

Developing and Maintaining Productive Researchers in Agricultural Education

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Teaching, research and service describe the threefold mission of the land-grant university. Most faculty members in agricultural education employed in land-grant universities subscribe to the proposition that all three dimensions of this mission are as important to agricultural education as they are to other areas of academic endeavor.

This article is concerned with the research function of the teaching-research-service mission. The literature on research productivity of faculty members in agricultural education is sparse. However, a review of productivity literature in the social and natural sciences provides a context for investigating the research productivity of agricultural educators.

Behmyer (1974) measured research productivity by the total number of articles published and the number of articles published over a two-year period. The sample, from data collected by the Carnegie Commission on the Future of Higher Education and the American Council on Education, was comprised of faculty meeting the following criteria: rank of at least instructor; holding a regular, full-time teaching appointment at a university or four-year college; a M.A. or Ph.D. degree; and a major teaching appointment in the arts and sciences departments in the humanities, natural sciences or social sciences. The results indicate relatively strong relationships between research productivity and both school type and institutional prestige. University faculty members publish significantly more research articles than their counterparts in four-year colleges. Faculty at higher prestige universities publish most. Results showed expressed interest in research over teaching to be the single best predictor of productivity. Full professors at high prestige, research-oriented universities are the most productive researchers. Productive faculty members are more likely to be tenured and to teach graduate students. High research producers express more interest in research, communicate more frequently with colleagues at other institutions and subscribe to more academic journals than do less productive faculty members.

Although faculty members who are productive researchers agree that publishing is an important aspect of the tenuring process, the most productive faculty most often work at institutions where the role expectations and reward systems are consistent with their career goals (Blackburn, Behmyer, & Hall, 1978). Working in the presence of research colleagues "may be considered one of the most important factors in creating the work environment for faculty" (Bean, 1983).

The research ambience of the university may exert a powerful influence over faculty members in agricultural education as well. When Mannebach, McKenna and Pfau (1984) reviewed the annual Summaries of Research and Development Activities in Agricultural Education from 1974 to 1982, they discovered that three universities accounted for over one-third of

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the research reported. Moreover, "Over two-thirds of the research was conducted by eleven of the 96 institutions included in the study."

Research Questions

The research reported in this article addresses the following questions:

1. How productive are agricultural education faculty members in generating new knowledge?
2. How does the research productivity of faculty members in agricultural education compare with faculty members in other vocational education service areas?
3. What factors encourage and enhance the research productivity of agricultural education?
4. What factors inhibit research productivity?
5. What can be done to increase research productivity in agricultural education?

Methods and Procedures

Kelly's (1982) study of the research productivity of faculty members in vocational education provides the data to address the research questions. The sample was faculty members in the various areas of vocational education employed in six research universities that were members of the university council for vocational education. To be included, the university must have been included in Clark and Guba's (1977) listing of the 24 universities that were the highest producers of education research or the university must have been in the top one-third of the 100 universities rated by Schubert (1979) as high presenters for the 1975 to 1978 annual meetings of the American Education Research Association. Also, the university must have faculty members in five vocational service areas, including agricultural education.

Eighty-six (84%) of the 101 faculty members contacted agreed to be interviewed. Twenty-seven (87%) of the 31 agricultural educators contacted agreed to be interviewed. Faculty members in agricultural education comprised one-third of the total sample.

The study combined qualitative and quantitative strategies. Data collection included the review of a curriculum vitae for each participant. This enabled the researcher to document the faculty member's research productivity. An index was calculated to qualify research productivity. From the literature, eight intercorrelated variables were identified as measures of research productivity. The variables are numbers of presentations, books, journal articles, popular articles, research reports, research grants, doctoral committees successfully chaired, and doctoral reading committees successfully completed. For each of the eight variables, a standard score (z score) was calculated for each faculty member. The eight z scores were summed for each faculty member and divided by the number of years since the faculty member had received the doctorate (using 1982 as the correction factor) to yield a corrected research productivity index for each faculty member.

A personal interview with each faculty member was used to gather qualitative information. This enabled the researcher to document a faculty member's research productivity. The transcripts of interviews with

the 27 agricultural educators were subjected to content analysis following the method outlined by Berelson (1954).

Findings

Research Productivity

Table 1, which describes the research productivity of faculty members in agricultural education, indicates that faculty members in agricultural education and home economics education are substantially less productive than faculty members in other areas of vocational education. There was wide diversity among agricultural education faculty members for each of the indicators of research productivity.

Table 1

Research Productivity of Faculty Members by Vocational Education Service Area

Variable	Means				
	Agric Educ (n=27)	Home Econ (n=16)	Business Office (n=13)	Dist Educ (n=8)	Voc Educ (n=22)
Years since doctorate	12.9	7.9	12.3	10.0	14.4
Number of:					
Presentations	41.8	25.3	57.1	35.5	100.8
Journal articles	15.1	10.8	18.2	10.4	29.8
Books & monographs	3.9	1.8	4.4	4.6	9.8
Popular articles	4.3	1.6	5.6	1.9	3.4
Research reports	6.3	2.0	4.1	2.8	12.7
Doctoral committees chaired	8.0	2.8	8.8	6.5	12.5
Doctoral committees completed	21.1	7.1	15.9	18.6	35.0
Research grants	2.5	2.1	2.3	1.4	5.8
Corrected research productivity index ^a	6.8	6.8	10.0	7.7	12.2

^aSum of z scores for each indicator of research productivity divided by the number of years since receipt of the doctoral degree.

The level of research productivity of agricultural education faculty members in contrast to other vocational education faculty members is

illustrated in Figure 1. Faculty members in agricultural education are underrepresented among faculty with the highest research productivity scores and overrepresented among faculty with the lowest research productivity scores. The contrast is more striking when the 10 faculty members with the highest research productivity scores and the 10 faculty members with the lowest research productivity scores are compared. No faculty members in agricultural education are included in the highest group; 6 of the 10 faculty members in the lowest group are in agricultural education.

Research Productivity Index

Fourth Quartile	+ + + # # # # # # # # # # # # # # # # # #
Third Quartile	+ + + + + + + + # # # # # # # # # # # # # #
Second Quartile	+ + + + + + # # # # # # # # # # # # # # # #
First Quartile	+ + + + + + + # # # # # # # # # # # # # # #

Key
 + Agricultural Education Faculty Member
 # Other Vocational Education Faculty

Figure 1. Comparison of research productivity of faculty members in agricultural education and other vocational education service areas

Factors that Encourage and Inhibit Research Productivity

Three-fourths of the faculty members in agricultural education earned the Ph.D. at large midwestern universities. Twelve hold degrees in agricultural education, nine have degrees in education and six earned the degree in vocational education.

The most helpful enabling experiences faculty members had with respect to research during graduate school fall into the following three categories:

1. Content enablers--courses in research methods and statistics, computer use, proposal and research critiques, work on actual research projects and getting work published.
2. Context enablers--Intellectual ambience factors such as work with other researchers as they conduct, teach and discuss research, discussion with other graduate students and the overall tone that is projected by the department and the university.
3. Collaborative factors--help from advisers or researchers, having a research fellowship or a dissertation research grant, and developing strong management skills by the example of others.

The following three factors were frequently reported as inhibitors: (a) lack of quality teaching about or reflection on research components; (b) no time for research as the press of teaching responsibilities seemed great; and (c) little or no perceived support from an adviser or significant others. In fact, having an adviser who is a competent researcher or having direct contact with an active researcher was deemed the most significant influence by over half of the agricultural education faculty members interviewed. Others credited their adviser with helping them get through the doctoral program and "learn the chain of reasoning" involved in research.

Upon completion of the doctorate, nearly 60% of the agricultural educators were offered a position at the doctoral institution they attended as a graduate student. Another 19% accepted positions at a research center or in another research oriented university. Others accepted administrative or teaching positions outside the university setting. Most have been in their present institution at least four years.

For agricultural educators, interacting with peers at research meetings and interacting by telephone are the favored methods of networking about research. The number of people with whom agricultural educators reported they discuss research ranged from 3 to 27 with an average of 9.

Although the typical agricultural education faculty member reads or skims four journals and three popular publications each month, there was quite a range in the number of periodicals read. Almost one-fourth of the group read or skim as few as two journals monthly while 10% review more than six journals on a regular basis.

Perceived institutional and departmental support for research are seen as the most important enablers to research productivity. Nine faculty members indicated that being at a research oriented university is critical, while 10 persons noted that the support of colleagues within the department is useful. The six persons who had discovered ways to relate their research and teaching responsibilities to each other also note this to be a positive factor.

Presentations at the National Agricultural Education Research Meeting and regional research conferences were noted by 10 faculty members as being significant. Such national and regional visibility for one's research brings additional opportunities for collaboration, publication and research grants. Agricultural educators reported that research grants provide resources for graduate assistants, clerical assistance and supplies that make it possible to plan and conduct research.

Agricultural education faculty members made it clear that productive researchers are self-starters with high motivation to do research. They also indicated that advising graduate students who are conducting research encourages their own research productivity.

One-third of the faculty members in agricultural education feel that agricultural education has not emphasized research and scholarship nearly enough. Sixteen of the 27 faculty members interviewed are primarily teaching or service oriented. Although some of the faculty members hold a 25% research appointment, it was felt that this is not enough time to do research. The consequences of this arrangement are that faculty members resort to not publishing very much, writing mostly review and synthesis articles or doing only fundable research. Three of the faculty members felt that their department's association with a college of education rather than a college of agriculture works to the detriment of their research productivity since opportunities for research support are more limited.

Several faculty members indicated that they felt deficient in research attitudes or research skills such as writing, statistics or research methodology. In all, one might say that some agricultural educators simply do not have research productivity as a high priority and thus, as one interviewee indicated, "do not work to minimize the inhibitors and maximize the enablers."

Conclusions and Recommendations

Faculty members in agricultural education in major research universities are less productive researchers than their colleagues in other vocational education service areas. Possible explanations for this level of research productivity reside in the factors that have been identified as enablers or inhibitors of research productivity.

The evidence is clear that several factors enable research productivity. An important factor is a faculty member who has specialized knowledge and skill in the design, conduct and reporting of research. These content enablers include, in addition to competence in research methodology and statistics, expertness in conceptualizing significant problems, knowledge of theory and research that impacts on the problems under investigation, the use of the computer as a research tool, skillfulness in interpretation and the talent to communicate clearly and concisely. Concomitant enablers are attitudinal and motivational traits of researchers that demand both productivity and scholarship.

The evidence is clear also that certain context factors contribute directly to the acquisition and further development of the competence and attitudes that enable research productivity. For the graduate student, these factors include, in addition to formal course work, active and meaningful participation in research planning all phases of the research process from formulating problems to reporting results. For the productive faculty member, this means continuing involvement in research efforts, the advising of graduate students and the supervision of their research, and collaborative efforts with other researchers. An essential companion to the context factors is collaboration, best described as a mentor for graduate students and junior faculty members and as a network of colleagues for experienced researchers.

In a real sense, the absence of these content, context and collaborative factors defines the major inhibitors to research productivity. The exception to this statement is that the degree of priority given research, both individually and institutionally, and the resources made available to support research, determine the extent to which the content, context and collaborative factors, even when present in abundance, actually result in research productivity. In agricultural education, past practice--and in some instances present practice--places higher priority on teaching and service than on research. Until agricultural education departments and faculties and the colleges and universities in which they are located assign a priority and monetary resources to the research mission that equal the priority and resource allocated to teaching and service, the mere presence of the enablers of research productivity is likely to yield less than what is expected or possible. Major strides in research productivity are improbable as long as the research function is the incidental and less well funded part of the teaching-service-research mission of agricultural education in land-grant universities.

We conclude with an additional important recommendation. The quest for higher research productivity by agricultural education faculty members will be for naught if it is not accompanied by an equivalent zeal for the

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