

Mid-career extension graduates' perceptions of the impact of a demand-driven, extension curriculum in Ghana

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One of the major challenges facing Africa today is ensuring that extension practitioners are well trained to enable them function effectively as facilitators of change at the farmers' level. The purpose of this study was to examine the effectiveness of a mid-career B. Sc. Agricultural Extension Curriculum in meeting the educational needs of mid-career extension agents. The study was descriptive and used a validated questionnaire to collect data from 30 purposively selected graduates of the program. The study revealed that 66.7% were aged between 40–49 years, and 93.3% had at least 10 years of working experience before entering the program. The graduates considered their competencies at the start of the program to be below average in all but 6 of the 25 courses offered under the program. After going through the program, all the graduates had attained competencies that were rated from high to very high. Improvement in academic status, knowledge and skills in the human relations as well as technical areas in agriculture, and attitude to

work, were perceived as the major benefits of the program. The effectiveness of the program in meeting the needs of the graduates was attributed to the availability of appropriate facilities and the conducive environment for the teaching-learning process, availability of adequate and competent lecturers, committed and supportive administrative staff, balanced curriculum and a well-planned and supervised field component of the program known as the supervised enterprise projects (SEPs).

Introduction

The improvement of a country's human resource capacity for productivity is a pre-requisite for social and economic development. In the agricultural sector, both formal and non-formal education efforts are essential for developing the competent workforce necessary for improving food security and rural employment and bringing about a reduction in poverty, especially rural poverty. In Ghana and other developing countries, agricultural extension has emerged as the main organisation dealing with human resource development with respect to technology transfer to farmers, farm families and workers. There is also general agreement that agricultural extension must be supported to continue playing this critical role in agricultural and rural development in sub-Saharan Africa (Carson 2000).

Numerous studies, however, have pointed out that the development of human resources, particularly the training of extension workers, remains a major problem (Crowder, Lindley, Bruening & Doron 1998; Kwarteng, Zinnah & Ntifo-Siaw 1998; Opio-Odongo 2000; Maguire 2000; Zinnah & Akeredolu 2005). Most of the extension staff engaged in ministries of agriculture and other public related agencies or extension staffs of non-governmental organisations (NGOs) neither have the requisite university level education nor the practical exposure needed to improve agricultural productivity. There is substantial literature to indicate that most of the agricultural

extension staff in sub-Saharan Africa lack appropriate training beyond secondary school (FAO 1990; 1993; 1996; Swanson 1990; Zinnah, Steele & Mattocks 1998). This deficiency, according to Carson (2000), hampers the efforts of governments, NGOs and other agencies to assist resource-poor farmers and to improve links between farmers, researchers and extension staff. These extension agents received substantial training in technical agriculture, with very little exposure to important areas such as rural sociology, communication, problem-solving and critical thinking skills, and the capability to work as a team. These are critical areas in which knowledge and skills must be developed to produce competent and effective agricultural extensionists.

The problem of inadequately trained agricultural extension agents in sub-Saharan Africa is exacerbated by other critical factors including:

- lack of up-to-date human resource development needs assessment in many African countries which results in poor policies needed to direct relevant human resource development programs (Lindley 2000);
- dissemination of knowledge predominantly by lecture method which does not augur well for experiential learning (Burkey 1993);
- tendency to organise training programs away from real-life situations facing farmers making it difficult for trainees to relate what is being done to actual farm conditions (Burkey 1993); and
- absence of systemic revitalisation of the curriculum of most agricultural colleges and universities to make them responsive to emerging requirements and demand of the rapidly changing working environment of extension staff (Zinnah and Akeredolu 2005).

To address the problem of lack of responsive training programs for extension staff, the University of Cape Coast (UCC) in Ghana developed, with the assistance of the Sasakawa Africa Association (SAA), the Ministry of Food and Agriculture (MOFA), and the

Winrock International Institute for Agricultural Development, a two-year, post-diploma, mid-career BSc. Agricultural Extension program in October 1993. The program was financially supported under the Sasakawa African Fund for Extension Education (SAFE).

The philosophy of the UCC B.Sc. Agricultural Extension program is based on the experiential learning model which emphasises a combination of theory, experience, critical reflection and practice (Kolb 1984). This philosophy is geared towards building the confidence and the commitment of extension staff so that they can work with farmers in a participatory way, learning from them, helping them to take control of their activities and enabling them to learn on their own. In nurturing the philosophy of experiential learning, the B. Sc. Agricultural Extension program places tremendous emphasis on the off-campus, farmer-focused, action research component of the training program called the Supervised Enterprise/Experience Projects (SEPs). Under this component, students who have had a prescribed one-year period of training on the University campus undertake a 6–8 months, off-campus, field-based, experiential program.

As an action research methodology, the SEPs are designed to immerse students in valuable farmer-focused, experience-based learning activities that mirror the total milieu surrounding subsistence and semi-commercial farming systems (Ntifo-Siaw & Bosompem 2009; Selener 1997; Chambers, 1989). They are meant to reduce the discrepancy between the training provided and the various tasks the extension staff are to perform in their work environment after training. Development of critical thinking skills, systems thinking capabilities, problem-solving strategies and the development of life-long learning attitudes are emphasised.

Objectives of the study

The general objective of this study was to investigate mid-career extension graduates' perceptions of the impact of the demand-driven extension curriculum on their competencies. The specific objectives were to:

- describe graduates' perceptions of the overall effectiveness of the program;
- examine graduates' perceived levels of competencies in selected courses before and after the program;
- describe graduates' perceived strengths of the program;
- describe graduates' perceived weaknesses of the program;
- describe the extent to which graduates' perceived career aspirations had been met; and
- solicit suggestions from graduates for program improvement.

Methodology

The study utilised a descriptive survey design to accomplish its objectives. The data used in this study were collected through a validated questionnaire. To establish content-validity, the authors' face-validated questionnaire was submitted for review to three university lecturers who had experiential learning expertise. These experts assessed and judged the questionnaire to be content-valid. A total of 30 questionnaires were administered to purposively selected respondents comprising the 2006 B. Sc. Agricultural Extension graduating class. The survey instrument comprised a five-point, Likert-type scale to measure perceptions of respondents of the variables of the study. Open-ended questions were included to collect demographic and other data concerning the graduates' career aspirations, the strengths and weaknesses of the program, benefits from the program and suggestions for improvement. Using the statistical software SPSS version 10 to analyse the data, descriptive statistics, including percentages, means and standard deviations,

were computed to describe the data. The percentages described the distribution of respondents on the characteristics of respondents while the means and standard deviations described the mean responses on respondents' perceptions and the extent to which they varied on their perceptions respectively. The open-ended part of the questionnaire was analysed qualitatively by examining and recording responses to establish the frequency of occurrence of the responses. This enabled the most important (most occurring) responses to be identified and discussed.

Results and discussion

Characteristics of respondents

Of the 30 respondents, 66.7 percent were in the age group of 40–49 years with only 20 percent and 13.3 percent being within the age groups of 30–39 years and 50–59 years respectively; 93.3 percent had been working for at least 10 years and only 6.7 percent had between 5–9 years' working experience. The results indicate that the respondents were mostly middle-aged and had had substantial amount of working experience as agricultural extension agents.

Overall perception of the effectiveness of the program

The means and standard deviations for the overall perception of the effectiveness of the courses are presented in Table 1.

Table 1: Overall perception of the effectiveness of the course

Component of course	Mean	Standard deviation
Opportunities for participating in discussions in class	4.50	0.57
Overall presentation of theory	4.48	0.57
SEPs supervision	4.40	0.62
Nature of interaction with instructors	4.38	0.68
Opportunities provided for socialisation, e.g. TV, common room, etc.	4.17	0.76
Pre-SEPs preparation	3.97	0.85
Classroom organisation	3.90	0.61
Curriculum balance: theory/practice/classroom/SEPs	3.87	0.78
Supervision for report writing	3.87	0.78
Facilities	3.37	0.86
Field trips	3.33	0.80
Overall presentation of practicals	3.28	0.99
Library facilities	3.23	0.90
Equipment	3.07	0.77
Access to computers for academic use	2.97	0.93

Scale: 1 = Very poor 2 = Poor 3 = Fair 4 = Good 5 = Very good

As shown in Table 1, 60% of the fifteen parameters examined under course effectiveness had mean ratings between 3.87 and 4.50, indicating that the respondents perceived them to be good aspects of the program. Facilities, field trips, overall presentation of practical learning activities, library facilities, equipment and access to computers had mean ratings between 2.97 and 3.38 indicating that respondents perceived these aspects of the program only to be fair.

Perceived competency before and after the program

Various courses taken as part of the extension program are aimed at providing instruction that would improve the competencies of students in specific technical areas of agriculture and farm management as well as ways of living and working as change agents among people in the community. Pre-program and post-program assessments of competencies of graduates with respect to the individual courses are presented in Table 2.

Table 2: Perceived competency before and after program

Course	Before		After	
	Mean	Std. Dev	Mean	Std. Dev
Agn 205: Introduction to Computers	1.70	0.84	3.59	0.78
Agn 302: Non-Traditional Farming	2.17	0.91	3.70	0.92
Aex 301: Rural Sociology and Agricultural Extension	2.64	0.62	4.10	0.63
Aex 303: Social Change and Rural Development	2.33	0.80	4.03	0.67
Aec 301: Farm Management Economics	2.60	0.67	4.33	0.61
Aex 304: Adult and Non-Formal Education	2.34	0.72	3.97	0.85
Irc 301: Information Retrieval	1.76	0.73	3.73	0.78
Acr 301: Principles of Horticulture	2.67	0.88	4.17	0.59
Aex 322: Planning of Advanced SEPs	1.46	0.64	4.34	0.61
Aex 302: Communication and Extension Methods	2.60	0.86	4.27	0.64
Aex 305: Extension Research Methods	1.89	0.79	4.03	0.68
Aex 306: Systems Thinking for Changing Agriculture	1.33	0.55	4.03	0.83

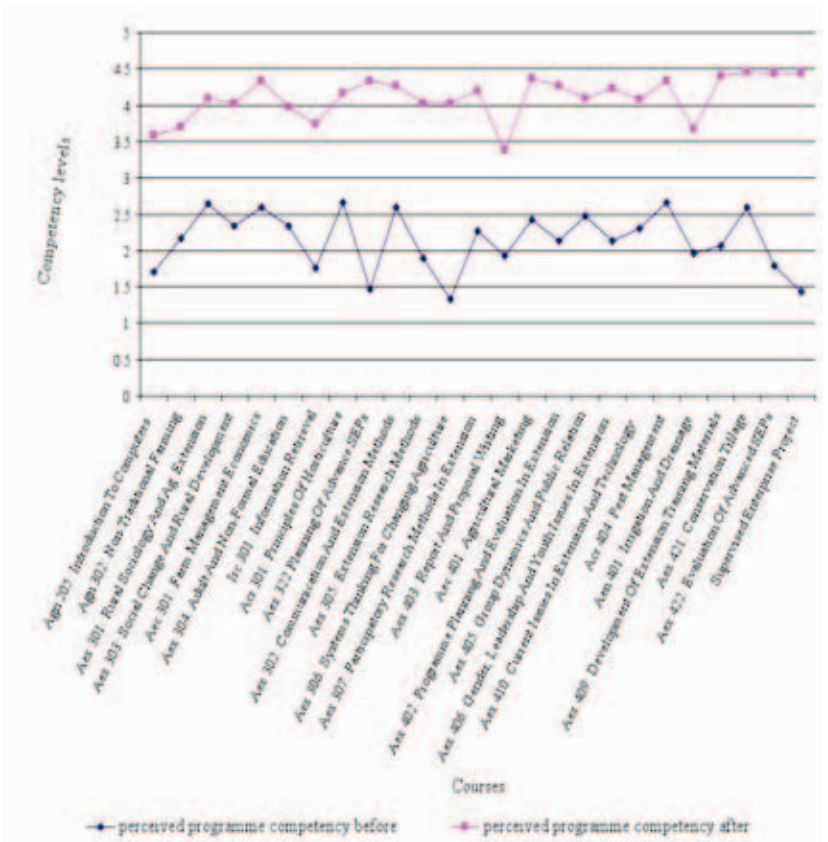
Course	Before		After	
	Mean	Std. Dev	Mean	Std. Dev
Aex 307: Participatory Research Methods in Extension	2.27	0.74	4.20	0.89
Aex 403: Report and Proposal Writing	1.93	0.71	3.38	0.75
Aec 401: Agricultural Marketing	2.43	0.73	4.37	0.61
Aex 402: Program Planning and Evaluation in Extension	2.13	0.86	4.27	0.74
Aex 405: Group Dynamics and Public Relation	2.47	0.83	4.10	0.67
Aex 406: Gender, Leadership and Youth Issues in Extension	2.13	0.78	4.23	0.63
Aex 410: Current Issues in Extension and Technology	2.30	0.70	4.07	0.58
Acr 404: Pest Management	2.67	0.76	4.33	0.76
Aen 401: Irrigation and Drainage	1.97	0.89	3.67	0.76
Aex 409: Development of Extension Training Materials	2.07	0.83	4.40	0.62
Aex 421: Conservation Tillage	2.60	0.89	4.45	0.63
Aex 422: Evaluation of Advanced SEPs	1.80	0.85	4.43	0.63
Undertaking Supervised Enterprise Projects	1.43	0.77	4.43	0.57

Scale: 1 = None 2 = Little 3 = Some 4 = Much 5 = Very much

The results from Table 2 and Figure 1 indicate that, at the start of the program, graduates considered their competencies in all but six of the 25 courses to be below average (mean value less than 2.5). However, after the program, all the graduates had attained competencies that were rated from high to very high. It is interesting to note that standard deviation values for respondents' perceived competencies both before and after the program were all below 1.0 indicating

that respondents could be considered statistically uniform in their perception of the components of the program both before going through the program and after they have been through it.

Figure 1: Competency levels before and after the program



Results presented in Table 3 show that graduates perceived their competencies (overall knowledge and skills) to have been significantly improved by their participation in the program. The overall mean value of respondents' perceived competency before participating in the program was 2.15 which corresponded to 'little' on the five-point, Likert-type scale. However, after participating in the program respondents' perceived competency was 4.13 which corresponded to 'much' on the scale. A dependent t-test showed that the perceived competency gain attributable to the program was statistically significant at the .01 level of significance. This is an indication of the overall program effectiveness in bringing improvement in the competencies of graduates. It is interesting to note that in both the instances of respondents' perceived competency before and after the program, the standard deviation values are low (less than 1.0) giving an indication that respondents did not vary much from the stated mean competency values both before and after the programs. Thus respondents were generally agreed on the weak competencies before the program and also generally agreed that their competencies had been significantly improved after going through the program.

Table 3: *Comparison of overall perceived competency before and after participation in the program*

Item	Mean	S.D	Difference in Mean	t	Prob.*
Overall perceived competency before program	2.15	0.48			
			1.98	-22.53	0.01
Overall perceived competency after program	4.13	0.45			

*sig. at .01 N=30

Perceived benefits of the program

An open-ended question sought to find out the perceived benefits of the program (defined to be the extent to which graduates believed the program would contribute to the overall improvement in their academic performance, status, knowledge, skills and ability to solve problems on the job and achieve positive results). Before the program, the graduates claimed that they were at the dead-end in their careers in terms of advancement on the promotion ladder. However, after going through the programs, the graduates reported that the program had offered them the opportunity to upgrade their academic status/credentials and therefore presented them with further opportunity to advance on the promotional ladder in managerial positions potentially up to the position of Director. They indicated that the program had contributed to overall improvement in their academic status, knowledge, skills and ability to solve problems on the job and achieve positive results. They also indicated that the program had prepared them and opened opportunities for them to pursue further studies at higher levels (i.e. Masters and PhD levels) if they so desired.

A few examples of the perceived benefits as expressed by graduates are quoted below:

The program has helped in raising my academic standards.

The program has exposed me to a lot of issues. I can now think systemically, look at issues from a broader perspective before taking action.

I have gained a lot of knowledge and I am in a better position to seek information and take up leadership roles.

Experiential learning through the SEPs has enhanced my knowledge and skills in participatory project conceptualisation, planning, implementation, monitoring and evaluation.

The program has enhanced my knowledge in diverse areas including communication, computing, systems thinking, critiquing, facilitation, proposal and report writing.

The program has improved my confidence level to assume a managerial position.

Perceived strengths of the program

In response to an open-ended question about how they perceived the strengths of the program, the graduates perceived the strength of the program to include: appropriate facilities and conducive atmosphere for the teaching-learning process; availability of adequate and competent lecturers to handle the various courses of the program; committed and supportive administrative staff; balanced curriculum in terms of theory and practical; the inclusion of emerging issues in extension and technology development; and the off-campus, participatory action research component which offered them substantial practical experience in the areas of conceptualisation, planning, implementation, monitoring and evaluation of sustainable agricultural and/or community development projects. A few examples of the perceived strengths as given by graduates are highlighted below:

The program is a useful one and the combination of practical work with the theory makes it very unique. Exposing students to issues concerning the latest policies of government as far as

agriculture is concerned makes students become abreast with what is going on in the ministry.

The curriculum is rich in content and relevant to the demands of the work environment.

Both academic and administrative staffs are very committed to program.

Lecturers are available, easily approachable and accessible to students.

Availability of library, computer room, accommodation, and lecture theatres make learning less burdensome.

Perceived weaknesses of the program

Pertaining to perceived weaknesses of the program, the respondents perceived the following as some of the weaknesses in the program that needed to be addressed: inadequate computers for practical hand-on computer training; inadequate seats for all students in the library at peak periods of demand; and inadequate financial support from the Ministry of Food and Agriculture to support their SEPs. The graduates also indicated they would like to see courses on animal health and fisheries included in the syllabus and an increase in the number of field trips and excursions.

Perceptions of the effectiveness of the program

Respondents were asked questions pertaining to the perceived effectiveness of program in contributing to their levels of career aspiration and overall knowledge and skills intended for use at work. The results are presented in Table 4. It can be inferred from these results that the program had enhanced graduates' attitude toward work, and met a large percentage of the career aspirations they had before entering the program. The graduates stated that they intended to use a substantial percentage of the overall knowledge and skills acquired in their workplaces.

Table 4: Graduates' perceptions of the effectiveness of the program on levels of aspirations, overall knowledge and skills intended for use in the workplace

Aspiration		
% of aspiration met	Frequency	Percent of respondents
45–59	2	6.6
60–79	14	46.7
80 and above	14	46.7
Total	30	100.0

Overall knowledge intended for use in the workplace		
% of knowledge intended for use	Frequency	Percent of respondents
40–59	1	3.3
60–79	8	26.7
80 and above	21	70.0
Total	30	100.0

Overall skills intended for use in the workplace		
% overall skill	Frequency	Percent of respondents
Less than 20	1	3.3
20–39	1	3.3
60–79	6	20.0
80 and above	22	73.3
Total	30	100.0

As shown in Table 4, 93.4% reported that at least 60% percent of the aspirations they had before entering the program had been met; 96.7% indicated that they intended to use at least 60% of the overall knowledge acquired in their workplace; while another 93.3%

mentioned that at least 60% of the overall skills acquired during training would be put to use in the workplace. The intention of a high percentage of the graduates to apply at least 60% percent of the overall knowledge and skills in their workplace indicates that the program had provided them with the requisite skills and knowledge relevant for the actual work environment. This further indicated that the program was responsive to the actual work environment within which the graduates would be operating.

Asked about the effect of the program on the graduates' attitudes to work, all the respondents asserted that the program had had a positive effect on their attitude to work. On the basis of their experience in the program, 96.7% of the graduates reported that given the opportunity they would recommend the program to others.

Suggestions for improvement of the program

The following suggestions were offered by graduates for improving the program:

- UCC and other stakeholders (MoFA and SAA) should strategise to procure adequate numbers of computers and reference materials/textbooks for the computer room and library respectively;
- Efforts should be made to increase the seating capacity in the library
- Frequency of field trips and excursions should be increased to enhance graduates' exposure to field activities and their practical knowledge;
- The curriculum should be reviewed to incorporate courses in animal production and health, fisheries and aquaculture and educational psychology—these courses may be offered as elective courses within the program;
- MoFA should be encouraged to increase its financial support to the students for the implementation of SEPs; and

- Access to the computer room and library should be improved and enable students to spend more time there.

Conclusions and recommendations

The results of this study have clearly shown that experiential learning works and that the curriculum of the B. Sc. Agricultural Extension program has been very effective in meeting the educational needs of the graduates. For example, respondents generally agreed that their competencies in various areas had been significantly improved after going through the program. The study has also shown that the implementation of a responsive curriculum improved attitude to work and contributed to building the confidence of the respondents. The relevance of such demand-driven curriculum can be inferred from the expressed intention of respondents to apply a substantial amount of the acquired knowledge and skills to work environment situations.

The findings also suggest that universities and colleges involved in the training of human resources for the agricultural sector can improve their programs through curriculum revitalisation as in the case of the University of Cape Coast to make them more responsive to the working environment of their graduates and society at large. It is recommended that in balancing theory and practice, innovative ways should be sought such as happened with the off-campus, supervised enterprise projects. Such an exercise should involve all stakeholders especially in the needs assessment, design, planning, implementation, monitoring and evaluation of the program. It is also important to address problems related to the educational support system such as the library and ICT facilities when revitalising and implementing such curricula.

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