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Gap Analysis for Future Agricultural Education Research in Eswatini, Swaziland

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Abstract

From the late 1970s to the early 1980s, agriculture educators began to use research as a way of verifying, creating, disseminating and applying new knowledge. However, existing literature is inconclusive on research themes covered and yet to be covered in Agricultural Education in Eswatini. Thus, this study sought to identify themes and gaps for future research in Agricultural Education in Eswatini. This was a qualitative study employing desk review in data collection. Trustworthiness of the content analysis guide was ensured through the use of experts from the Department of Agricultural Education and Extension (AEE) at the University of Eswatini (UNESWA). Data analysis was performed using frequencies and percentages. Findings of the study revealed that in Agricultural Education, gaps existed in the following thematic areas: primary themes - programme delivery methodologies and curriculum programme planning; and secondary themes- creative thinking and problem-solving; innovative instructional technologies; teaching basic and academic skills; professional staff development; educational methodologies for teaching and learning; professional preparation and competence; and needs of future agricultural workforce. The study concluded that research conducted in Agricultural Education in Eswatini is imbalanced in both primary and secondary research themes. Therefore, the Department of AEE at UNESWA must establish a research agenda to ensure that the research conducted is thematically balanced.

Keywords: Agricultural Education, primary themes, research project, research thematic areas, secondary themes, University of Eswatini

Introduction

Agricultural Education is relatively a young discipline that emerged in the early 1900s (Williams, 1991). In Africa, Agricultural Education emerged in the 1920s (Paterson & Arends, 2004) and in Eswatini emerged in 1973 (Gooday, 1974). Late in the 1970s to the early 1980s, agricultural educators started 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. The current focus of Agricultural Education across the globe is on research. Generally, the future of Agricultural Education depends on the development and application of new knowledge through research (Silva-Guerrero & Sutphin, 1990). It further depends upon many variables; and one of them of which is acquisition and application of new knowledge generated from research (Dyer, Haase-Wittler & Washburn, 2003).

In the past, it has been difficult to appraise the impact of Agricultural Education research, and it was equally difficult to perceive its potential (Williams, 1991). Generally, Agricultural Education research has been described as too shallow to develop essential understanding; focused on ancillary areas, and often unrelated to what is already known (Mannebach, 1981; Miller & Warmbrod, 1982; Warmbrod, 1987; Newcomb, 1978). In Thailand, Traimongkolkul and Tanpichai (2005) found that Agricultural Education was not focused, thus recommended that a national forum be formed to revitalise the total system of Agricultural Education.

Moore (2006) posited that it is clear 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). Since the 1990s, rapid growth in research and publishing activities in Agricultural Education has resulted in a plethora of Agricultural Education literature (Radhakrishna & Jackson, 1992b). Thus, Myers and Dyer (2004) concluded that the institutional demands of research, teaching, extension, and service, faculty often allow one area to suffer to meet the expectations of another. If research suffers, then every aspect of the Agricultural Education discipline suffers. Moore (1987) found that some thematic areas in Agricultural Education doctoral research had been well researched while others had not; thus concluded that research in Agricultural Education lacked focus.

Ball and Knobloch (2005) asserted 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. Newcomb (1993) pointed at the need for Agricultural Education research to become more focused, coordinated and conducted passionately. Shinn, Briers and Baker (2008)'s expression of the need to focus the Agricultural Education discipline, examine its knowledge base, and review its literature is a call to use 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 and 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 (Edgar, Edgar, Briers & Rutherford, 2008). Edgar et al. (2008) posed this question: How can we be sure where we are headed with our research; if the direction is not adequate and appropriate; and if we are unclear as to where we have been?

A need also exists to analyse the dimensions of Agricultural Education in holistically and suggest strategies to focus the discipline and prepare it for the future. Understanding research occurring in Agricultural Education can assist the discipline and other integrated specialisations to more fully focus literary contexts and further strengthen the discipline. Edgar et al. (2008) argued that lack of understanding the depth and type of research occurring in Agricultural Education meant that researchers in the discipline were unable to determine what futuristic research should be done. Structuring and identifying a research agenda can be valuable for: (i) maintaining compatibility with the national priorities of the educational system; (ii) guiding research investments and (iii) communicating priorities to agencies and organisations which have national responsibilities to plan and budget for research (Buriak & Shinn, 1993). Buriak and Shinn further asserted that a need was apparent for "researching to research." This was a line of inquiry to focus the profession on salient problems that are significant to the future of Agricultural Education. Existing literature reveals that some scholars found that the following primary themes were covered in the research conducted in Agricultural Education: programme relevance and effectiveness (American Association for Agricultural Education [AAAE], 2005); programme evaluation (AAAE, 2005; Edgar, Briers & Rutherford 2008); instructional programme delivery approaches (Edgar et al., 2008; Radhakrishna & Mbaga, 1995); programme development and improvement (Radhakrishna & Mbaga,1995; Schmidt, Lynch & Frantz, 1988); curriculum and instructional development (Crunkilton, 1988; Moore, 1987; Silva-Guerrero & Sutphin, 1990); evaluation of agriculture teaching and teachers (Buriak & Shinn, 1989; Silva-Guerrero & Sutphin,1990). Tsikati, Dlamini and Dube (2019) found that research conducted by post-graduate students in Eswatini covered mainly programme relevance and effectiveness, and knowledge base for teaching and learning. Contrary, some authors reported that Agricultural Education research was lacking regarding the following primary themes: planning learning experiences (Mathonsi, 2000); evaluation (Mathonsi, 2000); effective instructional structures (Miller & Madou-Bangurah, 1993); educational programme and effectiveness (Buriak & Shinn, 1989); and efficient information delivery systems (Buriak & Shinn, 1989). Tsikati, et al. (2019) found that curriculum programme planning and delivery methodology primary themes were under-researched by post-graduate students in Eswatini.

Regarding secondary themes, some scholars reported that the following were covered in Agricultural Education research: philosophical concerns and policy related issues (AAAE, 2005; Crunkilton, 1988); analysis of innovations (AAAE, 2005); creative thinking and problem solving (Luft, 2002; Silva-Guerrero & Sutphin,1990); faculty development (Edgar et al., 2008; Radhakrishna & Mbaga, 1995); evaluation of teaching programme (Radhakrishna & Mbaga, 1995; Silva-Guerrero & Sutphin,1990); recruitment (Radhakrishna & Mbaga, 1995); innovative instructional technology (Silva-Guerrero & Sutphin,1990); educational methodologies in teaching and learning (Silva-Guerrero & Sutphin,1990); instructional resources (Crunkilton, 1988); and individual achievement – basic skill development (Crunkilton, 1988). Tsikati et al. (2019) found that faculty and staff development, evaluation of teaching or programmes, and individual achievement were the most

researched secondary themes in Agricultural Education.

Secondary themes reported to have been under-researched in Agricultural Education were: teaching competence of high school and university faculty (Buriak & Shinn, 1989); teaching and learning (Mathonsi, 2000); education technology (Buriak & Shinn, 1989; Miller & Madou-Bangurah, 1993); evaluation of teaching or programmes (Miller & Madou-Bangurah, 1993); and effectiveness of instructional strategies and learning characteristics (Buriak & Shinn, 1989). Also, Tsikati et al. (2019) reported that the following secondary themes were under-research in post-graduate theses in Eswatini: educational methodologies for teaching and learning; innovative instructional technologies; history, philosophy, future and policy in Agricultural Education; teaching basic and academic skills; and creative thinking and problem-solving.

In Eswatini, students enrolled for a Bachelor of Science in Agricultural Education at UNESWA are required to undertake research projects. Studies conducted on focusing research themes and gap analyses for future Agricultural Education research in Eswatini are inconclusive. The researchers observed that generally, research projects conducted to synthesise and analyse research output in Agricultural Education at the University of Eswatini did not identify gaps to which future research could be focused. Thus, a great need existed to identify research gaps for future Agricultural Education research priorities in Eswatini. The future of Agricultural Education in Eswatini depends on the development and application of new knowledge through appropriate and relevant research. Agricultural educators will be able to target specific areas as they build the Agricultural Education discipline. Also, Agricultural education students will be able to focus on areas that have not been adequately researched.

Purpose & Objectives

The purpose of the study was to identify themes and gaps for future research in Agricultural Education in Eswatini. The objectives of the study were to:

1. Identify research themes covered by agricultural education students' research conducted at UNESWA; and
2. Determine research gaps that exist in agricultural education students' research conducted at UNESWA.

Theoretical & Conceptual Framework

The study was framed using the dimensions articulated by Buriak and Shinn (1989) in Agricultural Education research (see Figure 1). The figure presents the research areas that should be covered in Agricultural Education. The innermost circle represents the mission of Agricultural Education. The second circle presents the Agricultural Education research problem areas grouped into four research problem areas. Finally, the outermost circle represents the research activities for each problem area in Agricultural Education. The problem research areas were treated as the primary research themes in this study. Thus, the primary research themes are: (i) knowledge base for teaching and learning; (ii) curriculum programme planning; (iii) delivery methodologies; and (iv) programme relevance and effectiveness.

The research activities were treated as secondary themes in the study. Thus, each primary theme has secondary themes. Buriak and Shinn (1993) revealed that the knowledge base for teaching and learning has the following secondary themes: 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. Then, 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.

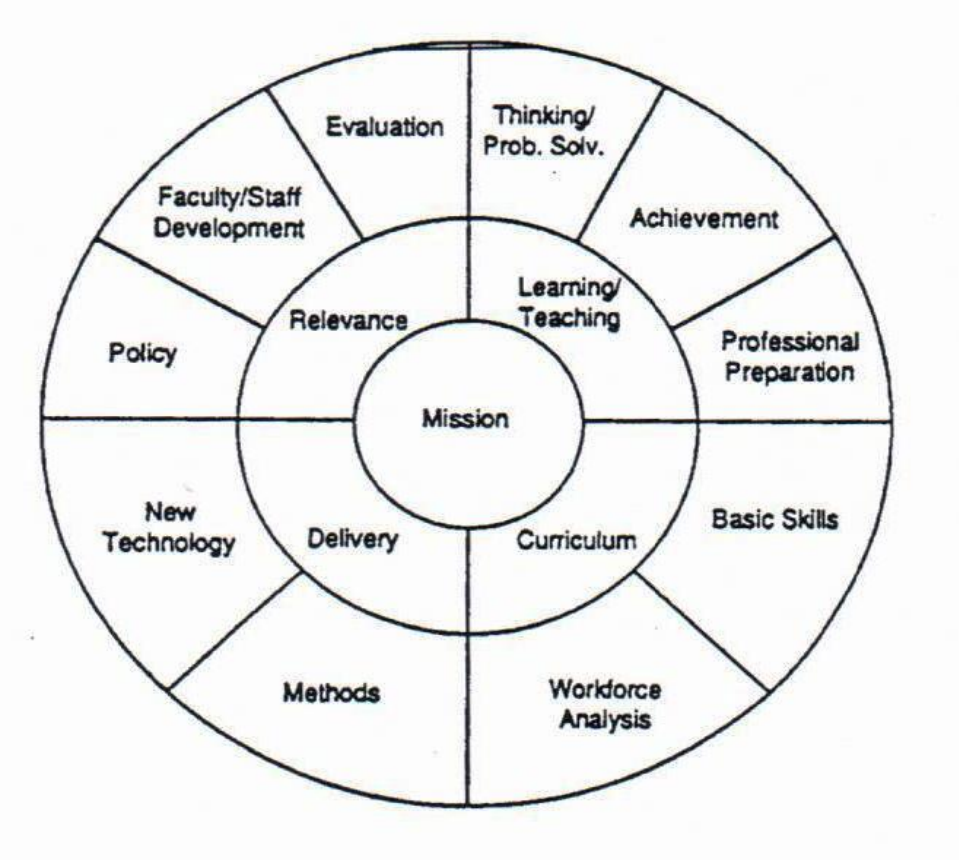

Figure 1. Theoretical framework (Buriak & Shinn, 1993).

Moore (1987) recommended that research in Agricultural Education should be balanced across the themes; Eswatini is no exception. In this study, research thematic gaps were established by comparing the researched thematic areas in Agricultural Education undergraduate research projects at the University of Eswatini against the thematic areas [primary and secondary] adapted from the study by Buriak and Shinn (1989). Gaps that existed in the research output were also reported by Edgar, et al. (2008a). The gap is a pointer to the research areas or topics that are yet to be researched in Agricultural Education (Silva-Guerrero & Sutphin, 1990).

Methodology

The study was qualitative and a census employing desk review in data collection of Agricultural Education undergraduate research projects (n=370) completed from 2008 to 2017. Research projects were considered to be in Agricultural Education if they related to the teaching of agriculture [both education and extension]. The researchers sought permission in writing to collect data from

UNESWA Library and permission was granted by the Senior Assistant Librarian at Luyengo Campus at the University of Eswatini. A total of 206 research projects found to be focused in Agricultural Education were analysed.

Trustworthiness and rigour were addressed using credibility, transferability, dependability and confirmability. Two experts from the Department of Agricultural Education at UNESWA reviewed the content analysis guide used for data collection to address issues of credibility. The experts added items and removed some from the content analysis guide. For instance, the researchers removed items on inferential analysis such as t-test and analysis of variance as suggested by the experts as they felt the study was getting wide open. Dependability was ensured by a detailed description of the implementation of the research methodology. Transferability was ensured by providing sufficient contextual information about students' research conducted at UNESWA and thick description of the thematic research areas in Agricultural Education. Finally, confirmability was assured through audit trails. The content analysis guide was divided into four primary themes; which were sub-divided into secondary themes. Each primary theme had check boxes where the researchers ticked to indicate for the primary and secondary themes. Each research project was carefully assessed and categorized into the appropriate primary and secondary theme. Both primary and secondary themes were mutually exclusive: that is, each research project was classified in to one primary theme and one secondary theme.

The research projects were analysed manually, using tally marks which were converted into frequencies and percentages. The structural dimensions for research in Agricultural Education postulated by Buriak and Shinn (1993) were used to identify the research themes and gaps in agricultural education students' research.

Findings & Discussion

Research Themes in Agricultural Education

Table 1 presents the number of research projects covered by each of the primary research themes expressed in percentages. The findings revealed that programme relevance and effectiveness (n=103, 50.0%) was the main primary research theme covered by Agricultural Education students' research at UNESWA. The second primary theme that is commonly addressed by Agricultural Education students' research was knowledge base for teaching and learning is (n=59, 28.6%). Similarly, existing literature indicates that in United States of America, programme relevance and effectiveness is the primary theme that was well researched (AAAE, 2005; Edgar et al., 2008). Radhakrishna and Mbaga (1995) and Schmidt, Lynch and Frantz (1988) found that programme development and improvement were also well covered. Tsikati, et al. (2019) found that research conducted by post-graduate students covered mainly programme relevance and effectiveness, and knowledge base for teaching and learning.

Table 1
Primary Research Themes Addressed by Students' Research Projects in Agricultural Education at the University of Eswatini

Primary themes	**f**	**%**
Programme relevance and effectiveness	103	50
Knowledge base for teaching and learning	59	28.6
Curriculum programme planning	24	11.7
Delivery methodologies	20	9.7
Total	206	100

Data in Table 2 present the number of secondary research themes addressed by students in Agricultural Education at UNESWA expressed in percentages. The table depicts that the most commonly addressed secondary research theme by students' research in Agricultural Education at the University of Eswatini is evaluation of the programme (n=53, 25.9%). Other secondary research themes that were adequately addressed by students' projects in Agricultural Education were: student achievement (n=37, 18.0%) and history, philosophy, future and policy in Agricultural Education (n=35, 17.0%). Existing literature reveals that the following secondary themes were covered in agricultural education research: philosophical concerns and policy related issues (AAAE, 2005; Crunkilton, 1988); evaluation of teaching programme (Radhakrishna & Mbaga, 1995; Silva-Guerrero & Sutphin, 1990); and individual achievement (Crunkilton, 1988). Tsikati et al. (2019) found that evaluation of teaching or programmes and individual achievement were the most researched secondary themes in Agricultural Education by post-graduates students at UNESWA.

Table 2
Secondary Research Themes Addressed by Students in Agricultural Education at the University of Eswatini

Secondary themes	**f**	**%**
Knowledge base for teaching and learning		
Professional preparation and competence	21	10.2
Individual achievement	37	18.0
Creative thinking and problem solving	1	0.0
Curriculum planning		
Needs for future agricultural workforce	19	9.2
Teaching basic and academic skills	5	2.4
Delivery methodologies		
Educational methodologies for teaching and learning	16	7.8
Innovative instructional technologies	4	1.9
Programme relevance and effectiveness		
Evaluation of teaching or programmes	53	25.9
History, philosophy, future and policy in Agricultural Education	35	17.0
Faculty and staff development	15	7.3
Total	206	100

Gaps in Agricultural Education

Table 1 depicts that the least covered primary research themes revealing gaps are programme delivery methodologies (n=20, 9.7%) and curriculum programme planning (n=24, 11.7%). Williams (1991) attributed the imbalance in the research conducted in Agricultural Education to the fact that it is generally a young discipline. Agricultural Education is also a young discipline in Africa (Paterson & Arends, 2004) and in Eswatini (Gooday, 1974). The findings of this study are consistent with the salient literature regarding the following secondary themes: planning learning experiences (Mathonsi, 2000); educational programme and effectiveness (Buriak & Shinn, 1989); and efficient information delivery systems (Buriak & Shinn, 1989). Similarly, Tsikati, et al. (2019) found that the most under-researched primary themes by post-graduate students in Eswatini were: curriculum programme planning and delivery methodology.

Table 2 also revealed research gaps in the following secondary themes: creative thinking and problem-solving (n=1, 0%); innovative instructional technologies (n=4, 1.9%); teaching basic and academic skills (n=5, 2.4%); professional staff development (n=15, 7.3%); educational methodologies for teaching and learning (n=16, 7.8%); needs of future agricultural workforce (n=19, 9.2%) and professional preparation and competence (n=21, 10.2%). The findings of the study on under-researched secondary themes are consistent with literature on: teaching competence of high school and university faculty (Buriak & Shinn, 1989); teaching and learning (Mathonsi, 2000); and educational technology (Buriak & Shinn, 1989; Miller & Madou-Bangurah, 1993). Similarly, Tsikati et al. (2019) reported educational methodologies for teaching and learning; innovative instructional technologies; and creative thinking and problem-solving as most under-researched secondary themes in post-graduate students' theses in Eswatini.

Conclusions, Implications & Recommendations

A primary conclusion drawn from this study is that research conducted by Agricultural Education undergraduate students in Eswatini in both primary and secondary research themes is imbalanced. Gaps in the research themes as adapted from Buriak and Shinn (1989) used as theoretical framework of the study were evident in the following primary themes: programme delivery methodologies and curriculum programme planning. Secondary themes which lacked research were: creative thinking and problem-solving; innovative instructional technologies; teaching basic and academic skills; professional staff development; educational methodologies for teaching and learning; professional preparation and competence; and needs of future agricultural workforce.

The implication of the findings is that a need exists for periodic assessment of institutional research to determine gaps in research to ensure that research is directed to the targeted thematic areas. The periodic assessment of institutional research can also help in directing limited resources and time to address most needed research. The findings of the study also imply that the future of Agricultural Education including Eswatini depends on the development and application of new knowledge generated through the thematic research areas (Dyer, Haase-Wittler & Washburn, 2003; Silva-Guerrero & Sutphin, 1990). Moore (2006) noted that some agricultural educators spend their time "*dabbling in esoteric research that does not have much relevance to the real world*" (p. 1). Also, Agricultural

Education research has been cited as too shallow to develop essential understanding, focused on ancillary areas, and often unrelated to what is already known (Silva-Guerrero & Sutphin, 1990). The study unveils the need for more focused and coordinated student projects in Agricultural Education. A need also arose to understand where the discipline has been, to allow the profession to better understand where to focus research efforts in the future. Edgar et al. (2008) argued that there was a need to re-examine Agricultural Education in a future that has already happened. In Eswatini, focusing and directing Agricultural Education research is imperative for its proper growth as the discipline is still young (Gooday, 1974). The use of the dimensions by Buriak and Shinn (1989) to establish gaps in thematic areas researched in Agricultural Education student projects in Eswatini implies that the global community of researchers must also embrace.

Based on the findings of the study the following recommendations were made:

1. A need to periodically (e.g. every 5 years) analyze research based on the themes that are covered in Agricultural Education is evident. This will ensure that the research conducted in the discipline is well coordinated and directed.
2. Researchers in Agricultural Education in Eswatini need to exert more effort towards research on thinking or problem-solving skills and innovative instructional technologies as they are important contemporary issues.
3. Researchers in Agricultural Education in Eswatini also need to focus their research on programme delivery methodologies and curriculum programme planning. If research conducted in these themes continue to be lacking; the methodologies used in teaching and learning and the curriculum in education will be stagnated.
4. The Department of Agricultural Education and Extension at the University of Eswatini must establish a research agenda to ensure balanced research in Agricultural Education. The research agenda should indicate and emphasize the status of research to be conducted on the pertinent thematic areas. Also, the researchers should collaborate with Agricultural Education stakeholders in identifying priority research thematic areas. This initiative will ensure adequate coverage of all relevant research themes. Similarly, other countries having Agricultural Education can also develop their own research agenda if they do not already have it.

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