

Research Priorities Perceived by Agricultural Education Post-Graduates in Eswatini

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Abstract

There is a need for Agricultural Education researchers to investigate where the discipline has been in order to focus future research. However, no study has been conducted to identify research priority areas for Agricultural Education in Eswatini. Thus, this study sought to identify research priority areas for Agricultural Education in Eswatini. This was a descriptive survey targeting a census of master's degree graduates (N=48), completed from 1996 to 2017 in Agricultural Education at the University of Eswatini. Validity of the instrument was ensured through the use of five experts from the Department of Agricultural Education and Extension (AEE), Faculty of Agriculture at the University of Eswatini (UNESWA). The inter-item reliability was determined using Cronbach's Alpha and the reliability coefficient was found to be $r=.986$ meaning the questionnaire was 98.6% reliable. Data analysis was performed using descriptive and inferential statistics. Findings of the study revealed that all the primary and secondary themes were research priorities. The leading primary research theme was Delivery methodologies while secondary research theme was Creative thinking and problem-solving. Therefore, the study concluded that research in agriculture must be informed and guided by the research priority areas established in the study. Consequently, Agricultural Education discipline in the Kingdom of Eswatini needs to have a research agenda that will be directed by the research priorities established in this study.

Keywords: Agricultural Education; primary themes; post-graduate; research priority Areas; secondary themes.

1. Introduction

“Researching to research” is a line of inquiry to focus the profession on salient problems that are significant to the future of agricultural education [1]. Reference [2] noted that “*there is a need to re-examine Agricultural Education in a future that has already happened.*” Similarly, a need also arose for Agricultural Education researchers to understand where the discipline has been in order to focus future research [3]. There has also been a call to examine the essence of research in Agricultural Education [4].

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Figure 1 summarises the conception of Agricultural Education adopted from [5]. The footing of the discipline is basically on biology, physical science, psychology and sociology. The discipline is therefore founded on agriculture and education. Thus, the discipline itself focuses on the learning as it pertains to agriculture and education. The discipline operates through the process of curriculum planning; delivery methodologies and programme evaluation. Settings of the discipline involve agencies, schools, universities, extension and industries.

Reference [6] grouped the Agricultural Education research activities into four main research problem areas: (i) “Knowledge base for teaching and learning”; (ii) “Curriculum programme planning”; (iii) “Delivery methodologies”; and (iv) “Programme relevance and effectiveness”. These problem areas were further divided into the objectives of research in Agricultural Education. The Knowledge base for teaching and learning has the following objectives: creative thinking and problem solving, individual achievement, and professional preparation and competence. Curriculum programme planning entails teaching basic and academic skills; and needs of future agricultural workforce.

Delivery methodologies relate to educational methodologies for teaching and learning; and innovative instructional technologies. Finally, Programme relevance and effectiveness involves the history, philosophy, future, and policy in Agricultural Education; faculty and staff development, and evaluation of teaching or programmes. Reference [7] used the problem areas to represent primary research themes and the research of objectives of the dimension to represent the secondary research themes in Agricultural Education.

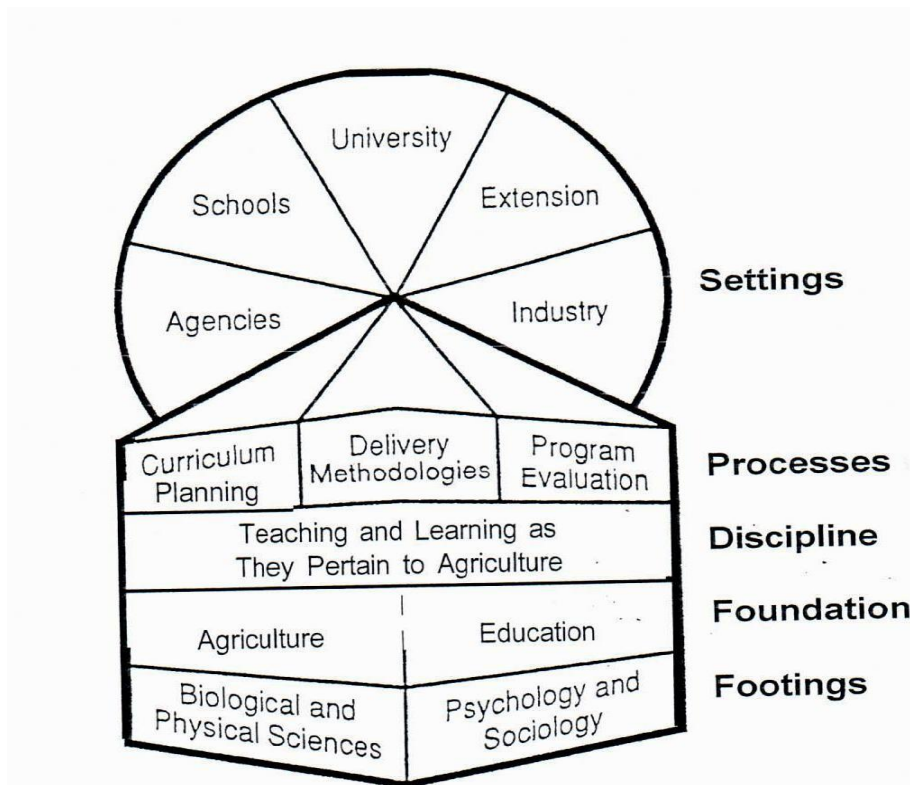


Figure 1: Conception of Agricultural Education.

Adopted from Williams D. L. (1991) - Focusing Agricultural Education research. Strategies for the discipline. Agricultural Education as a young discipline emerged in the early 1900s [5]. In Africa, Agricultural Education started in the 1920s [8] and reached Eswatini in 1973 [9]. Late in the 1970s to the early 1980s, agricultural educators began believing in both knowledge and facts coming from empirical investigation. Agricultural Education research became a way of verifying existing knowledge, creating new knowledge, and for disseminating and applying that knowledge. Hence, Silva-Guerrero and Sutphin [1] argued that the future of Agricultural Education depends on the development and application of new knowledge through research. It depends upon many variables; the most important of which is acquisition and application of new knowledge generated from research [10]. Unfortunately, it was engulfed with numerous challenges.

Previously, it has been difficult to appraise the impact of Agricultural Education, and equally difficult was to perceive its potential [5]. Reference [11] posited that agricultural educators are not “driving” the profession; they spend their time “*dabbling in esoteric research that does not have much relevance to the real world*” (p.1). Agricultural Education research has been cited as too shallow to develop essential understandings, focused on ancillary areas, and often unrelated to what is already known [12, 13, 14, 15, 1, 16]. Reference [17] noted that research work in Agricultural Education was not cumulative; that is, it lacked depth and sound theoretical framework. In Thailand, Reference [18] found that Agricultural Education was not focused, thus recommended that a national forum be formed, to revitalise the total system of Agricultural Education.

Since the 1990s, rapid growth in research and publishing activities in Agricultural Education resulted in a plethora of Agricultural Education literature [19]. Reference [20] concluded that the institutional demands of research, teaching, extension, and service often allow one area to suffer to meet the expectations of another. If research suffers, then every aspect of the Agricultural Education discipline suffers with it. Reference [21] found that some thematic areas in Agricultural Education were researched while others had not been researched; thus, concluded that research in Agricultural Education lacked focus.

Reference [22] concluded that it is critical for practitioners to examine the knowledge base of the field to allow the profession to reflect upon actions and ultimately improve the discipline. Reference [23] identified the need for Agricultural Education to know where it can and should go with research in its pursuit to develop empirical knowledge. Reference [15] identified the need for Agricultural Education research to become more focused, coordinated, and conducted passionately. Reference [47]’s expression of the need to focus the Agricultural Education discipline by examining its knowledge base, and by reviewing its literature, which calls for use of a holistic approach to examine research in Agricultural Education.

Few specific calls in Agricultural Education have been made to examine the essence of its research; yet, there is a need to understand where the discipline has been, to allow the profession to better understand where to focus research efforts in the future. A need arose to re-examine Agricultural Education in a future that has already happened [24]. Previous research has questioned the discipline on (i) how we can be sure where we are headed with research, (ii) if the direction is adequate and appropriate, and (iii) if we are clear as to where we have been?

Understanding research occurring in Agricultural Education will enable researchers to determine what futuristic research should be conducted in the discipline [24]. Reference [25] unveiled the need for structuring and identifying a research agenda can be valuable for maintaining compatibility with the national research priorities among other things.

The National Research Agenda (NRA) for the American Association for Agricultural Education (AAAE) was developed in 2007 [26]; revised in 2011 to outline research priority areas [27] and also revisited in 2016 to reconsider research priority areas [28]. The NRA was created as a guide for developing futuristic research [26]. The current National Research Agenda of 2016 – 2020 presents research priority areas in the following areas: (i) public and policy maker understanding of agriculture and natural resources [29, 30]; (ii) new technologies, practices, and products adoption decisions [31]; (iii) sufficient scientific and professional workforce that addresses the challenges of the 21st century [32]; (iv) meaningful, engaged learning in all environments [33]; (v) efficient and effective Agricultural Education programmes [34]; (vi) vibrant, resilient communities [35]; and (vii) addressing complex problems [36].

Reference [4] presented the following research priorities in food, agriculture, natural resources, health and family; need assessment; instructional and programme delivery approaches; youth leadership and development; and evaluation [4]. Reference [1] found that integrating new technologies, improving the programme, and documenting programme effectiveness were the highest research priority areas in secondary school. Reference [16] advocated for a broader research agenda to include extension education, communications, and non-vocational education in agriculture, post-secondary education, and Agricultural Education in higher education. Research conducted by [40] asserted that research priority categories for vocational education were: (i) programme development and improvement, (ii) policy studies in vocational education, (iii) effectiveness of vocational education, (iv) basic skills development in vocational education, (v) collaborative relationships in vocational education, and (vi) vocational education personnel development.

A study that sought to describe the future research priorities for Agricultural Education in Illinois using Delphi study found the following as leading future research priorities for Agricultural Education: new curriculum requirements in secondary and post-secondary education; knowledge of local school counsellors about the total agriculture industry field and the opportunities for young people; effective methods of teaching agricultural literacy; and benefits received by funding secondary agriculture programmes [39]. Reference ([5] conducted a study on strategies for the discipline to focus Agricultural Education research. At the top of the list, Williams [5] proposed the following strategies for focusing Agricultural Education: (i) comparing national agricultural goals with dimensions of Agricultural Education; (ii) matching Agricultural Education with agricultural centres of excellence; (iii) forming partnership with agencies; (iv) tying Agricultural Education to educational centre of excellence such as instructional technology, special education, science education and environmental education; (v) developing in-depth theoretical framework for Agricultural Education research; (vi) planning research programmes to develop centres for excellence in Agricultural Education.

Several studies related to Agricultural Education research have been conducted by researchers in Eswatini. Reference [41] conducted a study on Agricultural Education research projects at UNESWA from 2000 to 2008.

Reference [42] conducted a study focusing on the “*Analysis of student dissertation In Agricultural Education of the University of Swaziland.*” Similarly, Reference [43] conducted a study entitled “*Analysis of the Agricultural Education research conducted in Swaziland.*” This study came after a study conducted by [44] on summaries of students’ Agricultural Education dissertations completed between 1991 and 1995 at the University of Swaziland. A synthesis of the Agricultural Education students’ dissertations of the period from 1985 to 1990 was conducted by [45] at the University of Swaziland. Dlamini [46] also carried out a study with the need to determine priorities in Agricultural Education and Extension in Swaziland.

Recently, Reference [7] using content analysis established the gaps in undergraduate research conducted in [48] also used content analysis to reveal Agricultural Education research gaps by post-graduate students in Eswatini. In another study [49], using a Delphi technique engaged Agricultural Education experts to find out the thematic areas that had been under-researched in Eswatini. There is no study that has been conducted on Agricultural Education research priorities in Eswatini. Even the study conducted by [46], focused on research priorities in Agricultural Education and Extension. Therefore, a study that focuses strictly on the research priorities in Agricultural Education in Eswatini was necessary; especially, that a lot has changed. Thus, this study sought to determine the Agricultural Education research priorities in Eswatini.

2. Theoretical Framework

This study was framed by the General Systems Theory postulated by Kenneth Boulding in 1956 [50]. The General Systems Theory is considered as the skeleton of science in the sense that it aims to “*provide a framework or structure of systems on which to hang the flesh and blood of particular disciplines and particular subject matters in an orderly and coherent corpus of knowledge*” (p. 208) . The General Systems Theory studies all thinkable relationships abstracted from any concrete situation or body of empirical knowledge. Systems theory deals with epistemological processes underlying knowledge acquisition [51].

The General Systems Theory seeks to develop something like a "spectrum" of theories - a system of systems; which may perform the function of a "gestalt" in theoretical construction. "Gestalts" in special fields have been of great value in directing research towards the gaps which they reveal. The "system of systems" might be of value in directing the attention of theorists towards gaps in theoretical models, and might even be of value in pointing towards methods of filling them.

The demand for the General Systems Theory under one brand name or another cannot be denied. Something which might be called an "interdisciplinary movement" has been abroad for some time. The emerging of hybrid disciplines such as Agricultural Education is clear interdisciplinary movement advocated by the General Systems Theory. The General Systems Theory works to develop theoretical models having applicability to two or more of the integrated specialisations such as Agricultural Education [52]. A growing dissatisfaction is apparent to be limited in theories within the discipline. This clearly indicates the need for interdisciplinary movement towards empirical work using the General Systems Theory. The General Systems Theory was relevant for this as it is helpful in directing research in integrated specialisations such as Agricultural Education. This is because the theory may perform the function of a "gestalt" in theoretical construction which has a great

value in directing research towards the gaps which they reveal.

3. Objectives and Hypothesis of the study

3.1 Purpose and objectives

The purpose of the study was to identify research priority areas in Agricultural Education in Eswatini. The objectives of the study were to:

1. describe the demographic characteristics and background information of the respondents.
2. identify primary research themes that are a priority in Agricultural Education in Eswatini;
3. identify secondary research themes that are a priority in Agricultural Education in Eswatini;
4. identify differences between the research priority areas and selected demographic and background information of the Agricultural Education post graduates in Eswatini.

3.2 Hypotheses of the study

Null Hypothesis (H_0): There is no significant difference between the selected demographic characteristics and background information and the research priorities in Agricultural Education in Eswatini.

Alternative Hypothesis (H_1): There is no significant difference between the selected demographic characteristics and background information and the research priorities in Agricultural Education in Eswatini.

4. Methodology

The design of the study was a descriptive research. The target population of the study was a census of post-graduates (N=48), graduated from 1996 to 2017 in Agricultural Education at the University of Eswatini. The study was framed using the General Systems Theory [50]. A self-administered questionnaire was developed from the literature to solicit data from Agricultural Education Master's degree graduates. Section A of the questionnaire had a numerical rating scale: 1=Not a priority; 2=slightly low priority; 3= Low priority; 4=Moderate priority; 5=High priority; 6=Very high priority. Section B of the questionnaire was on demographic characteristics and background information. The questionnaire was validated by a panel of experts (n=5) from the Department of AEE of the University of Eswatini and two teacher training college lecturers. Post-hoc reliability of the questionnaire was calculated using Cronbach's Alpha which was found to be $r=0.986$. Data were collected by means of a questionnaire from December 2017 to January 2018. Ethical considerations were ensured by the signing of a consent form. The respondents and participants were assured of confidentiality, anonymity and privacy; and that their participation in the study was voluntary – that is, they could withdraw their participation without suffering any repercussion. Inferential and descriptive statistics were used in data analysis.

5. Findings and discussion of the study

5.1. Demographic characteristics and background information

Table 1 depicts that most of the respondents were male graduates (n=30, 62.5%). A majority of the respondents were in the age range of 46 – 50 years (n=12, 25.0%) and were married (n=39, 81.3%). An overwhelming majority had master's degree (n=47, 97.9%) and completed from 2011-2015 (n=23, 47.9%). The respondents came from rural areas (n=37, 78.7%). Most of the respondents were teachers (n= 18, 37.5%) employed by the Government of Eswatini through the Ministry of Education and Training (n=46, 95.8%).

Table 1: Demographic characteristics and background information (N=48).

Demographic characteristics and background information	f	%
Sex		
Female	18	37.5
Male	30	62.5
Age		
Less than 35 years	5	10.4
36-40 years	10	20.8
41 – 45 years	7	14.6
46 – 50 years	12	25.0
51 – 55 years	6	12.5
Over 55 years	8	16.7
Marital Status		
Single	9	18.8
Married	39	81.3
Educational qualification		
Masters Degree	47	97.9
Doctorate Degree	1	2.1
Graduation Year		
1996 - 2000	9	18.8
2001 - 2005	4	8.3
2006 - 2010	6	12.5
2011 - 2015	23	47.9
2016 – present (2017)	6	12.5
Home location		
Rural	37	78.7
Urban	10	21.3
Occupation		
Lecturer	7	14.6
Teacher	18	37.5
Principal / College administrator	11	22.9
Curriculum designer	1	2.1
Curriculum evaluator	1	2.1
Inspector Regional education officer / Teaching Service	5	10.4
Member of Parliament	1	2.1
Private sector Administrator / Director	4	8.4
Employer		
Government	46	95.8
Private sector	1	2.1
Self-employed	1	2.1

5.2. Primary theme research priorities in Agricultural Education

Table 2 revealed that all the primary themes were high research priority in Agricultural Education ($\mu=4.89$, $\sigma=0.75$). Respondents rated Delivery methodologies as the highest among the primary research themes ($\mu=5.00$, $\sigma=0.73$). Knowledge base for teaching and learning was rated as a second research priority among the primary themes in Agricultural Education ($\mu =4.94$, $\sigma=0.69$). Programme relevance and effectiveness ($\mu=4.86$, $\sigma=0.80$) and Curriculum programme planning ($\mu=4.77$, $\sigma=0.78$) were also considered as primary thematic research priorities in Agricultural Education. These research priority areas reported in this study have similarities with National Research Agenda in the USA: 2007-2010 [26]; 2011-2015 [27]; and 2016 – 2020. Unfortunately, Agricultural Education in Eswatini still lacks a research agenda. For instance, the American National Research Agenda of 2016 – 2020 presents the following research priority areas: (i) public and policy maker understanding of agriculture and natural resources [29, 30]; (ii) new technologies, practices, and products adoption decisions [31]); (iii) sufficient scientific and professional workforce that addresses the challenges of the 21st century [32]; (iv) meaningful, engaged learning in all environments [33]; (v) efficient and effective Agricultural Education programmes [34]; (vi) vibrant, resilient communities [35]; and (vii) addressing complex problems [36]. The findings are also harmonious with those by Edgar, Briers and Rutherford [4], Knight [37], and Radhakrishna and Xu [38].

Table 2: Agricultural Education Primary Themes that are Priority Research Areas in Eswatini (N=48).

Primary themes	μ	σ
Delivery methodologies	5.00	0.73
Knowledge base for teaching	4.94	0.69
Programme relevance and effectiveness	4.86	0.80
Curriculum planning	4.77	0.78
<i>Overall</i>	<i>4.89</i>	<i>0.75</i>

Cut off points— $\mu \leq 1.45$ [1]=not priority; 1.45-2.44 [2]= very low priority; 2.45-3.44 [3]=low priority; 3.45-4.44 [4]=priority; 4.45-5.44 [5]= high priority; 5.45-6.00 [6]=very high priority.

5.3 Secondary theme research priorities in Agricultural Education

Table 2 revealed that all the secondary themes were considered by respondents having high research priority in Agricultural Education. Creative thinking and problem solving ($\mu =5.17$, $\sigma=0.74$); Innovative instructional technologies ($\mu =5.12$, $\sigma=0.81$); and Evaluation of teaching or programmes ($\mu =5.04$, $\sigma=0.79$) were the leading secondary theme research priorities in Agricultural Education. The findings of this study are consistent with that from Silva-Guerrero and Sutphin [1] regarding the following research areas: Professional preparation and competence, Innovative instructional technologies, and Evaluation of teaching or programmes. The findings of the study also confirm those from Edgar, Briers and Rutherford [4] and Warmbrod [16] that research priority in Agricultural Education pertains professional preparation and competence, innovative instructional technologies, and faculty and staff development. Similarly, Haper [39] identified a number of Agricultural Education research priorities including cost versus benefits of secondary agriculture education programmes; benefits of Supervised Agricultural Experience; qualities which agriculture employers want in their future employees; improve agriculture education enrolments at all education levels; models for teacher recruitment and retention;

integrating agriculture into all areas of curriculum; technology and internet; and so on [39].

Table 2: Secondary Themes that are Priority Research Areas in Agricultural Education in Eswatini.

Secondary themes	μ	σ
Creative thinking and problem-solving ^a	5.17	0.74
Innovative instructional technologies ^c	5.12	0.81
Evaluation of teaching or programmes ^d	5.04	0.79
Educational methodologies for teaching and learning ^c	4.91	0.74
Professional preparation and competence ^a	4.90	0.78
Faculty and staff development ^d	4.81	0.80
Needs for future agricultural workforce ^b	4.80	0.76
Individual achievement ^a	4.77	0.84
Teaching basic and academic skills ^b	4.74	0.90
History, philosophy, future and policy in Agricultural Education ^d	4.60	1.18

Cut off points $-\mu \leq 1.45$ [1]=not priority; 1.45-2.44 [2]= very low priority; 2.45-3.44 [3] =low priority[3]; 3.45-4.44 [4]=priority; 4.45-5.44 [5]= high priority; 5.45-6.00 [6]=very high priority. $\sigma \leq 1.44$ – consistent rating, >1.44 - inconsistent rating.

Primary themes: a= Knowledge base for teaching; b=Curriculum planning;

c= Delivery methodologies and d= Programme

relevance and effectiveness.

5.4. Differences between research priority areas and selected demographic characteristics and background information

Independent t-test and analysis of variance for dichotomous and multichotomous demographic variables respectively were used to identify differences between research priority areas and selected demographic characteristics and background information. Table 3 reveals that there was no-significant difference between the research priority areas and the selected demographic characteristics and background information. Therefore, the researchers failed to reject the null hypothesis that there is no significant difference between the selected demographic characteristics and background information and the research priorities in Agricultural Education in Eswatini.

Table 3: Differences on the research priority areas by selected demographic characteristics and background information.

Demographic variables	Value	p
Sex	t=.444	.66
Age	F=1.404	.26
Marital Status	t=.510	.61
Graduation Year	F=.967	.44
Home location	t=.247	.80
Occupation	F=.514	.79

6. Conclusion and Implications

All the primary themes - Delivery methodologies, Knowledge base for teaching and learning, Programme relevance and effectiveness and Curriculum programme planning are a research priority in Agricultural Education. All the secondary themes are also a research priority in Agricultural Education. Creative thinking and problem solving, Innovative instructional technologies, and Evaluation of teaching or programmes are the top most secondary theme research priorities for Agricultural Education in Eswatini. The findings of the study imply that Agricultural Education researchers must be informed and guided by the thematic research priorities established in the study. Since, Agricultural Education is a young discipline in Eswatini [9]; focusing the research guided by the thematic research priorities established in the study is imperative. The findings also have implications for Agricultural Education globally. Again, since Agricultural Education is young, emerging early in the 1900s internationally [5], and in the 1920s in Africa [8] thematic research priorities must be established and be used to direct research in different countries around the globe.

7. Recommendations for Action

The following recommendations emanated from the study:

1. A need to periodically (that is, every 5 years) analyse research in order to update research priority areas in Agricultural Education in Eswatini is evident.
2. The Agricultural Education discipline in the Kingdom of Eswatini needs to have a research agenda that will be directed by the research priorities established in this study.

Acknowledgements

The author would like acknowledge Professor M. P Dlamini and M. A, Dube from the University of Eswatini for their technical assistance in this research. Also, the author is appreciates the assistance provided by Library Staff of the University of Eswatini especially from Luyengo Campus during data collection. Credit is also due to the secretary in the Institute of Post Graduate Studies at UNESWA, for availing theses that could not be found in the University Libraries at the Luyengo and Kwaluseni Campuses. Special accolades are also due to Mr. E. M. Manana, former lecturer at Ngwane College for the tireless effort put in proofreading and editing this article.

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