



Pre-Service Agricultural Education Programmes: Do They Impact on The Teaching of Agriculture in Secondary Schools? Case of Zimbabwe

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Abstract

The purpose of this study was to make a qualitative investigation on the contribution of pre service agricultural education programmes to the teaching of high school agriculture. A participatory investigation approach was used to gather data, where among other relevant stakeholders, school authorities, agricultural teachers and training institutions staff were consulted on the congruency or discrepancies between pre - service agricultural education programmes and expected competencies of a qualified agricultural teacher. Teachers displayed requisite content and pedagogical competencies in the teaching of agriculture at secondary school level gained from their pre-service agricultural education. The study established the need for continuous in-service and staff exchange course programmes for agricultural teachers in order to keep them abreast with the dynamism and technological innovations in agricultural education sector.

1. Introduction

Agricultural educationists are faced with a 'Herculean' task of not only trying to provide quality education, but equally one which has relevance to the life of the learner and the world of work today. Like most developing countries, Zimbabwe's agriculture sector provides employment and incomes to over 70% of the population, 60% of the raw material required by the industrial sector, 45% of the total export earning, and sufficient food to feed the entire nation, (Zimbabwe's Agricultural Policy Framework, 2012). The country places emphasis on the teaching of agriculture in most secondary schools. The quality of teaching learners receive is depended upon several interacting factors of which the single most critical factor is the quality of pre service education received by the teacher (Modebelu and Nwakpadolu, 2013). This study, therefore, sought to qualitatively investigate the contribution of pre service agricultural education programmes in colleges on the teaching of secondary school agriculture.

The teaching of agriculture is seen as most appropriate for the formation of attitudes and work habits of children in order for them to be self reliant citizens with relevant entrepreneurial skills (Doolittle and Camp, 2003). As such, teaching of agriculture was made compulsory for all secondary schools at independence in 1980, as the Zimbabwe government instituted policy changes in the educational system, which resulted in significant structural, curricular and philosophical transformation of the system. Secondary schools increased from 197 in 1979 to 1276 in 1986, representing a 638 percent increase over a period of eight years. Pupil enrolment in secondary school stood at 66 215 in 1979, and that increased to 545 841 in 1986 (Shizha and Kariwo, 2011). The increase in school enrolments resulted in an equally sharp increase in the number of agricultural teachers required to service the education system.

The policy that agriculture must be taught in all schools resulted in a rapid demand for agriculture

teachers. That meant that colleges had to produce, quantitatively as many teachers as possible. This trend led to producing general-purpose teachers as observed by Chanakira (1998) when he said, all teachers particularly those training to teach in the secondary school sector, should specialise in the teaching of at least two subjects. The strategy does not only facilitate teacher development but it will also assist to deal with teacher shortage problems in Zimbabwe.

It was also partly because of the high demand for agriculture teachers, that technical teachers' colleges were opened to train secondary agricultural teachers plus other technical secondary

school teachers in such subjects as, metal work, building, woodwork, home economics and technical graphics. Technical teachers' colleges enrolled post 'O' level candidates who did a three-year and or four-year course in such subjects as agriculture or home economics, but at the same time studying another academic subject such as English or mathematics. The training model could still not meet the demand for agricultural teachers. Therefore, potential candidates holding certificates or diplomas in agriculture were drawn from agricultural colleges (Table 1) under the program called post agriculture diploma in education (PADE).

Table 1. Enrolment per college and number of students (%) who joined teaching of Agriculture in schools.

Agricultural College/ Institute	Enrolment/Year	% Opting For Teaching
Gwebi	96	50
Chibero	94	70
Mlezu	150	95
Esigodini	100	90
Kushinga Phikelela	75	90
Riotinto	70	90

Source: Belvedere Technical Teachers' College Agriculture Departmental files 1999.

However, Mashingaidze (2014) echoed sentiments that, a review of the Post Agriculture Diploma in Education (PADE) was necessary to make sure that PADE program addresses topics in the 'O' level syllabus that may not be addressed in the Certificate and Diploma courses and to orient students to rural economy where they end up as teachers.

It became necessary, that an investigation of the agricultural education program be done. The study attempted to cut across all range of skills and competencies expected of an Agriculture teacher teaching 'O' level Agriculture. The pre service Agriculture training programme was investigated to establish its contribution to the teaching of Agriculture in terms of professional competencies among qualified teachers, as well as whether the programme closes any gaps between certificate and diploma courses and the 'O' level syllabus.

Study objectives

The study sought to:

(i) Collect information from graduates of the pre service agricultural education programmes, now employed as agricultural teachers, on their perceived competence to handle topics in 'O' level agriculture syllabus.

ii) Identify 'content gaps' between the national diploma/certificate in agriculture syllabus and the content universe and practical skills demands for the 'O' level syllabus in agriculture.

iii) Measure the articulation between agricultural training programmes and the requisite pedagogical/teaching skills needed to implement 'O' level agriculture syllabus.

2. Materials and methods

The target population were graduates from agricultural colleges, heads of agriculture departments in secondary schools, headmasters as well as agricultural education officers. Closed and open ended questionnaires were administered to heads of agriculture departments, headmasters, agricultural education officers in order to get data on the perceptions and views of the school and Ministry of education authorities on the competency or otherwise of the former PADE students in teaching of O'level agriculture.

Syllabus documents that included 'O' level Agriculture, National Diploma and Certificate in Agriculture, and the pedagogic syllabus were also reviewed to establish whether there were some content gaps or not, that existed between the agricultural college syllabuses and what is taught in the 'O' level agriculture syllabus.

Purposive sampling technique was adopted whereby all respondents who were teaching agriculture in Harare province and its environs became involved as participants of this study. Twenty five agriculture heads of departments, 25 heads of schools, and ten agriculture education officers who supervised agricultural teachers also

participated in this study. All agricultural education officers in Zimbabwe's ten provinces participated in the investigation. The reason for not sampling Agriculture Education officers was that they constituted a small group that could easily be reached by telephone and by post.

The evaluation study mainly followed a naturalistic paradigm to investigation because it stressed firsthand experience with educational activities and settings, and allowed for recording of multiple rather than single realities. The investigator's data capturing procedure was modelled on Stake's countenance model.

Stake countenance model is mainly characterised by two activities, description of an education situation and then judging the worthiness of the situation. The model gives two major operations, of any investigation as complete description and judgment of the program. The evaluation framework aided the investigator in collecting, organizing, and interpreting quantitative and qualitative data. It highlights the differences between descriptive and judgmental acts according to their phase in an educational program: antecedent, transaction, and outcome (Popham, 1993). The antecedent refers to a condition existing prior to instruction that may relate to outcomes (Popham, 1993), whereas transactions are seen as successive engagements or dynamic encounters constituting the process of instruction. The out-comes are the effects of the instructional experience (Barbara, 2001). Descriptive acts points to what was intended or what was actually observed to occur.

The investigator stated competencies expected in the teaching of 'O' level agriculture under 'intents' of the description matrix of Stake's countenance model, then with a list of intents the investigator observed, among other things, performance by the teacher in a teaching learning situation (transactions), then recorded the standard of performance using judgement criteria under judgement matrix. Competencies that the investigator looked for included selection and sequencing of agriculture concepts, lesson preparation/scheming, communicative competence of the teacher, appropriateness of teaching method used and or adequacy of work given to pupils (Wood, 2010).

The main reasons for picking on, and or adopting Stake's countenance model are that it gives a conceptual framework for thinking through the procedure of a complete investigation. It also helps to portray the complexities of an educational activity such as the soundness of agricultural education programmes on the teaching of 'O' level Agriculture,

facilitates provision of first hand information based on classroom observation or document/ content analysis from which to base decisions of future training programmes on. Stake's countenance model also allowed for involvement of those who participated in implementation and supervision of agricultural teachers to become participants of the study and make judgements for future action plan. (Worthen. and Saunders, 2011).

Other naturalistic investigation approaches, such as illuminative, democratic and or responsive, could have been adopted for this study, but most of them only seek to explain patterns or situations without giving judgements on which to base decisions. However, like any other naturalistic approach to investigation, Stake's countenance model is also potentially high labour and cost intensive. The study was therefore confined to an accessible target group of respondents.

The approaches of gathering data included; lesson observations, syllabus document/ content analysis, analysis of assessment/supervision reports written for agriculture teachers either by head of department or by the head of school, interviews of heads of school, and descriptions of anything encountered in class or outside, though not initially listed under the description matrix of intents.

3. Results and discussion

3.1 Agricultural teaching competence

Agricultural teachers were found to be either very good or good, 46%, in their lesson preparation, sequencing of content, formulating of behavioural lesson objectives, use of appropriate language, questioning and pacing of lessons, use of stimulating teaching methodologies, class management and giving of adequate work to pupils. About 11% of the teachers were found to be in the satisfactory region in the marking and evaluation of pupils' work. Marking of practical reports, diaries and notebooks was not done consistently and written communicative comments on pupils' work were absent (Table 1).

The apparent lack of supervision of pupils' work may be attributable to large class sizes, an average of 47 pupils per class, and lack of supervision by the headmasters or head of departments. Failure to observe and or supervise teachers can lead to poor work performance (Modebelu and Nwakpadolu, 2013).

Table 2. Findings on lesson observation

	Very Good	Good	Satisfactory	Weak
	%	%	%	%
- Competencies relating to subject and content of Teaching Agriculture: preparation and lesson planning, objectives clear and sensible, lesson introduction, selection and sequencing of content and teacher knowledge of content	40	52.8	7.2	0
- Classroom Communication: vocabulary and use of language, questioning and pacing of lesson and voice projection.	30.7	61.3	8	0
- Methodology and class management: use stimulating teaching techniques, teacher pupil interaction, pupil/pupil interaction, monitoring class activities, class control, class interest, organising pupils, focusing pupils' attention, supervision of practical work and closing the lesson	22.8	63.2	14	0
- Assessment: marking consistency, giving meaningful comments, adequacy of work given, progress records and documentation.	26.4	62.3	11.05	0.25

Table 3. Abilities of Agriculture Teachers to handle 'O' level Agriculture Theory and Practical topics

	Theory						Practical					
	Very able	Just able	Not sure	Needs help	Taught	Not taught	Very able	Just able	Not sure	Needs help	Taught	Not taught
	%	%	%	%	%	%	%	%	%	%	%	%
Soils	86.6	13.4	0	0	98.6	1.4	74.2	20.4	3.6	1.8	93.1	6.9
Principles of plant growth	89.4	9.7	0.3	0.6	96.3	3.7	66.6	22.3	6	5.1	68.3	31.7
Livestock husbandry	78.4	21.6	0	0	100	0	53.6	36.8	6.4	3.2	92	8
Farm structures and machinery	73.6	20.8	3.2	2.4	94.4	5.6	52	38.4	5.6	4	92	8
Agriculture economics	65.3	28.7	4	2	92.7	7.3	42	35.3	10	12.7	75.3	24.7
Crop husbandry	62.1	20.6	7.4	2.9	81.3	13.7	58.9	26.8	10.7	3.6	77.5	22.5
Forestry	38	50	4	8	60	40	30	42	6	22	54	46
Animal husbandry	65.8	23.4	4.9	5.9	85.5	14.5	54.5	28.3	10.1	7.1	81.2	18.8
Horticulture/lawns	32	40	16	12	44	56	28	40	20	12	46	54
Farm structures	59.3	24.3	8.4	8	84.7	15.3	43.3	33.8	11.6	11.3	82.6	17.4
Summary on agriculture content competence	65.1	25.25	4.8	4.2	84	16	50.3	32.4	9	8.3	76.2	23.8

3.2 Content analysis

Some topics that were in the 'O' level agriculture syllabus were not well tackled at the pre service agriculture training colleges. Agriculture teachers highlighted three areas of concern that were not covered in theory lessons during their pre-service training, i.e. 56%, 40% and 15.3% of the agriculture teachers highlighted Horticulture and lawns, Forestry and Farm structures and Farm machinery, respectively. On the practical part, the number of

teachers who indicated non coverage of technical skills during pre-service training was as follows; in Horticulture and Lawns 54%, Forestry 46%, Principles of plant growth 31.7%, Agriculture Economics 24.7% and Crop Husbandry Option 22.5% (Table 2).

Comparison between content/document analysis findings and teacher questionnaire findings on possible content gaps between 'O' level agriculture syllabus and pre service colleges of agriculture

syllabuses shows common areas of content topics not covered as; flowers, ornamental and lawns and intermediate technology. The overall impression one got was that pre service agricultural programmes covered most of the content that enable teachers to teach agriculture effectively. However, the need for in-service programs for agriculture teachers emerged as necessary in view of changing technologies and content issues. The fact that some sections on appropriate technologies were not well tackled at agricultural colleges, helped to explain why practical's in agriculture at secondary schools were not being effectively implemented since most secondary schools' projects were not self sustaining. Some content gaps that were noted at the pre service agriculture colleges include agricultural legislation, animal traction, national agricultural programmes, history of agriculture and intermediate technology.

3.3 Requisite pedagogical skills

All pedagogical topics under agriculture subject specific methodology were rated as very relevant, by both heads of departments (76%), and education officers (70.5%). On listing of most useful or least useful topics that were learnt at pre service training college, agriculture teachers rated almost all topics learnt at college as most relevant in their day-to-day classroom practice. However, some agriculture teachers rated the following agricultural topics as least relevant in their day to day classroom practice (Table 3).

On the practical relevance of the pre service agricultural education programme objectives to the teaching realities that take place in schools, agricultural teachers strongly agreed that the programme objectives matched practical expectations in schools.

Findings from Agriculture Education Officers, heads of Agriculture departments and agricultural teachers, on the articulation between pre service Agricultural education course programme vis-à-vis requisite pedagogical teaching skills needed to implement 'O' level agriculture, agreed with findings from content analysis and Svinicki and McKeachie (2011).

Table 4. Least useful agricultural topics

Agricultural topic	% rating number
Curriculum research study	20
History of Agriculture Education	40
Horticulture	40
Organic Farming	52
Trends in world agriculture	40

3. Conclusion and recommendations

The study established that pre service agricultural education programmes in Zimbabwe were linked and relevant to the teaching of 'O' level agriculture. However agricultural education colleges need to run in-service course programs in order to keep former students abreast with current issues related to the teaching and learning of agriculture and other related areas of need as dictated by prevailing situations in school farms.

Pre service agricultural Pedagogies programmes should place emphasis on developing skills of testing and assessing of practical lessons in agriculture.

Continuous in-service programmes on skills and content enrichment that addresses content gaps and new trends in agriculture should be done.

There is need to further explore why some agriculture teachers, 20-40%, rated the following as least or not useful topics: Organic farming, Floriculture, Trends in world Agriculture, History of agricultural education and Curriculum research study.

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برنامه‌های پیش از خدمت آموزش کشاورزی: آیا بر آموزش کشاورزی در دوره متوسطه مدارس

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هدف از این تحقیق ارزیابی کیفی در ارتباط با برنامه‌های پیش از خدمت آموزش کشاورزی در بین دانش‌آموزان مقطع دبیرستان کشاورزی در زیمباوه بود. یک رهیافت ارزیابی مشارکتی برای جمع‌آوری داده‌ها در بین ذینفعان، مسئولین مدرسه، معلمان کشاورزی و کارکنان مؤسسات آموزشی استفاده شد. معلمان محتوای مورد نیاز و صلاحیت‌های آموزشی برای آموزش کشاورزی در مدارس متوسطه را تبیین نمودند. این مطالعه نیاز برای تداوم آموزش ضمن خدمت برای معلمان کشاورزی به منظور بهره‌گیری از نوآوری‌های پویا و فنی در بخش آموزش کشاورزی را مهم دانسته است.

چکیده

کلمات کلیدی: آموزش، آموزش کشاورزی، دیپلم کشاورزی، پیش از خدمت.