

Designing curriculum that fosters psycho-social and accountability issues in agricultural education programs

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Abstract: How would the agricultural education curriculum be designed if the goal is to promote the development of psycho-social, entrepreneurship, and accountability in learners? To address this question, the course “management of agricultural enterprises in schools” offered to potential teachers at a college level was used as an experiment at one of the colleges of agriculture in the Southern African region. Participants’ behaviors (performance, activities, conduct) were observed. The study recommended that the features of an education system in combination with proactive policies of education, and agriculture set the periphery for appropriate curriculum in agricultural education that could encourage the development of psycho-social, entrepreneurship and accountability in learners.

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Introduction

Curriculum in agricultural education fosters the development of multiple technical competencies and psychosocial characteristics. At Botswana College of Agriculture (BCA), a course entitled “AEB 425 management of school enterprises” was introduced five years ago as one of the core courses designed for preparing potential student teachers of agriculture. It is a 400 level course, designed for potential teachers of agriculture. According to the enrolment list, the course is taken by both pre-service (directly from senior school) and in-service students (who have taught before and those who trained with diploma and never been employed). The approach to teach the course were based on team-based learning, problem-solving, student-centered learning, and the application of prior knowledge to develop an understanding (Felder & Brent, 2003). Since then, there has not been any evaluation of the course to assess students’ attitudes towards the curriculum. The question is, does the curriculum help participants develop psychosocial characteristics, competencies, and accountability needed in their teaching profession? For almost a century, the meaning of curriculum has been coined around by different scholars with the aim of designing models of education that foster desired outcomes and characteristics of learners (Esner, 1988). Generally, there are several definitions of curriculum (Abosi and Kandjii-Murangi, 1996; Posner, 2004) and many authors have highlighted different perspectives by which the concept of curriculum is considered. For example, UNESCO (2004) defined curriculum as comprising of the subject content that is “learned” and

“taught”; “how it is delivered;” “assessed” “the resources used” as well as the expected outcomes. According to the UNESCO International Institute for Educational Planning (2006) curriculum is defined as a consolidated plan of learning experiences acquired through documented and non-documented activities found in an educational institution.

Interestingly, curriculum is one of the most powerful and significant elements of education programs (McNeil, 2001). It is a valuable aspect of education that is used to cause the required change to students’ behavior in schools (Taylor, 1999). Studies have found that curriculum helps prepare individuals to acquire and develop characteristics that are needed for professional careers (Anamual-Mensah, Asabere-Ameyaw & Dennis, 2007). For instance, significant educational curriculum provides the opportunity for people to acquire a variety of expertise such as “computational skills, problem solving skills, initiative, logical thinking, creativity, adaptability, moral integrity, self-confidence, practical skills, and job-centered skills”. As stated by Cline (2001) curriculum helps people develop universally accepted virtues of life which include “responsibility, self-discipline, gratitude, caring, compassion, self-control, cooperation, courage, honesty, loyalty, trust, empathy, and respect for self and others”. Curriculum is therefore one crucial aspect of education, (Taylor, 1999) as it encompasses the desirable characteristics expected of a person who undergoes any form of education or training. Therefore, it is important to formulate appropriate and relevant curriculum to bring

about change in the understanding, attitudes and behaviors (Taylor, 1999).

To design the curriculum in generally, needs one to consider several factors (Taylor, 1999). According to Abosi and Kandjii-Murangi curriculum is more technical, it needs planning, “analysis of instructional materials, developing instructional units, creating programmed learning materials, and preparing computer software” (p.187). Posner (2004) noted five areas important in a curriculum plan; “the learners, the teachers”, “the subject matter”, “the milieu” and the “curriculum specialist” since they frequently impose the impact on what needs to be learned (Posner, 2004, p.35). Rogers and Taylor (1999) too found that designing curriculum needs specialists to (1) assess the accuracy of “the aims and goals” of the program (2) authenticate “the learning objectives” as well as (3) “the learning activities”. According to Zinnah, Steele, Mattocks (1998), agricultural programs particularly in Africa face curriculum challenges which limit preparation of educators from acquiring relevant “knowledge and skills” to effectively perform their functions.

According to Kohlehr (2006) curriculum should be: flexible, outcome based, encouraging knowledge construction, and having a specific structure. Other attributes of curriculum include integrating psycho-social personality (UNESCO, 2006), and accountability (Hopkins, & Horstmeier, 2005). Practices in teaching and learning should help to build conducive environment that enables teachers realize the importance of being happy in the classroom. As indicated by UNESCO (2006), “Good teaching and learning practices are also good psychosocial practices”. Based on the foregoing, this paper attempted to examine the curriculum at BCA facilitating psychosocial and accountability characteristics on student teachers using AEB 425 as a case study. Does the curriculum at Botswana College of Agriculture facilitate the development of psychosocial and accountability characteristics in student teachers? The purpose of the study was to describe the demographic characteristics, and psycho-social and accountability characteristics development by the participants during the “management of school enterprises” course.

Materials and Methods

Data for this study was gathered during a class “Managing Agricultural Enterprises in Schools” offered to trainee teachers of Agricultural education in the department of Agricultural Education Extension and Economics (AEE) at Botswana College of Agriculture (BCA). The study adopted the methodology described by Bloom, Dunn & Morse (1961) to gather classroom behaviors. Demographic characteristics, psycho-social and accountability

characteristics of participants were described. A class of 92 potential teachers of agriculture who registered and took a course entitled “Managing agricultural enterprises in schools” at BCA from January to May, 2008 participated in the study. The class was purposively selected for the study to assess if the course provides psychosocial and accountability issues in managing a small-scale broiler production business to student teachers. The participants were informed about the researchers’ intention to study their behaviour at the beginning to the end of the course to determine the psycho-social and accountability skills developed during their participation in the eight week period. The class was also informed that their participation records, academic scripts, written work, and attitudes towards the course would be observed and they should feel free to indicate if they did not want to be included in the observation. Participants also were informed that there would be no penalty imposed if they did not participate in the study. Two participants withdrew two weeks after the project was started leaving the group to be ninety. Participants were randomly assigned to 8 groups of 10-12 people on the first day of class to work in teams. The participants’ record of work for 3 groups was used as outcomes of this study to describe the accountability of and psychosocial characteristics of participants.

Results

Table 1 presents the rubric designed to assess performance skills in schools’ broiler enterprise, Table 2 shows the feed conversion efficiency estimated from average weight gain calculated by students, Table 3 represent the profit and loss statement for broiler enterprise, while Table 4 and 5 presented the unnecessary expenses incurred during management of broilers and bBalance sheet statement in a broiler enterprise respectively.

The results on demographic characteristics of the participants show that almost all (99%) of the participants had not owned poultry enterprises, approximately 60% had managed broiler enterprise, 40% had not been involved in broiler management, majority of the participants (52.3%) had previously managed school-based enterprises and 43% had never managed a any form of a business or school enterprises. Over ninety percentage (90.9%) of the participants indicated that their families did not own broilers, approximately 16% of the participants were in-service (having taught before), 84% were pre-service, 11% had worked in chicken farms, and 89% have not worked in any chicken farm. At least 77% of the participants were male, 33% female, 16.7% lived on-campus, 83.3% off-campus getting living allowance of BWP 1,700 per month, 0.03% were self sponsored, 38.9% were on 300 level while 61.1%

were completing at the end of the term. The participants' ranged between 26 to 39 years old.

Table 1 : A rubric designed to assess performance skills in schools' broiler enterprise

Skill	Performance scale				Points awarded
	Very good	Good	Satisfactory	Unsatisfactory	
Cleaning of the poultry house	12 points The cleaning of the poultry house was done in advance, before the arrival of chicks.	8 points The cleaning was done to average performance and accordance with respect to cleanliness and hygienic.	4 points The cleaning was imperfect though completed	0 points The cleaning was far from expected outcome	
Feeding	12 points Correct feeding times, correct feeding amounts, with all the necessary steps taken to remove the previous feed contaminated with droppings, saw dust - replacing the feeds in trays.	8 points Feeding performed with one aspect having been left out e.g. removing one aspect procedurally little cleaning, adding new feed to previous feeds	4 points Performed but without following the correct procedure of feeding, like replacing feeds without disposing the old ones	0 points When feeding has done partially, and chicks finish feed at intervals and empty feeders at the next feeding time	
Watering	12 points Providing correct amounts and clean water with all the necessary hygiene steps taken care of which ought to be done such as cleaning, unblocking the water pipes,	8 points Providing correct amounts and clean water with minimum hygienic steps taken care of.	4 points Providing correct amounts and clean water with no hygiene steps taken care of	0 points Not done due to failure to attend the project	
Records keeping	12 points Providing appropriate records on the enterprise such as amount of feeds given, number of bags opened, date opened, mortality, signatures of attendants	8 points Providing confusing records on the activities such as amount of feeds given, number of bags opened, date opened, mortality, signatures of attendants	4 points Providing partial or forged records on the activity conducted.	0 points No records	
Slaughtering	12 points Correctly done/completed according to the procedures of slaughtering	8 points Completed without following the procedures of slaughtering birds	4 points Partially completed	0 points Incomplete	
Marketing	12 points Completed all the marketing procedures including advertisement, pricing, packaging and selling	8 points Completed part of the marketing procedures.	4 points Partially Completed the procedures of marketing broilers	0 points Failed to market the product	

Table 2: Feed conversion efficiency estimated from average weight gain calculated by students

Wee k	Daily weigh t gain (kg) (ave)	Daily Feed Consume d (average)	Feed Conversio n Rate	Weekl y gain (kg)	Feed consume d (kg)	Feed Conversio n Rate	Monthl y gain (kg)	Feed consume d monthly	Feed conversio n rate
1	0.06	0.02	0.33	0.42	0.53	1.27			
2	0.08	0.07	0.86	0.56	0.84	1.50			
3	0.2	0.32	1.14	1.4	2.41	1.72	2.30	5.40	2.35
4	0.25	0.33	1.32	1.75	3.5	2.0			

Table 3 : Profit and loss statement for broiler enterprise

Expenses				Income			
Description	Quantity	Unit price (BWP)	Total price	Description	Quantity	Unit price BWP	Total price BWP
Day old chicks	600	3.70	2220.00	Gizzards	50	7.00	350.00
Broiler starter crumbs	10	150.43	1504.30	Necks	48 pks	8	384.00
Broiler grower pellets	20	157.32	3146.40	Claws/legs	52	5	260.00
Broiler finisher pellets	32	155.33	4970.56	livers	42 pks	4	168.00
Stress pack 100g	1	22	22	Intestines	16pks	3	48.00
New Castle vaccine 100doses	1	18.15	18.15	Manure	-	-	-
TAD Gumboro vaccine 100 doses	1	33.00	33.00	Dressed birds	555	17.25/kg	13173.83
Wood shavings	3	49.50					
Wood shavings	3	57.20	250.25				
Oxyphen 100g	3	79.75	239.25				
Labor	5	32.00	160.80				
Plastics packaging	1pk	128.80	128.80				
Total expenses			12841.21	Total income			14215.83
Profit			1374.62				14215.83

Table 4 : Unnecessary expenses incurred during management of broilers

Description	Quantity	Unit price	Total price
High pressure gas brooder	1	699.00	699.00
High pressure gas regulator	1	308.00	308.00
Complete tube feeder	8	57.20	457.60
Total			1464.60

Table 5 : Balance sheet statement in a broiler enterprise

	BWP
a) Current assets	
Building and land	58800.00
High pressure gas brooder	699.00
High pressure gas regulator	308.00
Complete tube feeder	457.60
Total assets	60264.60
b) Liabilities	
Rent	823.00
Water	-
electricity	-
labor	160.00
Total liabilities	983.00
Total balance = Total assets – Total liabilities	60264.60 - 983.00 = 59281.80

Discussion

Table 1 shows the outcomes, (assessment rubric) developed by the participants in the study. Majority of the participants who carried out the task were motivated to contribute to the development of the instrument for assessing the practical skills in an agricultural project. They worked cooperatively as a team, actively contributing towards the development of the instrument, researched information, and also attended group work meetings. The group members interacted well with each other and consulted with professionals to improve their product. The

participants were able to through the task understood the need for acquisition of practical skills, and how they can be assessed objectively. The skills identified included; cleaning, feeding, providing water, administering vaccines, keeping records of their observations, slaughtering broilers, marketing the product, correct temperatures, cleaning equipment and surroundings, and indorsing their signature for completion of stipulated tasks (table 1). The participants outlined specific descriptions that conclude each skill gained, rated on a scale of what was done, timeliness and remarks. The groups noted the need for the instrument as a response to the policy of the Agricultural Education for Botswana that is applicable to students in junior secondary schools and constitutes part of their final mark in the course. The rubric developed was based on practical activities carried out by the students and culminates into a continuous assessment.

Table 2 shows the work of participants on the task of determining the feed conversion efficiency (FCE) in broilers. The participants were able to establish the need for determining FCE and how that will help improve the productivity of the farmers. The number of birds was obtained: the amount of feed in Kg was calculated after feeding thrice each day which was then extrapolated for each day, weekly or monthly. Ten chickens were randomly selected and weighed each week and the average weights recorded. The weight gained was also related to the stocking rate for the poultry house. The result in Table 2 shows that growth rate and feed conversion are inversely proportional to the floor space per bird. Through this tasks (keeping data, working in groups, computing analysis) student teachers were made more accountable in their learning activities.

Tables 3-5 presents the results on the preparation of financial statements for the poultry enterprise: balance sheet, profit and loss account and the unnecessary expenses included. The tables show data on every aspect of production and finances through to marketing gathered and computed by the participants on the task. The records as shown in Table 3 contained cost of purchasing the chicks, number of the chicks, feed, and cost of heating the brooder, labor, medicine, mortality and the profit obtained in the project. Table 5 presents expenses incurred in running the enterprise and also the income obtained from the enterprise. Table 6 presents data gathered by participants which show unnecessary expenditure in the business.

The participants were able to learn and gain more from the preparation of the account statements as they might have carried out of transferred learning of the concepts from other relevant courses during their program of study. The fact that they managed the

broiler enterprises themselves, kept records and applied several of the business management concepts learned from their core and elective courses, made them more accountable as shown in Tables 3 -5. They were able to demonstrate the profitability of the broiler enterprises managed during AEB 425 course, ability to work together, active participation, high level of skill development, positive attitudes towards learning, and also identified unnecessary expenses incurred in the business (Table 3-5). The paper has clearly shown that through the course students were able to improve their psycho-social and accountability characteristics. Participants' behaviors (performance, activities, conduct) that were observed during the course suggests that the allocation of tasks to student teachers in the management of agricultural enterprises in schools course offered them hands-on experience to be more responsive to agricultural curriculum than the conventional class room teaching and examination. The awareness by the participants in the course that their classroom behaviours were being observed motivated learning and acquisition of skills in unusual way. It is therefore recommended that activities and tasks that will improve the psycho-social and accountability characteristics of learners be introduced into more courses and that AEB 425 should focus more on different agricultural enterprises for the would-be teachers.

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