Effectiveness of Primary School Agriculture Teachers in Swaziland

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Abstract

Teaching effectiveness is the extent to which teaching leads to increased learning. The purpose of this study was to determine factors related to the effectiveness of primary school agriculture teachers in Swaziland. The pupils' performance in the Grade 7 examinations in Swaziland Primary Agriculture Examinations was used as a measure for teachers' performance. The design of the study was a descriptive correlational survey. A self-administered questionnaire was used for data collection. The target population was 384 primary school agriculture teachers that offered agriculture as a subject during 2011. A stratified random representative sample of 186 agriculture teachers was used in the study. A response rate of 72% was achieved after134 respondents provided usable data. Descriptive statistics of frequencies, means, percentages and standard deviations were used to describe data and correlations were used to describe relationships between variables. Regression analysis was used to determine explanatory and predictor variables for teaching effectiveness. The findings revealed that the explanatory and predictor variables for teacher effectiveness were the number of agriculture in-service workshops attended by the teacher and school type (religious or government). The research hypothesis that teachers' perception regarding their college preparation program should explain the greatest variance in teacher effectiveness was rejected. The conclusion from the study was that primary school agriculture teachers were not effective. The major recommendation was that effective, relevant and regular workshops have to be conducted to enhance effective teaching of agriculture in primary schools.

Key words: Correlational survey, teaching effectiveness, primary school agriculture teacher, academic performance, external examination.

Introduction

Teaching effectiveness can be defined as the process of eliciting desired outcomes in learners. The performance of agriculture teachers could be judged by pupils' attainment in public examinations and practical activities. The academic performance of pupils is linked to the ability, commitment and job satisfaction of teachers. Satisfaction from teaching is the best predictor for teaching effectiveness (Dlamini, 1989).

Teaching effectiveness can be influenced by a teacher's background. This includes pre-service and in-service training. This training provides opportunities for teachers to master subject matter and to enhance overall teaching effectiveness. Strong in-service programs, ideally, are designed to maintain a pool of beginning and experienced teachers who are competent and capable.

Support from the school and community also enhances teacher effectiveness. The school must have the necessary resources and the community should provide facilities which make life pleasant to the teacher. Job satisfaction and personal commitment to the profession help make a teacher effective. Appalling conditions of service work against the success of education reforms that would promote quality and relevant education. These result in teachers having negative attitudes towards government, which may lead to ineffectiveness.

Kunene (1996) reported that the standard and quality of agriculture offered in schools was continually deteriorating despite lots of inputs made toward uplifting the standards of the school's agriculture program. Kunene further stated that coordinators (supervisors) reported that some schools did not take heed of the recommendations for improvement that are suggested by the area or district coordinators or supervisors.

Nzalo (1997) reported that countries where agricultural education had failed were those that had

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poor supervision of the program. Duncan et al. (2006) stressed that agriculture involves skills and mastery in agricultural content, pedagogical processes and other competences that are associated with managing the overall program of agricultural education. In agreement with Duncan et al., Dlamini (1989) indicated that for effective teaching to take place, agriculture teachers require mastery of the subject matter, teaching skills and student management. Mazibuko (2004) observed that the quality of education offered in schools was not good enough, attributing this to the fact that there was little effective teaching in schools. Magagula (1994) pointed out that some of the ingredients to quality education are the optimum and efficient ways in which teachers are trained in what to teach (content) and how to teach (pedagogy). Roques (1986) alluded to the fact that teaching a practical subject like agriculture is more demanding than teaching other subjects because agriculture teachers have to care for crops and livestock even on weekends and holidays. Magagula (2008), however, reported that coordinators had observed that teachers who had no training in education experienced difficulties in teaching modern agriculture. It was argued that the issue of inadequately trained teachers was insignificant in Swaziland, as it only accounted for 1 to 2%. Given the challenges and concerns that affect the smooth running of the school's agriculture program (agriculture program taught in schools), there is a strong need to carry out a study to determine the level of effectiveness of agriculture teachers, especially, in primary schools.

Purpose and Objectives of the Study

The purpose of the study was to determine the teaching effectiveness of primary school agriculture teachers in Swaziland. The specific objectives of this study were to:

1. Describe the effectiveness of agriculture teachers in terms of academic performance of their pupils in external examinations.
2. Describe the perceptions of the primary school agriculture teachers regarding their college preparation.
3. Describe the level of support agriculture teachers receive from the school leadership for the smooth running of the Schools Agriculture Program in primary schools in Swaziland.
4. Identify in-service training needs of agriculture teachers
5. Describe relationships between variables.
6. Identify independent variables that explain and predict effectiveness of primary agriculture teachers in Swaziland.

Major Hypothesis

The research was based on the hypothesis that Swaziland's primary school agriculture teachers' perceptions on their college preparation should explain the greatest variance on their effectiveness. The hypothesis was supported by Harper et al. (1990) who conducted a study in the United States of America to determine factors associated with Western Region agriculture teachers' perceptions of teaching effectiveness. They found that teachers' perception of their teacher training program accounted for the largest proportion (22.4%) of variance in the variable scores and identified five significant factors that were related to teaching effectiveness in agriculture. These factors were: teachers, training, community environment, school environment, student characteristics and background of the teacher.

Methodology

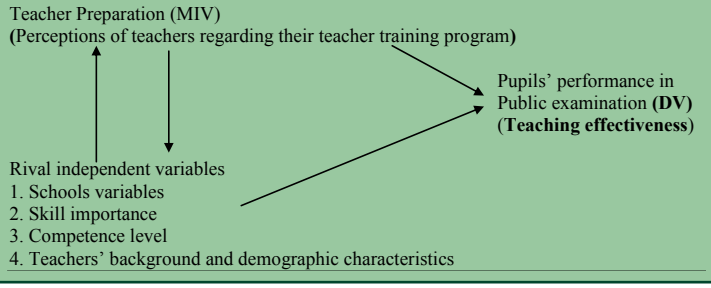
The study was a descriptive correlational survey study. The conceptual framework for the study is as shown in Figure1.

The target population was all agriculture teachers (N= 348) teaching agriculture in the primary schools in Swaziland during the calendar year 2011.There was only one agriculture teacher assigned to teach agriculture in a primary school. An up- to- date list of teachers was obtained from the Ministry of Education and Training to control frame error.

A stratified random sampling procedure by region was followed to determine sample size. A random representative sample size of 186 teachers was obtained for the study. This number was based on Krejcie and Morgan (1970) table for determining sample size for research activities. A stratified random sampling ensured proportionate representation for each of the four regions of Swaziland and ensured that each individual was chosen entirely by chance and each member had an equal chance of being included in the sample. The procedure included categorizing the 348 teachers from the same number of schools into the four regions. The names of all the 348 teachers were written on pieces of paper. The papers were then put into four bags, one bag for each region. The bags were shaken for evenly distribution of the papers in the bags. From the four bags, a total of 186 teachers were chosen.

A questionnaire was designed to collect data from the sample of 186 primary school agriculture teachers. The questions were developed from related literature. The questionnaire was divided into five sections. The first section was college preparation and had 12

Figure1. Conceptual framework of the study.



statements that required respondents to indicate their level of adequacy in college teacher preparation. A six point Likert scale was used to rate the items. The rating scale ranged from very inadequate (1) to very adequate (6). The second section, school related factors, contained 12 questions with nine of the statements requiring respondents to indicate their level of satisfaction regarding support received from school management. Respondents were required to indicate their level of satisfaction using a six point Likert scale ranging from very unsatisfactory (1) to very satisfactory (6). Three questions required respondents to provide informational responses. The third section was skill importance. Respondents were asked to indicate the level of importance regarding 24 agricultural skills. Rating scales ranged from unimportant (1) to very important (6). The fourth section was skill competence level, which included the same 24 agricultural skills as in third section. Respondents were asked to indicate their level of competence in performing each skill. The rating scale ranged from very incompetent (1) to very competent (6). The fifth section, background and demographic variables, included 14 variables and 10 informational questions. Questionnaires were mailed to the teachers in accordance with procedures suggested by Dillman (1978).

The dependent variable was teaching effectiveness of primary school agriculture teachers in terms of the academic performance of their pupils in the Grade Seven National Agriculture examinations of 2011. Examination results were obtained from the Examinations Council of Swaziland. Student grade symbols were as follows: A ≥ 70%, B = 63% - 69%, C = 56% - 62%, D = 50 % - 55%, E = 40% - 49 % and F = 0% - 39%. For analysis purpose, mean scores were calculated for each grade symbol as follows: A = 85%, B = 66%, C = 59%, D = 52.5%, E = 44.5% and F = 19.5%.

The number of candidates per school that attained each of the symbols was multiplied by the mean scores for the symbols and the overall product was divided by the total number of candidates. The calculated final score (percentage) per school was attributed to the agriculture teacher. Thus, only one score was used per teacher.

A panel of experts consisting of the regional coordinator from the Shiselweni district, two Ngwane College Heads of Department: Professional Studies and Agriculture Departments and a lecturer from the Department of Primary Education at the University of Swaziland attested to the representativeness of the items making up the survey instrument. To insure reliability, a pilot test was conducted with 30 primary school agriculture teachers that were not participating in the study. Cronbach's alpha was conducted to determine the reliability coefficients for the domains of the instrument. The reliability coefficients were found to be .85, .70 and .94, for the college preparation, school variables, skill importance and competence levels domains, respectively.

A total of 134 questionnaires with usable data were returned, yielding a 72% response rate. Non response error was controlled by comparing early respondents to late respondents and no significant differences were observed between early respondents to late respondents (as surrogates for non-respondents). Hence, results are true for the target population (Miller and Smith, 1983). The Statistical Package for Social Sciences (SPSS) Version 19.0 was used. Percentages, means and standard deviations were used to describe data. Weighted discrepancy scores using Borich's (1980) model of assessing needs were used to determine the agriculture teachers' in-service needs for the acquisition of various skills. Analysis of Variance (ANOVA) and t-test were used to determine statistical significant differences. Post hoc analysis using Scheffe's HSD test was used to determine significant group differences. Correlations were used to describe relationships between variables. Regression analysis was used to identify explanatory and predictor variables for teaching effectiveness. To determine the level of statistical significance, an a priori probability alpha level of P = .05 was set.

Findings

Description of the Study Sample

The majority (82 or 61%) of the primary school agriculture teachers from the four regions of the country were males. Most (116 or 88%)of the primary school agriculture teachers came from rural areas and their ages ranged from 23 to 59 years with a mean age of 37.80 and standard deviation of 9.30. The majority (64 or 47.76%) of the agriculture teachers were trained at Ngwane Teachers' College. The majority (71 or 52.99%) of the agriculture teachers graduated between the year 2000 and 2011.Few of the teachers (n = 25) improved themselves by enrolling with Emlalatini in-service training center and obtained an in-service certificate in Agricultural Education. Most (78 or 58.21%) of the teachers did not take agriculture as their major course in their final year of study. The majority (93 or 69.40%) of the teachers held a diploma (Associate degree) qualification having credit passes (C grade) from their different institutions of training. Most (95 or 70.90%) of the teachers have been in the teaching profession for ten years and teaching agriculture for about eight years. Most (85 or 63.43%) of the schools where the teachers were teaching had been offering agriculture for more than 20 years. The majority (80 or 59.70%) of the teachers reported non-existence of in-service workshop opportunities and (113 or 86.90%) agriculture teachers reported to have not attended in-service workshops since employment.

Mean scores of pupils' performance in the grade seven Agriculture Examination in the year 2011 by region as an indicator for effectiveness of primary school agriculture teachers in Swaziland

Table 1 displays mean scores for the academic performance of the 2011 Grade Seven candidates as a measure of teaching effectiveness of the primary school

agriculture teachers. The results show that the overall mean score for all the schools in the four regions of Swaziland was 48.04%. Schools from the Lubombo region had the highest mean scores (M = 49.32%), followed by schools from the Manzini region (M = 48.16%). Schools from Hhohho came third (M = 47.80%) and schools from the Shiselweni region had the lowest mean score (M =46.96%). There was no significance difference (P=.05) in academic performance between the four regions. Based on the overall mean score (48.04%), of the 2011 Agriculture National Examinations, which fell below 50% mark, primary school agriculture teachers in Swaziland were not considered effective in their teaching.

Respondents' Perceptions Regarding College Preparation

Table 2 contains information regarding adequacy of teacher preparation by colleges in providing training to primary school agriculture teachers in Swaziland. Findings indicated that primary school agriculture teachers perceived their college preparation as slightly adequate (M = 4.33). Preparation in assessment records had the highest mean (4.77) rating. On the other hand, the least mean rating (inadequate preparation) was reported to have been in managing layers (M = 3.03). Again, this trend was noticed in respondents from all the four regions of the country. This scenario could be attributed to the fact that the agriculture syllabus for primary schools puts less practical emphasis on layers (hens) than broiler chickens. Hence, teacher educators might have read the primary school syllabus and decided to put less emphasis on layers. The findings of this study are in line with those of Maseko (1987) who noted that students (pre- service teachers) did no acquire adequate skills and knowledge from the courses offered by the agriculture departments at Ngwane and Nazarene Teacher Training colleges to become effective teachers. Magagula (2008) raised a concern on the declining standards in teacher training institutions.

Table 1. Mean scores of pupils' performance in the grade 7 Agriculture Examination (2011) by region

Region	N	Mean score (%)	SD	F	Probability
Lubombo	24	49.32	7.86		
Manzini	40	48.16	8.14		
Hhohho	39	47.72	8.79		
Shiselweni	31	46.96	8.12		
Overall	134	48.04	8.23	.40	.75

Probability = .05

Primary School Agriculture Teachers' Perceptions Regarding the Support Received

Table 3 contains information on agriculture teachers' perceptions regarding the support received from school management. The findings from this study revealed that primary school agriculture teachers were slightly unsatisfied with the support they received from their schools leadership. The mean rating for "the support received from school management" domain was 3.84, indicating a slightly unsatisfactory rating. However, the respondents reported satisfaction with the items "land availability" and "head teacher's support" with a mean rating of 5.06 and 5.05, respectively. On the other hand, the availability of audio-visual aids had the least mean rating (M = 1.88). Access to computers also received a low (unsatisfactory) mean rating of (M= 2.31). The researchers observe that access to educational technology may be a key factor that agriculture teachers are concerned with in Swaziland.

Table 2. Respondents' perceptions regarding college teacher preparation

	Name of District									
Independent Variables	Lubombo		Manzini		Hhohho		Shiselweni		Overall	
	M	SD	M	SD	M	SD	M	SD	M	SD
	(n = 24)		(n = 40)		(n = 39)		(n = 31)		N =134	
Content of education courses	4.62	1.14	4.15	1.44	4.49	1.14	4.77	0.92	4.51	1.21
Writing objectives	4.29	1.60	4.50	1.34	4.38	1.31	4.68	1.19	4.46	1.34
Teaching Practice	4.67	1.24	4.47	1.38	4.64	1.22	4.55	1.31	4.58	1.20
Content of agriculture courses	4.42	1.47	4.22	1.25	4.56	1.29	4.45	1.80	4.41	1.28
Managing school gardens	4.83	1.05	4.45	1.22	4.41	1.23	4.61	1.25	4.58	1.20
Managing vegetables	5.00	0.83	4.58	0.96	4.77	0.90	4.39	1.28	4.69	1.02
Managing field crops	4.46	0.93	4.42	1.15	4.51	1.12	4.48	1.26	4.47	1.12
Managing broilers	4.79	1.22	4.25	1.52	4.23	1.65	4.55	1.57	4.45	1.52
Managing layers	3.00	1.50	2.65	1.81	3.08	1.90	3.39	1.63	3.03	1.75
Managing finances	3.42	1.61	3.58	1.55	3.49	1.62	3.94	1.24	3.61	1.51
Keeping production records	4.58	1.06	4.35	1.37	4.26	1.50	4.42	1.23	4.40	1.32
Assessment records	5.29	0.96	4.47	1.45	4.64	1.27	4.68	1.30	4.77	1.32
Overall	4.45	1.22	4.19	1.37	4.29	1.35	4.41	1.33	4.33	1.32

Rating Scale: 1= Very inadequate, 2= inadequate, 3 = slightly inadequate, 4 = slightly adequate, 5 = adequate, 6 = very adequate; M = Mean or Average; SD = Standard Deviation; n = sample size.

Table 3. Respondents' perceptions regarding support from school management

	Name of District									
Independent Variables	Lubombo		Manzini		Hhohho		Shiselweni		Overall	
	M	SD	M	SD	M	SD	M	SD	M	SD
	(n = 24)		(n = 40)		(n = 39)		(n = 31)		N =134	
Head teachers' support	5.21	1.22	5.15	0.98	4.95	1.17	4.90	1.11	5.05	1.12
Access to finances	3.92	1.69	4.18	1.55	3.72	1.61	3.32	1.60	3.79	1.62
Availability of garden tools	4.87	1.12	3.38	1.65	4.26	1.35	4.52	1.48	4.26	1.47
Availability of poultry Equipment	4.75	1.11	4.05	1.48	3.56	1.55	4.26	1.37	4.16	1.46
Availability of land	5.50	0.66	5.02	1.29	4.95	1.17	4.77	1.45	5.06	1.22
Availability of water	3.62	2.04	3.95	1.92	3.82	1.70	3.35	1.74	3.69	1.83
Relations with other teachers	4.92	1.02	3.95	1.66	4.36	1.51	4.39	1.43	4.41	1.49
Access to computer at school	3.33	2.06	3.95	1.47	2.13	1.59	1.84	1.64	2.31	1.72
Availability of audio- visual aids	1.75	1.15	1.78	1.14	1.95	1.19	2.03	0.40	1.88	1.21
Domain	4.21	1.34	3.71	1.46	3.74	1.43	3.71	1.47	3.84	1.43

Rating scale: 1 = Very unsatisfactory, 2 = unsatisfactory, 3 = slightly unsatisfactory, 4 = slightly satisfactory, 5 = satisfactory, 6 = very satisfactory teaching; M = Mean or Average; SD = Standard Deviation; n = sample size.

Discrepancy Scores, Weighted Mean Scores and Ranks

Table 4 reports discrepancy scores, weighted mean scores and ranks of 24 agriculture education skills. Weighted mean scores are

Table 4. Weighted mean scores and rankings for determining in-service needs of agriculture teachers

Skill area	Importance		Competence		[a]Discrepancy Score	[b]Weighted Mean score	Rank
	M	SD	M	SD	**DS**	M	Rank
	N = 134		N = 134		N = 134		
Soil sampling	4.91	1.48	3.28	1.47	1.63	8.00	1
Identification of diseases	5.38	0.97	4.05	1.01	1.33	7.15	2
Keeping financial records	5.44	1.01	4.14	1.11	1.30	7.07	3
Making contour lines	4.71	1.43	3.25	1.48	1.46	6.88	4
Identification of pests	5.43	0.88	4.17	0.92	1.26	6.84	5
Keeping broiler production records	5.15	0.92	4.33	0.96	1.18	6.51	6
Keeping diary records	5.57	0.83	4.42	0.85	1.15	6.40	7
Making compost	5.45	0.94	4.31	0.71	1.13	6.17	8
Keeping crop production records	5.04	0.98	4.29	0.94	1.13	6.00	9
Laying out plots	5.60	0.81	4.81	0.87	1.05	5.86	10
Ability to use sprayers	5.21	1.17	4.07	1.14	1.12	5.83	11
Keeping vegetable production records	5.46	0.98	4.44	0.96	0.97	5.28	12
Identifying soil profile	5.18	1.09	4.19	1.12	0.99	5.13	13
Testing for crop maturity	5.26	0.99	4.29	0.93	0.97	5.10	14
Controlling soil erosion	5.48	0.94	4.74	0.14	0.74	4.10	15
Vegetative propagation	4.46	1.45	3.73	1.45	0.73	3.29	16
Keeping tool inventory	5.65	0.75	5.06	1.03	0.58	3.29	16
Making seedbeds	5.69	0.76	5.04	1.17	0.56	3.10	18
Plotting growth curve	4.71	1.43	4.05	1.46	0.66	3.09	19
Identifying soil texture	5.27	1.03	4.73	1.10	0.54	2.85	20
Weighing live chickens	5.10	1.21	4.57	1.26	0.53	2.70	21
Handling chickens	5.34	0.94	4.88	1.15	0.46	2.43	22
Identifying cattle breeds	5.19	1.19	1.35	4.75	0.44	2.30	23
Transplanting	5.66	0.64	5.26	0.99	0.40	2.27	24

Note. [a]Discrepancy score = Mean score importance – Mean score competence,
[b] Weighted mean score = Discrepancy score x Mean score importance;
M = Mean or Average; SD = Standard Deviation; n = sample size.

normally used to rank skills according to their competence in relation to in-service needs (Borich, 1980). Findings from this study revealed that the five top skill areas the primary school agriculture teachers needed in servicing were in soil sampling, identifying diseases, keeping financial records, making contour lines and identification of pests.

Relationships between Variables

Table 5 displays intercorrelations between variables. Davis' (1971) scale of descriptors was used to describe the relationship between performance (Dependent variable) and selected background and demographic characteristics of respondents (Independent variables). The findings showed that correlation coefficients for all the 14 independent variables ranged from negligible association to moderate association. Variables with the highest negative correlations with teaching performance were sex (rpb = -.21), type of school (rpb = -.24) and in-service attended (r =-0.22).

Independent Variables of Effectiveness

Multiple regression analysis was used to estimate the relationships between the independent variables and teaching effectiveness of primary school agriculture teachers. Stepwise regression was used to determine which of the independent variables explained and predicted variance on the dependent variable, teaching effectiveness of primary school agriculture teachers. Fourteen independent variables were included in the analysis. The number of cases included met the requirements set forth by Warmbrod (1992), who indicated that 8-10 cases are needed for each independent variable to run linear multiple regression. Initially, the findings of this study showed collinearity between the independent variables "age" and "teaching experience" (r = .82). To eliminate collinearity, age and teaching experience were combined.

The number of agriculture in-service workshops contributed 6.1% of the variance in the dependent variable, as measured by academic performance of pupils in an external examination (Table 6). A negative beta coefficient (-0.25) reveals a negative correlation between numbers of in service workshops attended and teaching performance, as measured by decreased performance of pupils. A beta value is a measure of how strongly each predictor variable influences the dependent variable (pupils' performance). It is measured in units of standard deviations. High beta values indicate the great impact of the independent variable on the dependent variable and negative beta values indicate negative impact of the independent variable on the dependent variable. This result creates a concern with the teaching effectiveness of the in-service workshops.

Table 5. Relationships between variables

	Y	X^1	X^2	X^3	X^4	X^5	X^6	X^7	X^8	X^9	X^{10}	X^{11}	X^{12}	X^{13}	X^{14}
Y	1.00														
X^1	-.14	1.00													
X^2	-.12	.11	1.00												
X^3	-.07	-.05	-.11	1.00											
X^4	-.24	-.08	-.06	-.07	1.00										
X^5	-.14	-.02	.00	-.11	.28	1.00									
X^6	-.01	.01	.11	-.10	-.09	-.26	1.00								
X^7	-.16	.02	-.06	-.14	.19	.73	-19	1.00							
X^8	-.06	.13	.05	.03	-.19	-.14	.05	-.03	1.00						
X^9	-.22	.05	-.03	.07	-.10	.35	-.26	.30	.32	1.00					
X^{10}	.07	-.06	.07	-.18	-.03	-.19	.04	-.12	.09	-.07	1.00				
X^{11}	.08	-.21	.03	-.15	-.15	-.39	.28	-.24	.01	-.24	.27	1.00			
X^{12}	.15	.16	.22	-.16	-.22	-.31	.19	-.16	.38	.60	.00	.09	1.00		
X^{13}	-.21	-.11	-.16	.06	.07	-.03	-.10	.03	.03	.21	.09	.08	-.26	1.00	
X^{14}	.13	-.05	-.02	.05	-.03	-.04	.20	.04	.04	.08	-.01	.03	.07	.10	1.00

Dependent variable: Y= performance of primary school agriculture teachers (Interval). X^1= College preparation (Interval), X^2= school variables (Interval), (interval, X^3=school location (nominal: 0 = rural,1= urban), X^4=school type (nominal,0 = mission, 1 = government), X^5= Experienc$_e$(age and teaching experience) Ratio, X^6=college performance (Ratio), X^7= experience in teaching agriculture (ratio),X^8= in-service opportunity X^9= agriculture in-service attended(ratio), X^{10}= Access to computers (Nominal, 0 =no, 1 = yes), X^{11}= academic qualification (ratio), X12= was agriculture your major? (Nominal, 0= no, 1= yes), x^{13} $_{= sex}$ (Nominal 0 = female, 1= male), X^{14}=teaching practice grade / symbol (ratio).

Table 6. Variables perceived to explain and predict teaching effectiveness of teachers

Independent variable	R	R^2	R^2_{change}	β	Beta	t-value	probability
School type (religious or government)	.24	.058	.058	-.4.31	-.26	-.3.21	00
Number of in-service workshops attended	34	.119	.061	-.5.73	-.25	-.3.00	.00
Constant = 50.15							

Adjusted R^2 = .105; Standard error = .768; Probability = .05.

Table 7. Regression analysis of the major independent variable with rival variables

Rival Independent variable	R	R^2	R^2_{change}	â	Beta	t-value	probability
Skill competence	.10	.10	.10	.36	.30	3.78	.00
Academic qualification	.37	.14	.04	.28	-.20	-2.44	.02
Agriculture as a major	.41	.17	.03	.32	.19	2.36	.02
Constant = 2.74							

Adjusted R^2 = .151; Standard error = .758; Probability = .05.

Table 7 shows regression analysis of the major independent variable (College teacher preparation) by rival independent variables. Skill competence and agriculture as a major were found to be the largest predictors of positive teacher preparation. Academic qualification had a negative impact on teacher preparation.

The research hypothesis was that teacher preparation should explain the greatest variance on pupils' performance'. The findings showed that teacher preparation did not explain the greatest variance on pupils' performance, instead the number of workshops attended did, but in a negative fashion. The findings showed that although the primary school agriculture teachers rated themselves to be effective, the academic performance of their pupils in the 2011 external examination was low and contrary to their self-ratings. Thus the hypothesis for this study was rejected. Instead school type and number of in-service workshops attended explained about twelve percent of the variance on student performance.

Conclusions and Recommendations

The purpose of the study was to determine factors that influence teaching effectiveness of primary school agriculture teachers. Primary school agriculture teachers perceived themselves to have been adequately trained. There was a negative correlation between college teacher preparation and performance of pupils in the national examinations. Teacher educators in teacher training colleges have to ensure pre-service teachers acquire adequate knowledge and skills that would enable pre-service teachers to teach effectively when employed or beginning teaching. The findings indicated that teachers were slightly satisfied with support from their schools. There was also negative correlation between school related factors and pupils' performance.

The conclusion was that head teachers strive to offer the necessary support in terms of facilities to primary school agriculture teachers to be effective. The primary school agriculture teachers reported to be deficient in some agricultural skills. Teacher educators have a mammoth task of teaching in such a way that pre-service teachers acquire adequate skills from the different courses offered in colleges. In conclusion, colleges have to equip teachers with the necessary skills for effective teaching to take place in schools. The findings revealed that there were low correlations (low to negligible association) between performance (dependent variable) and 14 demographic and background characteristics (independent variables) considered in the study. Since the teachers perceived to have received slightly adequate preparation from colleges, the performance should have been slightly above average (50%).

The school type and number of agriculture in-service workshops attended by the primary school agriculture teachers were found to be the factors that explained and predicted the academic performance of pupils in national examinations. However, this study found that both factors had a negative impact on academic performance. This is contrary to previous research findings which alluded to the fact that in-service workshops make teachers perform their tasks better. From this study and related literature, mission schools perform better than government schools in external examinations.

Based on the findings and conclusion drawn from this study, the following recommendation is made: The Ministry of Education and Training should avail funds for regular and relevant training in technical skills (content) for agriculture teachers. Assessment of in-service training needs indicated that primary school agriculture teachers needed in service in technical skills, such as, soil sampling, identification of crop diseases, keeping financial records, making contour lines and identification of crop pests. The majority of the teachers denied the existence of in-service opportunities. On the basis of the fact that the study could not come up with many factors that influence teaching effectiveness of agriculture teachers in primary schools: A case study should be conducted on agriculture teachers from schools that consistently produce good results to determine factors that enhance their good performance. This recommendation is based on the fact that the teachers perceived themselves to be effective yet the academic performance of their pupils was low. A study to determine job satisfaction among primary school agriculture teachers in Swaziland might be helpful

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