Research Application Summary

A synthesis of factors that contributed to the decline in the number of practical assessed projects for the junior secondary education in Botswana

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Abstract

The purpose of this ethnographic research study was to investigate the factors that contributed to the decline in the number of practical assessed projects in junior secondary education in Botswana. The study was conducted at the Botswana College of Agriculture (BCA) Faculty of Agriculture of the University of Botswana, Content farm, Sebele, North East of the capital city, Gaborone. Informants included two groups of teachers of agriculture: in-service student teachers pursuing their Bachelor of Science degree (BSc) in Agricultural Education at BCA and the in-school teachers of agriculture with a diploma and BSc in animal science. Data for this study were collected between January and July 2012 through observations, interactions with in-school informants and viewing the status of agricultural projects in schools. Field notes were prepared for use in the study. Part of this data was collected through the use of open ended questions where teachers' views, expressions and opinions regarding the assessment of agriculture practical projects were gathered. Data were analysed by coding the emerging themes and applying descriptive analysis. The study identifies theoretical issues forming basis for understanding the status of schools agriculture projects to include (1) teacher motivation (2) validity issues on assessment (3) teaching standards, teacher education, and (4) practices in teaching. The study concluded by discussing implications on education of agriculture.

Key words: Agriculture practical grades, junior certificate secondary education, practical assessed projects, teacher informants

Résumé

Le but de cette étude basée sur la recherche ethnographique était d'étudier les facteurs qui ont contribué à la baisse du nombre de projets pratiques évalués dans l'enseignement secondaire du premier cycle au Botswana. L'étude a été menée au Collège de l'Agriculture du Botswana (BCA), Faculté d'Agronomie de l'Université du Botswana, Content farm, Sebele, au Nord-

Est de la capitale, Gaborone. Les informateurs étaient constitués de deux groupes d'enseignants de l'agriculture: les futurs enseignants en cours d'emploi poursuivant leur licence ès sciences (BSc) en éducation agricole au BCA et les enseignants dans les écoles dispensant l'agriculture avec un diplôme et une licence en sciences vétérinaires. Les données de cette étude ont été recueillies entre Janvier et Juillet 2012 grâce à des observations, aux interactions avec des informateurs dans les écoles et à l'affichage de l'état des projets agricoles dans les écoles. Les notes de terrain ont été préparées pour être utilisées dans l'étude. Une partie de ces données a été recueillie à l'aide de questions ouvertes où les points de vue des enseignants, les expressions et les avis concernant l'évaluation des projets pratiques agricoles ont été recueillis. Les données ont été analysées en codant les thèmes émergents et en appliquant l'analyse descriptive. L'étude porte sur des questions théoriques constituant une base pour comprendre l'état des projets agricoles dans les écoles afin d'inclure (1) la motivation des enseignants (2) les questions de validité sur l'évaluation (3) les normes d'enseignement, la formation des enseignants, et (4) les pratiques en matière d'enseignement. L'étude a conclu en discutant les implications sur l'enseignement de l'agriculture.

Mots clés: Projets pratiques évalués, informateurs des enseignants, enseignement secondaire, certificat du premier cycle, grades en agriculture pratique

Background

There is inadequate information provided by teachers of agriculture in junior secondary schools as evidence of how students acquire practical grades submitted for final examination. This has resulted in the decline in the number of practical agriculture projects contributing to the paper 3 of the junior secondary education in Botswana. Assessment of agriculture in junior secondary education comprises of three papers; paper one is a multiple choice items, paper two comprises of semi-structured items, completion and essay types of questions, and paper three is made up of hands-on projects conducted by students during agriculture lessons. Several practical projects conducted in schools as a requirement for the teaching and learning of agriculture contributes to the paper three examinations. This kind of assessment has been going on since agriculture was introduced into the school curriculum in the 1970s. In 2010, following the eight weeks national strike which teachers were party to, the majority of the practical projects conducted in schools were suspended from being included into

the final examinations for junior school education. Only marks from vegetable production projects were included as a practical component of the agriculture assessment (paper 3).

Literature Summary

Agriculture forms the background of many countries, particularly those that are developing. It provides opportunities for employment creation and human resource mobilisation hence it was made a component of schools curriculum. It plays a major role in many countries (Alam *et al.,* 2009). In schools, the teaching of agriculture has always consisted of *" … written examination(s), student project(s) and student demonstration(s) of technical skills to measure proficiency in a specific technical field through the application of national standards in such technical field."* (Camp *et al.*, 2009). According to Retallick (2010) agricultural education is a unique subject for schools as it demands the infusion of classroom theories into the real world through "*the application of the concepts and principles learned in the agricultural education classroom in planned, real–life settings under the supervision of the agriculture teacher"*. Gant *et al.* (2012) alluded to the fact that a comprehensive agricultural education programme was imperative in agriculture-oriented institutions or universities.

Study Description

This ethnographic study was conducted at Botswana College of Agriculture, Sebele Content Farm from January to July 2012. The College is situated in the north eastern part of the capital city, Gaborone. The College has an average enrolment of approximately 1,500 students. Out of this number, close to 170 students were enrolled in the Department of Agricultural Economics, Education and Extension (AEE). Out of this number, 120 were in-service students, 40 were coming directly from senior secondary schools, while 12 (5 registered) were enrolled in the graduate programme as part time students.

The student teachers who participated in this study were teachers (informants) who took part in the grading of agriculture practical projects as internal examiners in their schools and as external examiners for the Ministry of Education and Skills Development (MESD) and the Botswana Examination Council (BEC). Some informants were in-school currently teaching the subject. The study used four open ended questions requiring the informants to state their background in teaching prior to registering for their Bachelors of Science degrees in Agricultural education at BCA.

The researcher used qualitative data collected using open ended questions and field notes compiled when interacting with in-school teachers. The researcher had visited students during teaching practice.

Research Application

The study used both a thematic and discourse method of analysing qualitative research data as described by Mistica *et al.* (2008) to understand factors that contributed to the suspension of some practical agriculture projects in schools. The analysis involved using field notes (data) obtained from teachers during an observation of student teachers; interpreting narrations gathered using an open ended questionnaire. As indicated by Talja (n.d) discourse analysis explains the roles and positions of the participants, and talk is studied as an example of more general interpretative practices posed by the people involved.

The following questions were answered in this study;

Question 1: What were your backgrounds prior to joining the Botswana College of Agriculture for your Bachelor of Science degrees? Or school where you are teaching?

Table 1 shows the previous background of informants in marking/grading agriculture practical and their experience. The first column contain hypothetical names of teachers interviewed, the second column shows the current status of teachers interviewed, while the third and forth columns represent the gender and information gathered during conversations with the informants. Statements and narrations were gathered using the open ended questions. The overall teaching experience of informants in the study was relatively adequate. The experiences presented in Table 1 showed that majority of the informants had more than five years in teaching and were experienced with assessment procedures within their schools and as external examiners.

Question 2: Which practical components of agriculture were considered for the final examinations when you joined teaching?

The informants were asked to name the practical agriculture projects which were conducted in junior secondary schools. Furthermore, the informants stated marks allocated for each project and the skills assessed. The total for the five projects

Table 1. Previous background in practical marking and experience of respondents.

Teacher	Type	Gender	Background and experience
Teacher # 1 Assist teacher, school	In-service	Male	Taught for 5 years after BSc. degree before joining BCA for MSc. programme Been involved in marking practical agriculture for senior junior schools for 5 years Served as external moderator for 3yrs Still marks junior school practical projects but teachers at senior schools.
Teacher # 2 Assistant teacher	In-school	Female	Taught for 8 years after BSc degree in animal science from University of North West, RSA Holds Bed Agriculture Currently pursuing MSc Agric Education, BCA "involved in marking practical agriculture since I resumed duty" Served as external moderator for 1 year
Teacher # 3 Assistant teacher	In-service	Male	Taught for 8 years after diploma in agric Education from BCA involved in marking practical projects for 8 years Currently pursuing BSc. Agric Education degree
Teacher # 4 Assistant teacher	In-service	Male	Taught for 8 years after diploma in Agric Educ from BCA involved in marking practical projects Currently pursuing BSc. Agric Education degree.
Teacher # 5			-
Teacher 6			- -

add up to 350 marks as shown in Table 2. This mark is scaled to 20% of the final examination for agriculture.

Based on the information gathered, teachers of agriculture in secondary schools in Botswana were given the mandate to identify specific skills to be learnt by students. These results imply that students in different schools were likely to be assessed on different skills and were likely to show variations in the mark allocations, skills assessed and proficiency acquired by students. The performance of students from one school to the other was likely to vary. The results also confirm that standards in education were important as they provide guidance on the outcomes of any learning.

Teacher informants stated that resources were inadequate for agricultural projects and were contributing to the lack of teachers

Table 2. Practical activities conducted in junior secondary schools.

	Practical project	Description	Skills assessed	Marks
Form 1	Field crops	Teaches land preparation, planting, management and harvesting of the crop	Teachers select any 5 skills of their choice to assess	50 points
Form 2	Rabbit/Pig	Feeding, management marketing, harvesting	Teachers select any 5 skills of their choice to assess	50 points
	Sheep or Goats	Feeding, management marketing, milking	Teachers select any 5 skills of their choice to assess	50 points
	Fish/ Bees	Feeding, management marketing, harvesting	Teachers select any 5 skills of their choice to assess	50 points
	Chicken: layers/broilers	Feeding, management marketing, collecting eggs, slaughtering	Teachers select any 5 skills of their choice to assess	50 points
Form 3	Vegetable production	Teaches land preparation, planting, management and harvesting of the crop, plot stand, population, cultivation	Teachers select any 5 skills of their choice to assess	50 points
Total				250 points

doing appropriate job in assessment. Informants believed that conducting practical projects was an additional function in addition to classroom teaching. These negative perceptions about practical projects and extra mural activities in schools in Botswana have been noted and have implications on the roles and functions of a teacher. Perhaps it was time higher education programmes set teaching standards to guide teaching and learning of agriculture in schools.

Question 3: What factors do you think contributed to the scaling down of the practical components from six to one in the agriculture assessment in schools?

Agriculture teacher informants were asked to describe the possible attributes in the scaling down of the practical components of the agriculture assessment from six projects to one project. Results showed that majority of the teacher informants indicated that this was a “directive” from the Botswana Examination Council (BEC). The informants were of the feeling that teachers “were not consulted” but do not

feel "bothered" since the practical components was "demanding". The majority of the informants indicated that "*we [they] were not adequately paid for the projects"* hence they were not disappointed when the practical projects were suspended since they will not be under pressure.

The informants also stated that the BEC saw a need to suspend some practical components of agriculture because of lack of standards guiding practical assessment as a whole" and a reliability of scores given to students for practical". One of the informants boldly stated that

"*For long time agriculture practical marks in secondary schools have been "cooked" but following the 2010 national strike, the situation became worse. In 2010, when the national go slow strike started, some schools had not started their agriculture projects like growing crops, and livestock were not managed. In the end, they submitted high marks. This was evident enough that something was wrong"*

One informant echoed that there was need for appropriate advanced education for teachers in schools to be able to consider examinations a crucial component in their profession. She stated that *"teachers of agriculture were not properly trained/ prepared to handle examinations. So we are all not sure of what is important in teaching - passing students or uplifting the profession of teaching"*

Resources and infrastructure for teaching of agriculture in schools were some of the issues raised by informants as a concern in teaching agriculture. John suggested that if all projects in schools were to be considered in the final examinations there is need to have laboratory for the teaching of the subject. In addition, John stated that "*gone are the days when teaching was taken by all as a career of choice, today teachers of agriculture are no longer taking agriculture with passion hence some do not fear to hike marks for students"*

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