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ABSTRACT

A study was conducted to determine the demographic characteristics of Swaziland agricultural education professionals and their perceptions of the preservice teacher education program in agriculture in their country. Questionnaires were developed and mailed to 128 Swaziland agricultural education professionals, with a total of 116 usable questionnaires returned. The study found that most agriculture professionals in the country were males, had diploma (associate degree) qualifications, were relatively young, had relatively few years of teaching experience, and had not studied agriculture in high school. These professionals thought that present programs of agriculture should be maintained but that admittance procedures should be strengthened, student teaching should be improved, inservice education courses should be implemented, and more teachers should have high school teaching experience. Recommendations for program improvement were made based on the findings of the study. (KC)

Summary of
Research

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Professional Perceptions Regarding the Swaziland Agricultural Teacher Education Program

Barnabas Dlamini and Larry E. Miller

The Swaziland agriculture teacher education program began in 1975 to prepare competent agricultural teachers so that effective implementation of the school agriculture programs could be realized. The Swaziland Ministry of Education has indicated concern regarding the teaching ability of secondary school agriculture teachers (Roques, 1982). In order to further develop the teacher education program, perceptions of what should be changed in the Swaziland agricultural teacher education program to bring about improvement must be ascertained from agricultural teacher educators, national level inspectors, and teachers.

Teacher educators have been assumed to be well qualified and to know what constitutes a good teacher education program, national level inspectors know teachers' needs based on their experience in working with them, and teachers know best their local environment and their working conditions. A combination of views from these people constitutes a foundation for developing a more effective teacher education program.

Considerable research has examined the adequacy of teacher preparation. Teacher education programs were studied in terms of content, teacher certification requirements, administrative responsibilities, student-teacher supervision, staffing and recruitment (Howsam, Corrigan, Denemark and Nash, 1976; Page, 1983; Brikeley, 1983); strengths and weaknesses (Newcomb, 1978); professional competencies (Welton and Okatahi, 1985); student teaching (Pfister, 1984); and influence of personal characteristics (Dlamini B.M. 1982, Dlamini R.M. 1983; Anderson, 1982; Harrison, 1979). Research concerning teacher preparation in agriculture has been lacking in developing countries, particularly in Swaziland.

Purpose and Objectives Of the Study

The purpose of this study was to describe the perceptions of professionals in agricultural education regarding the preservice teacher education program in agriculture. The following objectives were developed to guide the study and serve as the basis for the research design:

1. To describe agricultural education professionals regarding the following selected characteristics: gender, level of education, occupation, years of experience, place of training, age, location of work place, and study of agriculture in secondary school.

2. To identify and describe the perceptions of agriculture teachers, teacher educators and national level inspectors concerning the agricultural teacher education program in terms of:
   a. process of student selection,
   b. qualification and experience of lecturing staff,
   c. process of student teaching,
   d. in-service education,
   e. coordination and linkage with other agencies,
   f. value of technical and professional courses offered, and
   g. adequacy of practical skills.

3. To determine whether there was a significant difference between the perception held by agricultural education professionals regarding the agricultural teacher education program in Swaziland by gender, occupation, place of training, place of work, and whether or not agriculture was studied in secondary school.

4. To identify and describe the relationship between each of the selected characteristics (gender, educational level, experience and age) of professionals in agricultural education and their perceptions of the agriculture teacher education program.

Methodology

Descriptive correlational research employing a mailed questionnaire was used in this study. The study's target population included 128 Swaziland agricultural education professionals. These professionals consisted of 11 agricultural teacher educators, nine national level inspectors and 108

agricultral teachers in secondary schools. The study was a census.

A panel of experts in agricultural education consisting of the doctoral advisory committee for the researcher at The Ohio State University, and six other experts familiar with the Swaziland situation reviewed the questionnaire for content validity. A Cronbach's alpha was used to establish the reliability of the instrument, which ranged from .76 to .95 using Swazi undergraduate prospective agricultural teachers before data collection.

The Senior Inspector for Agriculture in Swaziland provided an up-to-date list of national level inspectors, agricultural teachers and teacher educators in teacher training colleges. The Dean, College of Agriculture, University of Swaziland, provided a list of teacher educators in the agricultural education department, University of Swaziland. These procedures controlled frame error. The list of participants in the study was screened to avoid duplications. A series of follow-up procedures to the initial questionnaire mailing was conducted according to the suggestions provided by Dillman (1978). Early respondents, those who responded to the first mailing, were compared with late respondents, those who responded to the second mailing, to estimate the nature of non-response bias. Late respondents have been shown to be most like non-respondents (Miller and Smith, 1983). Results showed no significant difference between early respondent and late respondent groups regarding demographic characteristics and perception domains. Thus, results were generalized to the target population. In this study, sampling error was not a threat to validity since a census of all professionals in agricultural education were included in the study.

A total of 116 (90.6%) usable questionnaires were returned, 11 (100%) from teacher educators, 8 (88.9%) from inspectors, and 97 (89.8%) from agricultural teachers. Though this study was a census, inferential statistics procedures were employed as professionals in agricultural education were considered a sample at one point in time. The alpha level was set at .05.

Findings

About 85 percent of the respondents were males and about 15 percent were females. The majority (77.6%) of the respondents held the diploma qualification (Associate's degree), while 19 (16.4%) and 7 (6.0%) held the Bachelor's and Master's degrees, respectively. The professional groups in this study were teacher educators (11 or 9.5%), inspectors (8 or 6.9%) and agriculture teachers (97, or 83.6%). The number of years of teaching experience ranged from one to 34. The average number of years of work experience was 7, 3 and 5.4 years for teacher educators, agriculture teachers and inspectors, respectively. The overall mean was calculated to be 3.6 years.

About 83 percent of the respondents were trained in Swaziland and only a small percentage (17.2) was trained outside Swaziland. The age of participants ranged between 21 and 63 years. The average age was 26.9, 33.4 and 35.9 for agricultural teachers, inspectors and teacher educators, respectively.

The majority (64.6%) of the professionals in agricultural education were working in rural areas. Seventy-four (63.8 percent) of the professionals in agricultural education had not studied agriculture as a subject in high school..

Perceptions of the agricultural teacher education program regarding policy-related issues. Professionals in agricultural education reported their level of agreement on policy issues. Mean and standard deviation values were determined by overall group responses and professional category. Mean values of 4.5 and above were considered as indicating agreement, and mean values below 4.5 were considered as indicating disagreement.

As can be observed in Table 1, teacher educators, agricultural teachers and national level inspectors agreed with issues related to coordination and linkage with other agencies, in-service education, and qualification and experience of the agricultural education faculty. Professionals in agricultural education were in slight agreement with suggestions regarding student teaching and with how students should be selected for the agricultural education program.

Importance of the courses taught in the agriculture teacher education program. The courses students took while in the agricultural education program were considered important to the teaching of agriculture in the secondary schools of Swaziland. The information presented in Table 2 showed that all groupings of courses were considered important, with crop production courses (X = 5.1) receiving the highest rankings by all professional groups. Significant differences were observed on the rankings of professional courses, with the lowest rankings by inspectors.

Adequacy of skill training. Skills were grouped into five categories, as shown in Table 3, and professionals in agricultural education were asked to indicate the level of adequacy of each of the categories. The category "land use and mechanization skills" was considered somewhat inadequate and was ranked lowest by all professional groups, and the other four skill categories (professional, crop production, animal production and agricultural economics) were rated somewhat adequate. None of the skill categories received an adequate or higher rating.

Difference in perception of professionals in agricultural education toward the agriculture teacher education program. One-way analysis of variance was used to determine whether there was a significant difference between the perception held by professionals in agricultural education regarding the agricultural teacher education program by gender, profession, place of training, place of work, and whether or not agriculture was studied in secondary school (Table 4). Gender revealed a significant difference for three of the 16 domains/courses regarding the agricultural teacher education program. These three domains were qualification and

Table 1. Analysis of Policy-Related Issues

Issue Rated	Type of Professional ($\bar{X}$/S.D.) Teacher Educators n=11	Teachers n=97	Inspectors n=8	Total n=116
1. Student Selection	3.9 0.4	3.8 0.4	3.9 0.7	3.8 0.4
2. Student Teaching	4.3 0.3	4.2 0.4	4.4 0.3	4.2 0.4
3. Inservice Education	5.0 0.2	5.0 0.5	4.9 0.5	5.0 0.5
4. Qualification and Experience of Lecturing Staff in Agricultural Education	5.1 0.6	5.0 0.6	4.8 0.5	5.0 0.6
5. Coordination and Link with other Agencies	5.3 0.4	5.3 0.5	5.3 0.6	5.3 0.5

Rating Scale:
6 = Strongly Agree
5 = Agree
4 = Slightly Agree
3 = Slightly Disagree
2 = Disagree
1 = Strongly Disagree

Table 2. Importance and Rank of Courses Taught in the Agriculture Teacher Education Program

Categories of Courses Rated	Type of Professional ($\bar{X}$/S.D.) Teacher Educators n=11 (ranks)	Teachers n=97(ranks)	Inspectors n=8(ranks)	Total n=116(ranks)
1. Professional Courses	5.1(2) 0.5	4.8 (3) 0.5	4.4 (5) 0.5	4.8 (4) 0.5
2. Agricultural Economics Courses	5.0 (3) 0.5	4.8 (3) 0.8	5.0 (1) 0.5	4.9 (2) 0.8
3. Crop Production Courses	5.2 (1) 0.5	5.1 (1) 0.7	5.0 (1) 0.3	5.1 (1) 0.7
4. Land use and Mechanization Courses	4.6 (5) 0.8	4.6 (5) 0.8	4.6 (3) 0.6	4.6 (5) 0.8
5. Animal Production and Health Courses	4.8 (4) 0.7	4.9 (2) 0.7	4.6 (3) 0.5	4.9 (2) 0.6
6. General Courses	4.2 (6) 0. 8	4.0 (6) 1.1	4.0 (6) 0.4	4.9 (6) 1.0

Rating Scale:
6 = Extremely Important
5 = Very Important
4 = Important
3 = Unimportant
2 = Very Unimportant
1 = Extremely Unimportant

Spearman Rank-orde. Correlation showed significant associations between position held and course ratings at the .05 alpha level.

Table 3. Adequacy and Ranking of Skill Training by the Agriculture Education Program

Skills Domains Rated	Type of Professional ($\bar{X}$/S.D.) Teacher Educator n=11 (ranks)	Teachers n=97 (ranks)	Inspectors n=8 (ranks)	Total n=116 (ranks)
1. Professional Skills	4.1 (1) 1.0	4.8 (1) 0.8	3.6 (4) 0.6	4.6 (1) 0.9
2. Crop Production and Related Skills	3.9 (3) 1.0	4.6 (3) 0.8	4.0 (1) 0.5	4.5 (3) 0.9
3. Animal Production and Related Skills	4.1 (1) 0.9	4.6 (3) 1.1	3.7 (2) 0.6	4.5 (3) 1.1
4. Land Use and Mechanization-Related Skills	3.5 (5) 0.7	4.1 (5) 1.1	3.0 (5) 0.9	3.9 (5) 1.1
5. Agricultural Economics-Related Skills	4.8 (4) 1.2	4.7 (2) 1.1	3.7 (2) 0.8	4.6 (1) 1.1

Rating Scale:
6 = Very Adequate
5 = Adequate
4 = Somewhat Adequate
3 = Somewhat Inadequate
2 = Inadequate
1 = Very Inadequate

Spearman Rank-order Correlation showed no significant associations between position held and skill ratings.

experience of teacher educators, coordination and linkage with other agencies, and importance of crop production courses. Females rated the three domains/courses lower than males.

Significant differences between teacher educators, agriculture teachers and inspectors were revealed with respect to all aspects of skill training in the agricultural teacher education program. In general, the ratings for all areas of skill training were highest by teachers, teacher educators and inspectors, respectively in descending order.

When results were analyzed according to place of training, differences in opinions were noted with regard to professional, animal production, agricultural economics and land use and mechanization skills. Professionals trained in Swaziland rated the agriculture teacher education program higher than those professionals trained elsewhere. Place of work had no influence on the perceptions of professionals in agricultural education toward the agriculture teacher education program.

The study of agriculture while they were secondary students had an influence on how professionals rated some aspects of the agricultural education program. Significant differences were observed with regard to professional and agricultural economics courses and animal production skills. Professionals who studied agriculture while in secondary school tended to rate the agriculture teacher education program lower than those professionals who had not. Overall, examination of the means shows little practical difference between groups.

Relations between selected characteristics of professionals in agricultural education and their perceptions of the agriculture teacher education program. In this study, the relationship between each of the selected characteristics (gender, educational level, experience and age) of professionals in agricultural education and their perceptions of the agriculture teacher education program was identified and described as shown in Table 5. The relationship between gender and perceptions of professionals in agricultural education revealed a negligible to low association. Level of education and perceptions of professionals in agricultural education indicated a negligible to moderate degree of association.

A Pearson coefficient (r) was used to describe the relationship between years of experience and perceptions of professionals in agricultural education. Negligible to low associations were found. Age also revealed a negligible to low relationship for all categories of the agriculture teacher education program.

Conclusions

1. Agricultural education programs in Swaziland were conducted mainly by males, with inspectors and teacher

Table 4. Difference in Agrigulcutral Education Professionals' Perceptions Regarding the Agricultural Teacher Education Program

Characteristics	Domains Where Differences Were Observed	Means		F Value
1. Profession	Teachers n=97	Teacher Educ. n=11	Inspectors n=8	
Professional Skill	4.8	4.1	3.6	10.9
Crop Production Skills	4.6	3.9	4.0	4.2*
Animal Productions Skills	4.6	4.1	3.7	3.7*
Land use and Ag. Mechanics Skills	4.1	3.5	3.0	4.9
Ag. Economics Skills	4.7	3.8	3.7	6.2
2. Place of Training	Swaziland n=96	Other n=20		
Professional Skills	4.8	4.1		10.8
Animal Production Skills	4.6	3.9		9.2
Land use and Ag. Mechanics Skills	4.1	3.2		10.2
Ag. Economics Skills	4.7	3.0		5.3
3. Gender	Males n=98	Females n=18		
Qualif and Exp of Lecturing Staff	5.1	4.7		6.2
Coordination and Linkage	5.4	5.0		4.7
Crop Production Courses	5.1	4.7		6.6
4. Study of Agriculture	Studied n=42	Did Not n=74		
Professional Courses	4.7	4.9		4.3
Ag. Economics Courses	4.7	5.0		4.2
Animal Production Courses	4.8	4.3		4.6

Note: For complete list of Domains studied, refer to Table 5 - - Parallel underscoring line indicated statistically significant differences between groups of professionals using the Tukey method.

*Omnibus F-test was significant, but no statistically significant difference was detected between pairs of means using the Tukey method.

educators being exclusively male.

2. The majority of professionals in agricultural education held the diploma (Associate degree) qualification. A need existed to upgrade the agricultural education professionals in Swaziland to the Bachelor of Science (B.Sc.) degree and postgraduate Master of Science (M.Sc.) qualifications.

3. Professionals in agricultural education in Swaziland had relatively few years of teaching experience.

4. Agricultural education programs in Swaziland were conducted by relatively young professionals.

5. The majority of professionals in agricultural education had not studied agriculture as a subject while in high school.

6. Present procedures for admitting students to the agricultural education program should be maintained, but a need existed to include procedures as part of the admission process to determine interest of students regarding agriculture and teaching.

7. The conduct of student teaching needed strengthening.

8. The department of agricultural education needs to conduct in-service education courses in conjunction with the

Table 5. Relationships of Selected Personal Characteristics and Perceptions of Professionals in Agricultural Education (N=116)

Domain	Level of Education	Experience	Age	Gender
	r_s	r	r	r_{pb}
1. Student Selection	.19	.02	.09	-.11
2. Student Teaching	.04	.02	.01	.01
3. Inservice Education	-.11	-.02	-.06	-.16
4. Qualification and Experience of Lecturing Staff in Agricultural Education	.03	-.06	-.10	-.23
5. Coordination and Linkage with Other Agencies	.05	.09	.01	-.20
6. Professional Courses	-.13	-.04	-.04	-.09
7. Agricultural Economic Courses	-.01	.09	.08	-.02
8. Crop Production Courses	-.07	-.08	.04	-.23
9. Land Use and Mechanization Courses	.01	-.04	-.01	-.06
10. Animal Production and Health Courses	-.10	-.10	-.15	-.02
11. General Courses	.01	-.08	.05	-.16
12. Professional Skills	-.34	-.06	-.24	.15
13. Crop Production Related Skills	-.21	.06	-.14	.12
14. Animal Production and Related Skills	-.29	.03	-.23	.16
15. Land Use and Mechanization Related Skills	-.32	-.16	-.21	.08
16. Agricultural Skills	-.33	-.16	-.22	.16

Coding Note. Level of Education: 1 = associate's degree
2 = bachelor's degree
3 = master's degree
Gender 1 = male, 2 = female
Experience = Interval Data
Age = Interval Data

Ministry of Education for the technical and professional development of agricultural teachers.

9. Qualifications of teacher educators in the agricultural education department were considered adequate, but high school teaching experience was considered lacking.

10. Coordination and linkage with other agencies by the department of agricultural education was viewed as an important aspect of the agricultural education program.

11. The courses taught in the teacher preparation program were important to the teaching of agriculture in the secondary schools of Swaziland. General courses were considered as less important.

12. Skill training was somewhat adequate in the teacher preparation program.

13. Gender, type of profession, place of training, and study of agriculture in secondary school had no major influence on how the agricultural teacher education program was perceived by professionals in agricultural education.

14. Level of education slightly influenced the way professionals in agricultural education viewed the agricultural teacher education program, whereas gender, work experience, and age did not influence their perceptions.

Recommendations

This study was designed to describe and analyze the perceptions of professionals in agricultural education regarding the preservice teacher education program in agriculture at the University of Swaziland. Analysis of the responses of teacher educators, agriculture teachers, and inspectors, their comments and/or suggestions, and ideas from related literature revealed many suggestions for program improvement.

1. Agricultural education programs in Swaziland were conducted mainly by males. More females need to be recruited, especially as teacher educators and inspectors, to provide role models for female teachers.

2. Present procedures for admitting students to the agricultural education program should be maintained, but an oral

interview should be included as an additional criterion to determine students' interests in agriculture and teaching. Only students with high interest in agriculture and teaching should be admitted to the agricultural teacher education program.

3. There was a need to strengthen the student teaching component. The following are presented as recommendations:

a. The duration of student teaching should be one term (about 12 weeks) to enable student teachers to acquire the essential teaching experiences as opposed to the current duration of ten weeks.

b. Student teachers should be assigned to schools with adequate programs and where the school administration supports the student teacher program.

c. Student teachers should be assigned to cooperating teachers who have taught agriculture for at least three years, accept the responsibility for training a student teacher, hold membership in professional teacher associations (e.g. Swaziland Agricultural Teachers' Association), have good rapport with other faculty members, are considered excellent teachers, and possess desirable teaching behaviors (clarity, enthusiasm, task oriented, etc.).

d. The assessment of student teachers should be conducted by the university supervisor, the cooperating teacher, and the inspector based on the ability of the student teacher to plan for teaching, write a lesson plan, direct student learning activities, apply basic teaching procedures, use instructional media and resources, evaluate performance of students, counsel students, manage physical facilities, conduct those activities which aid in developing general school relations, and contribute to and perform professional activities.

e. Student teachers should observe cooperating teachers for a maximum of two weeks prior to commencement of student teaching.

4. The in-service education component needed improvement. This might be achieved through the following:

a. Teachers' technical and methodological needs should be identified cooperatively by teachers, teacher educators, and inspectors through systematic procedures.

b. Both the Ministry of Education and the Department of Agricultural Education should conduct in-service courses and workshops for agricultural teachers. Skill development workshops need to be conducted to upgrade teachers in both thetechnical and professional skills. Professionals in agricultural education from outside Swaziland could be invited to help conduct in-service workshops.

c. Teacher educators should provide individual instruction (such as design of research projects) and/or consultative services as requested by teachers and inspectorate staff.

d. A curriculum materials center should be developed, the purpose of which would be to identify, prepare, and distribute curriculum materials (such as textbooks, teaching aids, record books and curriculum guides) needed by teachers.

e. Teacher educators need to provide at least three on-site instructional visits to help first-year teachers adjust to the teaching profession. A sufficient number of faculty posts must be developed and maintained to fulfill this recommendation.

f. A Master's degree program should be started by the Department of Agricultural Economics, Extension, and Education for the professional development of teachers and the preparation of researchers in agricultural education.

5. The staff in the Agricultural Education Department should have a Ph.D. This would be particularly applicable if a postgraduate program was to be initiated.

6. The Department of Agricultural Economics, Extension, and Education should develop a coordination and linkage program with institutions in and outside Swaziland through the conduct of joint meetings, research projects, guest lectures, and the formation of an association of teacher educators in Southern Africa. The coordination and linkage should be geared toward exchange of knowledge to improve instruction and research useful to agricultural education development activities.

7. The agricultural teacher education program needs to strengthen practical training (skill training). This could be achieved through more involvement of students in practical activities and a requirement of work experience in one area of technical agriculture before graduation. Perhaps activities could includemanagement of poultry, rabbits, vegetables, field crops, citrus enterprises and/or participation in the day-to-day activities of the university farm for a period of one academic year.

8. There was a need for an immediate, in-depth evaluation by the College of Agriculture of both the general, and land use and mechanization courses which were perceived as being important to the teaching of agriculture in secondary schools, but just somewhat adequately providing skills.

Recommendations for further research. The following recommendations for further research were forwarded, based upon the findings of this study.

1. There is a need to systematically examine professional and technical skills possessed by agricultural teachers in Swaziland. The list of skills would be an invaluable tool for structuring and identifying needs for inservice courses for current teachers.

2. There was a need to examine the relationship between student selection for teacher training and criteria for teacher performance.

3. A need existed to conduct a study regarding the relevance of courses and skills taught by the land use and mechanization department to the teaching of agriculture in secondary schools of Swaziland.

4. The majority of professionals in agricultural education had not studied agriculture as a subject while in secondary school. A need exists to study the effect of studying agriculture in secondary school on interest in agriculture and/or teaching.

5. A needs assessment (e.g. task analysis) of farming and agribusiness needs to be conducted to determine agricultural mechanization competencies needed by high school students and agricultural teachers.

6. A study needs to be conducted to determine why teachers leave teaching, leaving the profession with a cadre of young and inexperienced professionals.

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Summary of Research Series

Improvement of agricultural education in the public schools can have a major impact upon many students. As these students are better prepared, and use their preparation in the work force, the entire country benefits. This study reports research conducted in Swaziland which was used to develop recommendations for improving public education in agriculture. It should be of interest to individuals contemplating similar work in other environments.

This summary is based on a dissertation by Barnabas Dlamini under the direction of Larry E. Miller. Barnabas Dlamini was a graduate student in the Agricultural Education Department of The Ohio State University. He is currently a lecturer in the Faculty of Agriculture, University of Swaziland, Luyengo Campus. Dr. Larry E. Miller is a Professor, Department of Agricultural Education, The Ohio State University. Special appreciation is due to James A. Knight, Jr., Associate Professor, Agricultural Education, The Ohio State University; William L. Thuemmel, Associate Professor and Head, Agricultural Education, University of Massachusetts; and Edgar P. Yoder, Associate Professor, Agricultural Education, The Pennsylvania State University; for their critical review of this manuscript prior to its publication. Special appreciation is also due to Barbara Cooper, Assistant Professor, Agricultural Education, The Ohio State University, for developing the new Summary of Research Series format.

Research has been an important function of the Department of Agricultural Education since it was established in 1917. Research conducted by the Department has generally been in the form of graduate theses, staff studies and funded research. It is the purpose of this series to make useful knowledge from such research available to practitioners in the profession. Individuals desiring additional information on this topic should examine the references cited.

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