of this evaluation, the research productivity of the individual faculty member oftentimes receives more emphasis. Gomez-Mejia and Balkin report that contrary to previous reports, their findings

indicate that teaching does have an effect on faculty pay (Gomez-Mejia and Balkin, 1992). However, they did find that the effect was absent for individuals with poor research records (Gomez-Mejia and Balkin, 1992, p.947). The recent actions of the state legislation through the TIP awards tend to re-emphasise the teaching component of the faculty member's overall evaluation.

An interesting question that has been debated for many years in academia is the relationship between scholarship and teaching. The basic premise that had been held by most academicians and administrators is that research productivity enhances the classroom experience; i.e., better researchers make better teachers. The TIP award process presents an excellent opportunity to evaluate this premise more closely. If the basic premise that researchers are better teachers is a valid one, then the recipients of these TIP awards should exhibit a productive research style when compared to their university colleagues. More precisely, these recipients should be as or more productive in the research area than their fellow colleagues who are at the same grade level (Assistant, Associate or Full Professor) with approximately the same number of years of service at that university. It was the purpose of this research to investigate these potential differences.

Background Research

College faculty are evaluated on the basis of teaching, research and service at most universities. Of the three, a faculty member's performance in the areas of teaching and research are the major determinants for promotions and pay increases (Centra, 1977). Caplow and McGee pointed out the apparently inconsistent hiring practices of many universities where faculty were hired primarily to teach but in fact promotion and salary decisions were based almost exclusively on their research and scholarship performance (Caplow and McGee, 1958). The primary issue debated in academia is whether these two components of a professor's yearly evaluation are diametrically opposed or synergistic in nature. Academicians and administrators of universities either view research as detracting or enhancing effective teaching methodology in the classroom. There does not seem to be much of a compromise on the issue. In fact, a number of authors view faculty research and teaching roles as being in conflict (Clark, 1987; Kerr, 1963; Veysey, 1965).

The literature is replete with articles addressing this issue. Numerous studies and editorials have been written concerning research productivity and teaching effectiveness from a number of different perspectives. An extensive study conducted by Feldman, concluded, "that in terms of the connection between research productivity or scholarly accomplishment of faculty members and their teaching effectiveness, on average, there is a very small positive association between the two variables" (Feldman, 1987, p.227). While some studies have incorporated just the two variables of research and teaching, other empirical works have investigated additional factors and variables which may impinge on the issue. For example, Brodzinski and Scherer suggest that a complete evaluation of teaching effectiveness should include the faculty member's participation in school service, professional development, involvement with the business community and scholarly research (Brodzinski and Scherer, 1990). The American Assembly of Collegiate Schools of Business (AACSB), state four justifications for research:

1. It improves the general knowledge of society.
2. It is a necessary ingredient in effective teaching.

3. It improves the practice of a particular discipline in the real world of affairs.
4. It is necessary to perpetuate one's own discipline or one's own self-image (Jacobs, Reinmuth, and Hamada, 1987).

Given the inherent length constraints for this article, it would not be possible to review, in detail, every article related to the possible connection between teaching effectiveness and research productivity. For example, an empirical work in 1995 summarised over 40 studies on the subject, and this listing is not all inclusive. While it is not possible to review every article, an effort will be made to review these empirical works as a whole to find a general consensus among them as well as identify significant aspects of their conclusions.

Opinions concerning the relationship between research and teaching that are based on general observation alone are readily available. In these editorials, both sides of the argument can be found. For example, one author wrote, "The more articles he has written, the better teacher he is supposed to be, but the opposite is more likely to be the case" (Cutten, 1958). A differing opinion is written by Leary when he states, "The popular image of the scholar as pendant immersed in library or laboratory has about the same validity as the popular image of Mr. Chips.. The fact is that our best teachers are almost without exception our best scholars" (Leary, 1959). Fortunately, the empirical work to date in the area has generated fairly consistent results.

Most studies completed thus far indicate that teaching and research are independent variables. Performance as an excellent researcher has no impact on the quality of instruction in the classroom, and *vice versa*. These empirical works used different variables as surrogates to measure both teaching effectiveness and research productivity. For example, Voeks' study utilised faculty membership in a university-based research society (1962), while Linsky and Straus used both a journal publication count and books published gauge based on a weighted average summary score to generate a citation score (1975).

Empirical studies also differ in regards to their populations surveyed and their sample size. For example, Hayes' study surveyed members from 17 academic departments at Carnegie-Mellon University (1971). Other researchers, such as Stallings and Singhal surveyed various faculty members at both the University of Illinois and Indiana University (1970), while Harry and Goldner obtained research data from 230 faculty members at only one university (1972). Some authors, such as Michalak and Friedrich, used a times series analysis and evaluated data over a five-year period at Franklin and Marshall College (1981). Centra's work was compiled from two samples. The first sample included 2,973 faculty members from 61 different four-year colleges and universities. The second sample was comprised of 1,623 professors from ten four-year colleges and universities. These samples included traditional liberal arts and research schools as well as faculty members from business, humanities, and social sciences disciplines (1983). As can be seen from this small sampling of studies, the methodology and populations surveyed varied greatly between studies.

With regards to conclusions, however, the studies to date have generated fairly consistent results. These studies have either found no or very little correlation between research productivity and teaching effectiveness. Possibly the most com-

prehensive study to date was published by Mike Allen (1995). In this study, the author used a meta-analysis methodology to summarise the results of over 40 quantitative studies addressing the teaching-research issue and found a relatively small positive correlation between research productivity and teaching effectiveness. Allen stated: "The results show a positive correlation between teaching effectiveness and research productivity. The correlation indicates that as either teaching effectiveness or research productivity increases the other variable does as well". The author concluded by stating: "The data do clearly support the idea that research productivity and quality teaching are not contradictory goals, the degree to which they are compatible or complementary goals could still be argued".

Many of the other studies in the area found similar results. Recent research performed by Tanner, Manakyan, and Hotard found a weak relationship between the two factors. They stated, "These comparisons ... indicated little, if any, link between excellence in teaching performance and research activity"(1992). They also indicated that any correlation that was found between the two variables seemed more a function of individual faculty interest than a function of any link between teaching and research. They concluded: "These levels of performance support the notion that teaching and research productivity are independent of each other, an idea that many faculty intuitively contend".

Earlier research efforts generated fundamentally similar results. Crimmel's study addressed the issue of teaching and research by focusing primarily on liberal arts colleges. He concluded that, "The evidence shows that scholarly research and publication contribute little if anything to teaching"(1984). Hoyt and Spangler's research came to the same basic conclusion, and stated, "The degree to which faculty members were involved with research was unrelated to student ratings of instructional outcomes"(1976). The issue is further clouded by recent research conducted by Richardson, *et al.*, where they found that "a factor analysis revealed a distinct pattern in the nature of scholarly activity preferred by individuals. In general, the 'higher status' type of research (books, refereed journal articles, national presentations) showed no relationship to teaching evaluations, but there was a modest positive relationship between teaching evaluations and 'lower status' types of scholarly activity (proceedings, regional presentations, other publications)" (Richardson, Parker, and Udell, 1992, p.79).

As can be seen by this brief review of the numerous studies that have been made in this area, little to no correlation has been found between research productivity and quality of teaching. This article attempts to address this issue from a different perspective using different measures of teaching effectiveness, namely the TIP awards designated by the State of Florida. What we believe to be significant here, and different from previous attempts to relate the two, is the extensive and rigorous review process that was used to make the TIP selections, i.e. to identify excellent teachers.

Methodology

The Chancellor's Office of the State University System of Florida provided a list of 797 recipients of the Teaching Incentive Programme Award based on their teaching quality during the three academic years from 1990-91 through 1992-93. The management recipients were identified by using the 1992-1993 *McGraw-Hill Directory of Management Faculty* (Hasselback, 1993). This procedure identified

17 management faculty members in the State University System of Florida as recipients of the award. These recipients were on the faculty at eight of the nine state universities. Five of the recipients were Professors, eight were Associate Professors and four were Assistant Professors. It should be noted that visiting faculty, instructors and lecturers were not eligible for the award. All the management recipients possessed the doctoral degree.

The award recipients were matched with non-recipients at the same university using the following criteria: (1) Rank; (2) Degree; and (3) Year the degree was awarded. This procedure resulted in matching 15 of the recipients with 15 non-recipients. Each of the pairs were at the same university, possessed the same rank and degree. The year of receipt of the degree varied by no more than three years. Matches were not possible for two of the recipients because at their University no one of the same rank possessed the same degree. Therefore, this case study compares the research productivity of 15 recipients with their 15 matches.

Information was gathered on the publication record of each of the 30 individuals. Publications in management journals were examined for the time period from August 1, 1990 through August 31, 1993. The teaching award was based on teaching effectiveness for three academic years (1990-91, 1991-92, and 1992-93). Research publications were examined for the same time period. Published research was defined in two ways: (1) the total number of articles published during the 37-month period; (2) the total number of articles published during the 37-month period in "major" journals. "Major" journals were defined as one of the top 20 overall journals as ranked by Extejt and Smith in their *Journal of Management* (1990) article. This list was used since it was published at the beginning of the time period over which the recipients' teaching was evaluated. These top 20 journals are listed in Table I.

Total articles were defined as those published in a journal indexed in one of the following:

ABI/Inform
Business Index
Education Index

ABI/Inform, published monthly by University Microfilms, presently includes just under 900 journals. The Business Index contains approximately 850 business management, and trade journals. The Education Index covers over 400 monthly national and international periodicals.

Letters to the editor, correspondence in journals, books, monographs, and newsletters are not considered. In the event of a co-authored article, each of the co-authors were given credit for the publication.

The non-parametric sign test (Siegel, 1956) was used to test the following two research hypotheses (stated in the null):

H1: ORR = ORNR
H2: MRR = MRNR

where ORR is the overall research record of the recipients and ORNR is the overall research record of the non-recipients. MRR is the major publication record of the recipients and MRNR is the major publication record of the non-recipients.

The sign test is a non-parametric test used to compare two populations; in this case, the recipients and non-recipients.

In using the sign test, if the overall or major research record of the recipient exceeded the non-recipient a plus sign was given; if the reverse was true a negative sign was given. If the research record of the recipient and the non-recipient match were the same, the observation was excluded from the statistical analysis. The test statistic is the number of + signs. The test is a binomial test with parameter $p = 0.50$. A binomial table is used to determine the significance level with a given number of paired data points and a given number of + signs.

Results

The overall research record of the recipients ranged from zero publications for six faculty members to a high of 19. The non-recipients ranged from zero for nine individuals to a high of six publications. The publication records in major journals ranged from zero to one for both the recipients and the non-recipients. The distribution of the number of publications is shown in Table II.

As shown in Table III, using the sign test, the overall number of publications resulted in seven cases in which the recipient's publications exceeded his match; four cases in which the match exceeded the recipient; and, four cases in which they were equal. The value of the test statistic (using the normal approximation to the binomial distribution) is as follows:

$$z = (2T-n) / \sqrt{n} = 0.90$$

with $T =$ the number of + signs = 7

and $n =$ number of non-tied observations = 11

There is no significant difference between the number of + signs and the number of - signs.

The results are the same for the top 20 journals. There were 13 ties and 2 instances in which the recipients' research records exceeded the non-recipients. Using the binomial table, the probability of two + signs is .25. Therefore, the hypothesis that the research records are the same cannot be rejected.

Conclusions

The results of this case study shows that within the State University System of Florida, those management faculty identified as outstanding undergraduate teachers had a publication record not significantly different from non-recipients with similar characteristics such as rank and terminal degree. This was true of overall publications and of publications in top 20 journals. This may tend to indicate that outstanding teaching and research are not mutually exclusive. It should be noted, however, that 16 of the 30 faculty members examined had no publications during the 37-month period.

Table I
Top Twenty Journals

1.	<i>Administrative Science Quarterly</i>
2.	<i>Journal of Applied Psychology</i>
3.	<i>Organizational Behavior and Human Decision Processes</i>
4.	<i>Academy of Management Journal</i>
5.	<i>Psychological Bulletin</i>
6.	<i>Industrial and Labor Relations Review</i>
7.	<i>Journal of Personality and Social Psychology</i>
8.	<i>Academy of Management Review</i>
9.	<i>Industrial Relations</i>
10.	<i>Journal of Labor Economics</i>
11.	<i>Personnel Psychology</i>
12.	<i>American Psychologist</i>
13.	<i>Journal of Labor Research</i>
14.	<i>Journal of Vocational Behavior</i>
15.	<i>Journal of Applied Behavioural Science</i>
16.	<i>Occupational Psychology</i>
17.	<i>Sloan Management Review</i>
18.	<i>Journal of Conflict Resolution</i>
19.	<i>Human Relations</i>
20.	<i>Journal of Human Resources</i>

Source: Extejt and Smith (1990).

Table II
Distribution of Number of Publications

Number of Publications	Recipients		Non-Recipients	
	Overall	Top 20	Overall	Top 20
0	6	12	9	14
1	3	3	2	1
2	3	0	2	0
3	0	0	1	0
4	1	0	0	0
5	1	0	0	0
6	0	0	1	0
-				
-				
19	1	0	0	0

Table III
Data for Sign Test

Overall Research Publications															
Pair Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Recipient Publications	0	0	2	0	0	2	1	1	1	5	4	2	0	19	0
Non-Recipient Publications	2	0	6	0	0	3	0	0	0	0	2	1	0	0	1
Sign	-		-			-	+	+	+	+	+	+		+	
Publications in Top 20 Journals															
Pair Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Recipient Publications	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0
Non-Recipient Publications	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Sign						+		+							



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