

An Empirical Analysis of the Literature Cited in the *Journal of Agricultural Education*

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Thirty-one volumes of the *Journal of Agricultural Education* (formerly *AATEA Journal*) have been published since 1961. Over the years, the journal has undergone a number of changes in terms of size, format, content, frequency of publishing (from three issues to four in 1983) and finally, a change in the name from *AATEA Journal* to the *Journal of Agricultural Education* (*JAE*).

During the *Journal's* span of 31 years, a number of researchers have examined various research and publishing aspects in the agricultural education profession. The most prominent subjects discussed included empirical analysis of the *Journal of Agricultural Education* during the eighties (Radhakrishna and Jackson, 1992); what topics were cited and who was cited (Moore, 1991); reader opinions of the *JAE* (Newman, 1990 & Williams, 1982); statistical procedures used by agricultural educators in reporting research findings (Bowen, Rollins, Baggett & Miller, 1990; Manneback, McKenna & Pfau, 1984; and Warmbrod, 1986); and agricultural and extension education research published in terms of program area, area of focus, and scope (Crunkilton, 1988).

Researchers in other disciplines have also examined research and publishing aspects within their professions. The most notable publications reviewed included the *Journal of Consumer Research* (Wind, 1977), the *Journal of Marketing Research* (Goldman, 1979), the *Journal of Applied Psychology* (Cox, 1977) and *Home Economics Research Journal* (Goldsmith, 1983). Although the scholars in the agricultural education profession have addressed research and publishing activities in a variety of ways, literature is scarce with studies that analyzed the citation characteristics of agricultural educators. "Citations are a popular indicator of the behavior of scholars because they

reflect on author's debt to earlier works, constitute a statement as to which of these works are important, and are a means by which authors anchor their work and relate it to earlier research" (Goldman, 1979, p. 485). In addition, citations may also reflect an author's scope of reading and his/her scientific interests (Berg, 1971; Broadus, 1967; and Crane, 1972).

A number of researchers in various scientific disciplines have considered citation structure as a good indicator of the nature of scientific activity. In addition, citation structure also characterizes a field of study, defines its boundaries, and explains how a discipline is interrelated with other fields of study (Narin, Carpenter and Berlt, 1972). Prominent scholars who have analyzed citation structures within their discipline include Goldman (1979)--*Journal of Marketing Research* and *Journal of Marketing*, Broadus (1952)--*American Sociological Review*, Hamelman, Edward & Mazze (1972)--*Finance Journals*, and Goldsmith (1983)--*Home Economics Research Journal*. These scholars have concluded that scientists use various methods to disseminate their research findings. Journals and books were the most widely used methods for communicating research findings, followed by working papers, presentations at research meetings and conference proceedings.

Findings from these studies also indicated that publications such as *Journal of Marketing Research* and *Journal of Marketing*, *American Sociological Review* and *Finance Journals* have a greater degree of self-identity than that of *Home Economics Research Journal*. A discipline is considered to have strong self-identity and compactness if a large proportion of the citations are concentrated in journals related to that area or

field of study (Goldman, 1979). For example, Goldman (1979) reported that 41.5 percent of all citations in the marketing discipline were concentrated in two journals, i.e., *Journal of Marketing Research* and *Journal of Marketing* whereas, only 16 percent of the citations in the home economics discipline were from its two major journals, *Home Economics Research Journal* and *Journal of Home Economics*.

Objectives

The primary purpose of this study was to examine the nature of sources cited (citation analysis) by the authors of articles published in five volumes of the *JAE* during the decade 1981-1990. The objectives of the study were to:

Determine the citation structure of the *JAE* over a 10 year period.

Determine the relative importance of types of citations referenced by authors publishing articles in the *JAE*.

Determine the structure of the agricultural and extension education discipline as indicated by self-identity and compactness.

Procedures

A census of all articles published in the *Journal of Agricultural Education (JAE)* during the decade 1981-90 was considered for this study. Using a systematic sampling procedure, every second year in the decade was selected for analysis. This resulted in the selection of the years, 1982, 1984, 1986, 1988, and 1990.

A total of 19 issues and 162 articles were analyzed to accomplish the study objectives. The selections of this decade and years for analysis were based on three criteria. First, the journal changed its publication from three to four issues per year, becoming a quarterly. Second, a scientific journal reflects the tastes and preferences of the editor and the reviewers, as well as editorial policies. The *JAE* had three editors during this decade: John Hillison (1982-84), Kirby Barrick (1985-1988), Philip Buriak (1989-91). Third, the *Journal* changed its name from *Journal of AATEA* to *Journal of Agricultural Education (JAE)* in 1988.

For categorizing citations, the classification of citations by Goldsmith (1983) was consulted. Goldsmith's classification includes books, journal articles, doctoral dissertations/masters' theses, conference proceedings and paper presentations, magazines, and bulletins and reports. Goldsmith's classification of citations was slightly modified to reflect the study needs. For example, dissertation abstracts were included in the dissertation and masters' these category. Staff studies, summary research reports, and ERIC documentation abstracts were included in the bulletin/reports category. The total number of citations per article, per issue, and per year were also determined. In addition, it was also determined how many citations were from the following types of publications: books, journal articles, doctoral dissertation and masters' theses, paper presentations and conference proceedings, bulletins and reports. Frequencies, percentages and means were used to describe the data.

Findings

Objective One

Scientists use a variety of methods to communicate their research findings. An attempt was made in this study to examine what sources agricultural educators are reading and using in their research. Data suggests that the mean number of articles cited has increased over the decade indicating a greater breadth of knowledge and reading among agricultural educators. Similarly, the number of articles published and the number of citations used has also increased over the years. During the sample years, the number of citations ranged from 4.5 per article in 1982 to 11.2 in 1990, with an overall mean of 9.02 (Table 1). It appears that agricultural educators tend to refer fewer citations per article (9.02) as compared to home economists (16.9) (Goldsmith, 1983).

Objectives Two and Three

Agricultural educators are most likely to quote information from journals (26%), followed by books (24%), bulletins and reports (23), dissertations and theses (13%), magazines and conference proceedings (8%) (Table 2). The use of journals has increased over the years. Similarly, the use of books, bulletins/reports, dissertations/theses and conference proceedings

has increased. The findings indicate a decline in the use of magazines by agricultural educators.

Since more than 25 percent of the sources cited by agricultural educators are from journals, it is important to know what journals are being used

Table 1. Average Number and Distribution of Articles and Citations by Year and Total (1981-1990)

	Year					Total
	1982	1984	1986	1988	1990	
Number of Articles	19	33	35	30	45	162
Number of Citations	86	224	314	332	506	1462
Average Number of Citations Per Article	4.5	6.8	9.0	11.1	11.2	9.0

Table 2. Number and Percentage Distribution of Citations by Type, Year and Total (1981-90)

Citation Type	Year					Total	%
	1982	1984	1986	1988	1990		
Journals	18	41	69	87	162	377	26.0
Books	13	57	94	73	119	356	24.0
Bulletins/Reports	28	57	59	79	112	335	22.9
Dissertations/Theses	23	39	33	38	54	187	13.0
Magazines	1	24	46	32	19	122	8.3
Papers/Proceedings	3	6	13	23	40	85	5.8

Table 3. Number, Percentage and Rank Ordering of Ten Most Cited Journals by Year and Total

Journal	Year					Total	%/Rank
	1982	1984	1986	1988	1990		
<i>Journal of Agricultural Education</i>	3	13	13	22	34	85	22.5/1
<i>Educational and Psychological Measurement</i>	1	2	2	3	12	20	5.4/2
<i>Journal of Extension</i>	3	-	2	8	6	19	5.3/3
<i>Journal of Teacher Education</i>	-	1	3	3	8	15	3.9/4
<i>Journal of Applied Psychology</i>	-	2	5	1	2	10	2.6/5
<i>Journal of Vocational Education Research</i>	-	1	-	3	6	10	2.6/5
<i>American Vocational Journal</i>	-	1	4	-	3	8	2.1/6
<i>NACTA Journal</i>	1	2	-	1	3	7	1.8/7
<i>Administrative Science Quarterly</i>	-	4	3	-	-	7	1.8/7
<i>Educational Researcher</i>	-	-	1	2	3	6	1.6/8
<i>Adult Education</i>	-	4	-	2	-	6	1.6/8
<i>Other Journals</i>	10	11	36	42	85	184	48.8

by agricultural educators. *The Journal of Agricultural Education* (22.5%) is the most often cited, followed by *Educational and Psychological Measurement* (5.4%), and *Journal of Extension* (5.3%) (Table 3). Findings also indicate that agricultural educators often cite journals from other disciplines, which indicates the interdisciplinary nature and diversity of the profession's research and reading characteristics.

The journals used by scholars and the nature of citation distribution are two key factors that determine the structural aspects of a discipline. If a discipline has a strong self-identity, the researchers in that discipline build on each other's

work. According to Crane (1972), extensive cross-referencing by authors in the same area indicates internal bonds, which reflect the structure and identify of a discipline. Similarly, if publications in a discipline are easy to locate because they only appear in a few journals, the discipline can be considered "compact." Greater compactness contributes to a stronger internal structure and self-identity in a discipline (Goldman, 1979, p. 489).

The discipline appears to have a strong self-identity, which suggests that agricultural educators tend to build on each other's work. In addition, the agricultural education discipline is compact

because most of the listed citations are concentrated in three specific journals, the *Journal of Agricultural Education*, *Journal of Extensions* and *Educational and Psychological Measurement*.

Conclusions and/or Recommendations

Journal analysis can provide a means of assessing key factors that usually indicate the research and publishing characteristics of a profession. This study attempted to identify the characteristics of literature cited by agricultural educators in the *Journal of Agricultural Education*.

The discipline of agricultural education appears to have a strong self-identify and compactness. This finding suggests that the *Journal's* editorial and review boards consider expanding the scope and breadth of the publication. This expansion may involve publishing research studies conducted in "nontraditional" topics that are currently pursued by many agricultural educators. According to Bowen, Radhakrishna, and Jackson (1991), agricultural and extension education faculty have been distributing more of their time to activities that have not traditionally been included in *JAE*. Bowen, et al. (1991) reported that the respondents to an agricultural and extension education faculty survey indicated that they were devoting more time to extension education (18.8%), administration (27.1%), and international agricultural education (8.6%) activities.

Agricultural education's narrow focus has been previously addressed by scholars, such as Warmbrod (1986), who indicated that despite the fact that agricultural education research has "made great strides" during the last two decades, we must concentrate on building a stronger conceptual/theoretical framework. Moore (1991) indicated that the profession must be on a continuous spiral upward and conduct more theory building research. He also suggested that both faculty and graduate students should seriously consider the scope and importance of their research topics before publishing.

The Editorial Review Board should compare the level of acceptance rates in other journals to that of the *JAE*. It appears that the level of acceptance rate in social sciences is comparatively low when compared to physical or natural sciences. The level of acceptance is relatively low in the *JAE* (33%) than in other

journals related to the profession: *Journal of Applied Communications*--85%; *NACTA Journal*--72%; *Journal of Extension*--36.5%; and *Journal of Vocational and Technical Education*--38% (Bowen, 1990). Examination of the level of acceptance rates in other related journals may provide a justification for accepting manuscripts in the nontraditional areas.

On the basis of the data collected in this study, agricultural educators and the *Journal of Agricultural Education* Editorial and Review Board should consider "branching out" by conducting and publishing research in nontraditional areas of agricultural education. The profession must also examine and cite more research conducted in other disciplines and incorporate those findings, conclusions and recommendations in order to build a stronger framework and continue broadening the agricultural educator's focus and breadth of knowledge.

This study should be replicated periodically, at least once in ten years to determine the changes that have taken place as a result of research and development efforts in the profession. Such studies may help the profession to adequately respond to the challenges faced by the profession.

The editorial review board of the *JAE* should consider bringing about a special volume addressing a specific or common theme important to the agricultural education profession.

Faculty who teach and advise graduate students aspiring to become faculty members should use the findings of this study to help them better understand the nature of publishing activities in the agricultural education profession.

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