

Agricultural Students' Perceptions of Farm Practical Year Programme at University of Agriculture, Abeokuta, Nigeria

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Summary

Farm Practical programme addresses the short comings in curricular of agricultural graduates enabling them to acquire knowledge and practical skills needed to become proficient in agriculture. The study contributes in providing insights into perceptions of level 400 agricultural students regarding the Farm Practical Year (FPY) programme at the University of Agriculture, Abeokuta, Nigeria. A total of 261 sample students were selected through stratified sampling procedure from 11 core agricultural departments and administered with pre-tested questionnaire. Results show that the programme provided students with 'hands-on' experience and opportunity to apply theory learnt in classroom to a real-life field situation in which students had to adapt and solve problems on daily basis. Students also felt strongly that the farm practical would contribute to their professional career and employability on graduation. However, certain perceived problems were raised by students such as lack of on-campus accommodation, delay in payment of allowances and paucity of resources. It is recommended that greater efforts are needed to mentor students to take active interest in farm practical while human and material resources strengthened to deliver this mandate.

Key words

perception, farm practical year programme, agricultural students, university, Nigeria

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Introduction

An attempt to increase the technical know-how of the nation's university graduates of agriculture necessitated the introduction of the Farm Practical Year (FPY) programme. According to Ogunbameru (1986), this process of gaining knowledge and practical skill through observation and by doing is called internship. In Nigeria, it is mandatory and indeed a policy of the National Universities Commission (NUC) that agricultural undergraduates in the fourth year of the five-year degree be exposed to farm practical year. This was also in line with the NUC Minimum Academic Standards introduced in the late 1980's that specified the need for Students Industrial Work Experience Scheme (SIWES) for degree programme in agriculture, forestry and other disciplines (Olawoye, 2006). Again, programme of this nature could be valuable in increasing the practical content and skills knowledge of students if delivered in a way that the programme is really designed. Undergraduate agricultural students must determine how to solve farm practical problems, gather and organise farm data or information, develop and formulate technical reports. These practices promote ownership of knowledge and translate into critical thinking skills they need to find out for themselves (Bransford *et al.*, 2000; White and Fredericksen, 1998). Students participation in farm practical can also be an effective means of experiential learning and associated skills development (Matter and Steidl, 2000; McCleery *et al.*, 2005). This is the hallmark of the inquiry approach (Young, 1997).

To this end, the roles of Faculties / Colleges of Agriculture in producing agricultural graduates for academic and professional leadership and management are critical to national social progress and economic growth (Amalu, 2006). But, in recent years, along with a rapid expansion in the number of agricultural faculties / colleges, poor vocational competence and near-zero practical skills in agriculture became evident. This necessitated the Round-Table Conference of Deans of Agriculture of Nigerian universities on Practical Training in June 2006 organised by the Leventis Foundation (Nigeria) Limited, University of Agriculture, Abeokuta and National Universities Commission. However, this situation is not peculiar to Nigerian universities but elsewhere (Warren, 1998; Maguire, 2000; Zinnah *et al.*, 2001). In India, the World Bank (1995) observed that there was little emphasis in the curricula on preparing the agricultural graduates for better career in agriculture or agribusiness outside government jobs. In Ghana, Okorley (2001) reported that only 20 per cent of final year university agricultural students surveyed indicated a definite willingness to pursue agribusiness as a self-employment venture because of the poor practical training delivered by the curriculum. Again, Okorley (2001) reported that the Head of Departments of three Faculties of Agriculture

in Ghana were of the opinion that the present curricula for teaching agriculture in the universities were not adequate to address the training needs for self-employment in agribusiness. Others have advocated for education that produces university graduates who can create rather than seek employment (Munowenyu, 1999). Consequently, the traditional classroom lecture-based delivery systems provide limited opportunity to acquire the necessary skills and experience to explore careers (Nikolova-Eddins *et al.*, 1997; Mc Lean, 1999; Ryan and Campa, 2000; Boersma *et al.*, 2001; Perry and Smith, 2004).

Perhaps one of the strongest arguments in the justification for establishing Universities of Agriculture in Nigeria is the need to produce a critical mass of new cadre of agriculturist. The FPY programme presents the university a unique opportunity to reinforce the practical application of all the theoretical inputs that have gone into her products. FPY has been exposing undergraduate agricultural students to all aspects of agricultural production process in crops, livestock, fisheries and forestry. Rather than being theoretical with theories about farming, level 400 agricultural students learn through FPY by actually participating in it. Such knowledge that students discover and build for themselves is also more meaningful and durable (Resnick and Chi, 1988).

At the University of Agriculture, Abeokuta, the FPY programme was initiated in 1992 and designed to provide the chief source of six months practical training for level 400 agricultural students to learn, develop and have hands-on experience needed in today's changing agriculture. The programme is managed by the University Teaching Farms Management Committee (TEFAMAC) and has trained over 4000 students since inception. It could be assumed that the provision of farm practical would make undergraduate agricultural students favorably disposed to it, hence, the need to clarify this assumption by examining the perceptions of students to it. Furthermore, new educational programme is required to evaluate the effectiveness and areas that need adjustments or improvements. This should provide information vital to an organisation's survival and prosperity (Bryson, 1988). It is against the backdrop that the study sought to provide answers to the following research questions:

- What are the perceptions of the students regarding farm practical year programme?
- What are the perceptions of students to the severity of problems encountered during the farm practical year programme?

Purpose of the Study

The purpose of the study was to examine the perceptions of undergraduate agricultural students toward

Farm Practical Year (FPY) programme at the University of Agriculture, Abeokuta, Nigeria. The specific objectives were to:

- describe the demographic profile of students;
- describe and explore the perception of students to the Farm Practical Year (FPY) programme;
- determine the perception of severity of problems faced by students during the programme.

Literature review

Perceptions refer to an individual's current appraisal of an object or programme (Hinkson and Keith, 2000). Duncan (2004) found that secondary educators either agreed or strongly agreed that the agricultural technology programme curriculum will contribute to a student's success in the agricultural industry and that the programme offers a valuable education for students. Akinsorotan (2001) viewed it as a sort of psychological reasoning or conclusion drawn from observed phenomena. It is an active cognitive process on one hand, and on the other, a mechanistic system fixed by inherent structure of the nervous system.

Allo and Schwass (1982) found that unless agricultural students have been effectively trained, they may not be able to perform the task that an efficient service will require from them to reach rapid and sustained agricultural growth. Training and transfer of technologies form the core of the process of development and the effectiveness of the agricultural services could be markedly reduced if the quality of agriculturist is poor. It has been observed also that agricultural transformation cannot take place in developing countries unless there is improved technical knowledge in the sector (Nigerian Tribune, 2004). In terms of training, Oloruntoba (2006) reported that this is vital in any organization because it ensures improvement in job behaviours and brings about higher standard of competencies. Prasad (1994) posit that training in general include acquisition of knowledge, skill and attitude, no matter what type of, level or length of training under consideration. This means that, training is not simply restricted to production aspects but an application of knowledge, skill and attitude needed to improve employer's ability in solving production problem and adopting improved practices and techniques at the field level. Youdeowei and Kwarteng (1995) found that training is useful only when designed to meet training needs, and is offered to people who will benefit from it. Hence, training needs are the competencies that must be acquired by trainees to enable them perform their jobs at the optimal level.

Anyanwu (1997) indicated that the idea of participation in practical work implies that success is ensured where efforts of the apprentice are supplemented or aroused by the

direction of authorities involved. Edozien (2002) believed that Nigeria future lies in the participation of youths in agriculture and in the empowerment of youths. In a related issue, Gidden (1997) posits that individual participate in social structures and through their participation produce and reproduce these structures. Agboola (1998) reported that people participate in things that affect them as a basic need for human beings.

Methodology

The target population consisted of all 326 FPY students (level 400) listed by the Students Industrial Work Experience Scheme (SIWES) Unit of the university for 2005/2006 session, but, data was received and analysed from sample of 261 students which represented 80 per cent of usable questionnaire. Systematic sampling procedures of a stratified sample were used for the study. The sample was stratified to ensure that all students in the eleven (11) core agricultural departments were included.

The instrument was field tested for content and face validity by panel of expert consisting of faculty members in the Department of Agricultural Extension and Rural Development. Minor corrections and restructuring of the instrument were made based on the recommendations of the panel of experts. The instrument was pilot tested with 30 undergraduates' agricultural students at the Olabisi Onabanjo University, Yewa Campus, Ayetoro, Ogun State, Nigeria. Responses were used to improve the content validity of the instrument. The internal consistency reliability estimate of the instrument was calculated using Cronbach's Coefficient ($\alpha=0.75$).

Part A of the instrument elicited information on socio-economic profile of the students. These variables were based on personal characteristics that were shown in literatures to be related to perception such as age, gender, cumulative grade point average (CGPA), where accommodated in session, place of domicile and parental occupation. Part B elicited information on perceptions of students to FPY programme. The students were asked to indicate their agreement with 34 statements based on perceptions identified in literatures and through experience. The items were measured using a four point Likert scale type of response ranging from strongly disagree =4 points; disagree=3 points; strongly agree=2 points; agree=1 point. Part C elicited data on the degree of the severity of the problems faced in the FPY programme. The items were also measured on a four point scale type of response ranging from very severe =4 points; severe=3 points, less severe=2 points; not all severe=1 point.

The data collected were analyzed using the SPSS version 11 for both descriptive and inferential statistics. The descriptive statistics tools used include frequency counts

and percentages. The *t* test was also used to test significant differences between two means at *a priori* 1.0 % level of probability. The null hypotheses tested were as follows:

- H_{01} mean score of perceptions regarding job prospects on graduation was not statistically significant
- H_{02} mean score of perceptions regarding improved academic performance were not statistically significant.
- H_{03} mean score of perceptions regarding teaching instructions and strategies were not statistically significant
- H_{04} mean score of perceptions regarding FPY generally was not statistically significant

Results and discussion

Objective 1: Demographic Profile of students

Table 1 presents the demographic profile of the students. The mean age of students was 25.3 years old (SD= 2.44). Majority of the students (98.2%) were between 16 and 25 years old. Most of them were males (60%) and majority (73%) secured accommodation off-campus during the session. Ninety percent had permanent residence in an urban area while only 10 per cent were in rural area. The mean cumulative grade point average (CGPA) was 3.37 (SD=.63) and majority (85.4%) of the students had CGPA of 2.50-4.49 while very few (3.6%) had 4.50 and above. Furthermore, majority (80.9%) also claimed that none of their siblings were studying or had studied agriculture. In terms of parental occupation, half proportions of the students' parents were civil servants while few engaged in farming. This implied a glowing positive acceptance of agriculture as a course among children of the urban elite.

Objective 2: Perception of students regarding the Farm Practical Year Programme

This section presents the perceptions of students under four sub-heads: perceptions regarding job prospects on graduation, perceptions regarding improved academic performance, perceptions regarding teaching instructions and strategies and perceptions regarding FPY generally.

Perceptions Regarding Job Prospects on Graduation

Table 2 shows students' perceptions regarding job prospects on graduation. Majority of students agreed strongly with four highest rated statements $M= 3.44$, 'Farm practical experience would enhance employability on graduation'; $M=3.35$, 'Curriculum in FPY would contribute to my success in agribusiness on graduation'; $M=3.27$, 'FPY would increase my agribusiness'; and $M=3.26$, 'FPY offers a valuable hands-on experience for students interested in agribusiness'. The corresponding *t-values* computed were 54.85, 52.38, 63.53 and 55.57. Students however disagreed

Table 1. Demographic profile of respondents

Variables	Frequency	Percentage
Age (Years)		
16-20	150	57.3
21-25	107	40.9
26-30	4	1.8
Total	261	100.0
Mean Age=25.26; SD=2.44		
Sex		
Male	157	60.0
Female	104	40.0
Total	261	100.0
Cumulative Grade Point Average		
1.50-2.49	28	10.9
2.50-3.49	116	44.5
3.50-4.49	107	40.9
4.50 and above	10	3.6
Total	261	100.0
Mean=3.37; SD=.63		
Where accommodated in session		
Off-campus	190	72.7
On-campus	71	27.3
Total	261	100.0
Place of domicile		
Rural	26	10.0
Urban	235	90.0
Total	261	100.0
Sibling studying agriculture		
Yes	50	19.1
No	211	80.9
Total	261	100.0
Father's occupation		
Farming	24	9.1
Civil service	130	50.0
Self-employed	107	40.9
Total	261	100.0
Mother's occupation		
Farming	4	1.8
Civil service	138	52.7
Self-employed	119	45.5
Total	261	100.0

Source: Field survey, 2006

with the lowest rated statement, $M=2.97$, 'I will be a better agriculturist in future'. Each of these *t-values* were statistically significant at less than 1% level thus leading us to reject the null hypothesis H_{01} , that is, the mean score of agreement regarding job prospects on graduation was not statistically significant. Therefore, of the six statements, students had the highest perceived levels of increased employability on graduation. The developments are indicative of the potential of FPY to make graduates a job creator rather than seekers. It is essential for the students to become problem-solvers and to obtain 'hands-on' experience within their profession before graduation (Beer, 1995; Nokolova-Eddins *et al.*, 1997; McLean, 1999; Boersma *et al.*, 2000). Such experience positions students to be more 'marketable' upon graduation.

Table 2. Perceptions Regarding Job Prospects on Graduation

Statements	<i>df</i>	Mean	SD	<i>t</i>	<i>p</i>
Farm Practical experience would enhance employability on graduation	260	3.44	.66	54.85	.000
Curriculum in FPY would contribute to my success in agribusiness on graduation	260	3.35	.67	52.38	.000
FPY would increase my agribusiness potentials	260	3.27	.71	63.53	.000
FPY offers a valuable hands-on experience for students interested in agribusiness	260	3.26	.62	55.57	.000
FPY would provide job for me in future	260	3.11	.84	38.88	.000
I will be a better agriculturist in future	260	2.97	.70	44.75	.000

Likert-scale type: 1= strongly disagree, 2= disagree, 3 = agree and 4 = strongly agree; M=Mean; SD = Standard Deviation; p=Sig. (2-tailed)

Table 3. Perceptions Regarding Improved Academic Performance

Statements	<i>df</i>	Mean	SD	<i>t</i>	<i>p</i>
Combination of lectures and practical has exposed students to real problems on the field	260	3.38	.61	58.23	.000
FPY increased transferability of theory learned in class to practical on the field	260	3.34	.69	50.39	.000
FPY will enhance my overall GPA	260	3.33	.68	49.48	.000
The granting of 16 credit is right	260	3.08	.77	42.10	.000
FPY enhanced and expanded my understanding of agriculture	260	3.05	.71	55.81	.000
I anticipated improved academic performance on completion of FPY	260	3.00	.65	48.43	.000
The granting of 16 credit is should be reviewed downwards	260	1.82	.78	22.70	.000
The programme would not bridge the skill gap in field practical	260	2.12	.87	25.39	.000
FPY decreased transferability of theory learned in class to practical on the field	260	1.81	.91	20.78	.000

Likert-scale type: 1= strongly disagree, 2= disagree, 3 = agree and 4 = strongly agree; M=Mean; SD = Standard Deviation; p=Sig. (2-tailed)

Table 4. Perceptions Regarding Teaching Instructions and Strategies

Statements	<i>df</i>	Mean	SD	<i>t</i>	<i>p</i>
FPY instructors make adequate planning and informed decisions regarding the programme	260	3.21	.72	46.88	.000
Students strongly favoured university teaching farm experience	260	3.18	.74	44.84	.000
Now that we have started, my perception of FPY is positive	260	3.17	.62	53.79	.000
The FPY encourages drudgery	260	3.16	.60	55.43	.000
Frequent contact with lecturers during FPY motivates learning	260	3.15	.71	46.84	.000
FPY instructors gave opportunity for learning , guided and supported students	260	3.05	.71	44.83	.000
I was familiar with the field practical taught in FPY	260	2.97	.70	41.71	.000
Students did not preferred outside the university exposure	260	2.30	.85	28.32	.000

Likert-scale type: 1= strongly disagree, 2= disagree, 3 = agree and 4 = strongly agree; M=Mean; SD = Standard Deviation; p=Sig. (2-tailed)

Perceptions Regarding Improved Academic Performance

Table 3 shows students' perceptions regarding improved academic performance. Majority of the students strongly agreed with three highest rated statements, $M=3.38$, 'Combination of lectures and practical had exposed students to the real problems on the field'; $M=3.34$, 'FPY increased transferability of theory learnt in class to practical situation on the field'; and $M=3.33$, 'FPY will enhance my overall GPA'. The corresponding *t-values* computed were 58.23, 50.39 and 49.48. Students agreed with three other statements with mean values of 3.00 to 3.08. However, students strongly disagreed with the lowest rated statements $M=1.81$, 'FPY decreased transferability of theory learned in class to practical on the field', $M=1.82$, 'the programme would not bridge the skill gap in field practical'. Each of the *t-values* were statistically significant at 1% level thus

leading us to reject the null hypothesis H_{02} , that is, the mean score of perceptions regarding improved academic performance was not statistically significant. Hence, of the nine statements, majority of the students had the highest perceived levels of FPY on their academic performance. Lindner and Dooley (2002) also found that performance requires application of related knowledge and helps make possible the acquisition of new knowledge.

Perceptions Regarding Teaching Instructions and Strategies

Table 4 shows perceptions regarding teaching instructions and strategies. Students agreed strongly with one highest rated statement $M=3.21$, 'FPY instructors made adequate planning and informed decisions'. The corresponding *t-value* computed was 46.88. Students also agreed with three other statements with mean values of

Table 5. Perceptions of Students to FPY Programme Generally

Statements	<i>df</i>	Mean	SD	<i>t</i>	<i>p</i>
FPY experience is a worth while venture	260	3.33	.68	51.41	.000
My parent's impression of FPY was positive	260	3.25	.73	46.45	.000
Peer group interactions during FPY is a worthwhile experience	260	3.18	.74	39.87	.000
I believe I made a right decision to enrol in agriculture	260	3.06	.84	38.34	.000
The FPY was an eye-opener	260	3.03	.74	43.19	.000
My enthusiasm about FPY before we started was negative	260	2.91	.72	42.16	.000
The FPY was a good programme	260	2.82	.86	34.00	.000
FPY duration should be reviewed downwards	260	2.71	.79	35.79	.000
FPY was a time-waster	260	2.38	.98	25.58	.000
FPY duration was quite right	260	2.99	.75	41.94	.000
My parents perception of FPY was negative	260	1.82	.78	24.44	.000

Likert-scale type: 1= strongly disagree, 2= disagree, 3 = agree and 4 = strongly agree; M=Mean; SD = Standard Deviation; p=Sig. (2-tailed)

Table 6. Perceptions of severity of problems faced by students during FPY (*n*=261)

Statements	Very severe, %	Severe, %	Less severe, %	Not at all severe, %
1. Not living on the campus	34.5	28.2	16.4	20.9
2. Lack of inputs and other operating supplies to do adequate practical job.	43.6	26.4	13.6	16.4
3. Lack of safety ware exposes students to danger	46.4	26.4	19.1	8.2
4. Inadequate instructors to cope with teaching and supervision.	53.6	26.4	13.6	6.4
5. Delayed in payment of allowances is demoralising	63.9	26.4	5.8	3.9
6. Inadequate government subvention is lowering the quality of the programme.	14.5	17.3	24.5	43.6
7. Inadequate vehicle dedicated to conveying students to and from extension villages and demonstration farms	27.3	26.4	25.5	20.9
8. Methods used in teaching practical was laborious	41.8	15.5	17.3	25.5
9. Teachers failed to use combination of instructional strategies.	71.8	10.0	13.6	4.5
10. Uncertainty in weather condition	10.0	7.3	23.6	59.1

Likert-scale type: 1= not severe, 2= less severe, 3 = severe, and 4 = very severe.

3.05-3.18. However, the students disagreed with the lowest rated statement, $M=2.30$, 'Students do not prefer outside the university exposure'. The corresponding t value computed was 28.32. The t -value was statistically significant at less than 1% level thus leading us to reject the null hypothesis H_{03} , that is, the mean score of perceptions regarding teaching instructions and strategies was not statistically significant.

Perceptions of Students Regarding FPY Generally

Table 5 shows students perceptions regarding the FPY generally. Students agreed strongly with two highest rated statements $M=3.33$, 'FPY experience was a worth while venture' and $M=3.25$, 'My parents impression of FPY was positive'. The corresponding t -values were 51.41 and 46.45. Students also agreed with three other statements with mean values 3.03 to 3.18. However, students strongly disagreed with the lowest rated statement, $M=1.82$, 'My parents impression of FPY was negative'. The corresponding t -value computed was 24.44. The t -value was statistically significant at less than 1% level thus leading us to reject the null hypothesis H_{04} , meaning that the mean score of perceptions regarding FPY generally was not statistically significant. This corroborated the submission by Millenbah and

Millspaugh (2003) that the intensive field experience was a strategy to gain the necessary skills and experience.

Objective 3: Perceptions of severity of problems faced by students during FPY

The result presented in Table 6 showed the perception of problems faced by students in the practical programme. These appeared to be the major causes of dissatisfaction among students. Crucial among these problems is inadequate on-campus accommodation during FPY as perceived by most of the students (62.7%). Students (63.9%) also indicated a very severe delay in the payment of allowances. Majority of the students (80%) also perceived the paucity of resources such as agricultural inputs as serious problem mitigating FPY programme.

Students also claimed that, apart from doing mundane tasks, the programme was laborious and led to drudgery. They were subjected to the use of local farm implements including hoes and cutlasses on the allocated plots. They also claimed that their output from such plots were valued and seldom adequately rewarded. Inadequate vehicles for transporting students to and from extension villages and farms was a moderately severe problems as claimed

by more than half (54.7%) of the students. According to ethical consideration, institutions have a responsibility to ensure the safety of all those associated with the farm practical. However, majority of the students (72.8%) claimed that lack of safety wears exposes them to danger during the FPY. But uncertainty in weather condition was not regarded as a problem by the majority of the students (82.7%). However, most of the students (68.1%) felt that inadequate subvention from government was not affecting the quality of the programme. It should be noted that the task of an instructor is not only to know what skill the learners must acquire, but also the process by which the skills are acquired. But, majority of the students (81%) felt that failure of instructors to use different instructional methods was a very severe problem in the FPY. Finally, inadequate instructors to cope with teaching and supervision of field practical were perceived as a very severe to severe problems by majority (80%) of the students.

Conclusion and recommendations

Employers of labour nowadays demand that graduates of agriculture be well-grounded in practical content. The Farm Practical Year programme provided students with 'hands-on' experience and opportunity to apply theory learnt in classroom to a real-life field situation in which students had to adapt and solve problems on daily basis. Students were generally consistent and tend to agree in their perceptions regarding the Farm Practical Year programme.

Students had also benefited both theoretically in the classroom instructions as well as technically in the field. This implies that the Farm Practical Year had proved to be a novel programme availing opportunity for undergraduate agricultural students to gain practical skills supplemented by theoretical knowledge in agriculture. This no doubt would enhance employability or self-employment in agribusiness on graduation. In order to make the programme relevant and increase the quality of teaching, instructors should avail themselves of modern techniques in agriculture. Furthermore, students should be exposed to private farms outside the university as a way of strengthening knowledge and skills in modern agriculture.

Findings of this study also indicate that the programme has beneficial outcomes despite certain perceived problems by students. As noted earlier, the severity of problems faced during FPY calls for adoption of a re-newed strategy to re-orientate resources and deliver the programme. This becomes necessary since the programme was based on the premise that a combination of factors comprising the right technology, access to physical inputs, adequate instructors and enabling environment are essential to get the programme moving and facilitate learning among stu-

dents. Learning is the mental activity by means of which knowledge and skills, habits, attitudes and ideals are acquired, retained and utilized resulting in the progressive, adaptation, modification of conduct and behaviour.

In general, University must ensure that proper perception, appropriate attitude and right teaching / communication behaviour are acquired through sound practical agricultural training. To this end, there is a need to put in place adequate resources and learning environment for the field-based practical. University should also show more concern with the welfare of students and staff at large including mental, physical health and safety, and take all possible precautions to avoid incidental injury. Mentoring is an excellent means for students to receive technical and psychosocial support students could benefit from various mentoring relationships. Consequently, mentoring of students which is an essential aspect of career development should be encouraged by the university not only in the FPY but throughout students' career.

Finally, in future longitudinal studies should be conducted to verify these findings as new entrants join the programme and as university achieved or failed to achieve the strategic objectives in ensuring that the University Teaching Farms Management Committee (TEFAMAC) is fulfilling its mission.

References

- Agboola T. (1998). The participation of rural poor in rural development. A theoretical construct. *Nigeria Journal of Economic and Social Studies*. vol. 30, (2): 167-176
- Akinsorotan A.O (2001). Perception of Village extension agents on the staff appraisal systems used by Oyo State Agricultural Development Programme in Nigeria. *Nigeria Journal of Development Studies* vol 1(1): 48-56
- Allo. A. V. and Schwass R. A. (1982). A Discussion of agricultural extension for development countries: The Farm Advisor; FFTC Book Series No. 23 pp 71-76.
- Amalu, U.C (2006). Finding solutions to the problem of low academic and professional standards of graduates of agriculture in Nigeria. Invited paper at the Roundtable of Deans of Agriculture of Nigerian Universities on Practical Training held at the Senate Chamber, University of Agriculture, Abeokuta 13-16 June, 2006, 8pp.
- Anyanwu C. N. (1997). Community development. The Nigerian perspective, Gabesther Educational Publishers. Ibadan p. 2
- Beer, R.H (1995). Guidelines for the supervision of undergraduate research. *Journal Chem. Educ* 72: 721-722.
- Boersma, S.M, M. Hluchy, G. Godshalk, J. Crane, D. DeGraff, and J. Blauth (2000). Student-designed interdisciplinary science projects. *Journal of College Science Teachers*, 30: 397-402.
- Bransford, J.D, Brown, A.L and R. Cocking (2000). How people learn: Brain, mind experience and school. National Academy Press, Washington, D.C.
- Bryson J. M. (1988). Strategic planning for public and non-profit organizations. San Francisco, CA. Jossey -Bass Publishers.

- Duncan, D.W (2004). Knowledge and perceptions of Virginia secondary agriculture educators toward the agricultural technology program at Virginia Tech. *Journal of Agricultural Extension* vol 45, (1): 21-28
- Edozien N. N. (2002). Empowering the poor through micro finance. A Paper Presented at 20th Biennial Conference of the Development Finance. Department of Central Bank of Nigeria held in Calabar November 4-5.
- Gidden A. (1997). *The Constitution of society: Outline of the theory of structuralization*. Berkeley, University of California Press 68pp.
- Hinkson, M and Keith, L. (2000). The attitude and perceptions of high school administrations towards agricultural science teachers in Texas. Proceedings of the 2000 Southern Agricultural Education Research Conference, Lexington. KY.
- Matter, W.J., and R.J.Steidl (2000). University undergraduate curricula in wildlife: Beyond 2000. *Wildlife Society Bulletin* 28: 503-507.
- Maguire, C.J (2000). Agricultural education in Africa; managing change. A paper presented at Workshop 2000 on bringing African universities more into agricultural development held in Accra and Cape Coast, Ghana September 4-6.
- McCleery, R.A., R. R. Lopez, L.A. Harveson, N.J.Silvy, and R.D.Slack (20005). Integrating on-campus wildlife research projects into the wildlife curriculum. *Wildlife Society Bulletin* 33: 802-809.
- McLean, R.J.C (1999). Original research projects: a major component of an undergraduate microbiology course. *Journal of College Science Teachers* 29: 38-40
- Millenbah, K.F and J.J Millsbaugh (2003). Using experiential learning in wildlife courses to improve retention, problem solving, and decision-making. *Wildlife Society Bulletin* 31: 127-137
- Munowenyu, M.E (1999). The need to offer Basic Vocational Education in Zimbabwe's Secondary Schools, *Zimbabwe Journal of Educational Research*, vol. 11, (1): 43-56.
- Nigerian Tribune (2004). Institutional strategies for sustainable agriculture and improved productivity in Nigeria. UNAAB's Contribution and Experience. October 25, 2004.
- Nikolova-Eddins, S.G., D.F. Williams, D. Bushek, D. Porter, and G. Kineke (1997). Searching for a prominent role of research in undergraduate education. Project interface. *Journal of Excellence College Teachers* 8: 69-81.
- Lindner, J.R and Dooley, K.E (2002). Agricultural education competencies and progress toward a doctoral degree. *Journal of Agricultural Education* 43 (1): 57-68.
- Ogunbameru, O.B (1986). Extension internship: A pre-requisite for students degree. *Journal of Extension Systems* vol 2 June, pp 69-71. <http://www.jesonline.org/1986jun.htm>.
- Okorie J. U. (2001). Vocational industrial education Bauchi League of Researchers in Nigeria. pp 5-6.
- Okorley, L.E. (2001). Determinants of the propensity to enter into agribusiness as self-employment venture by tertiary agricultural students in Ghana. The World Bank, Washington, D.C.
- Olawoye, J.E (2006). State of training facilities for practical agriculture in Nigerian universities and the way forward. Paper presented at Round-Table of Deans of Faculties of Agriculture in Nigerian Universities on Practical Training held at the University of Agriculture, Abeokuta June 13-16, .7pp
- Oloruntoba, A (2006). Perceived professional competencies of agricultural extension agents in Ijebu-Ode zone of Ogun State Agricultural Development Programme, Nigeria. *Journal of Agricultural Sciences, Science, Environment and Technology-ASSET Series C* 11pp.
- Prasad, C (1994). Training for agricultural development a basic functional area. *Journal of Rural Reconstruction*.
- Perry, G.A., and M.F. Smith (2004). A simulation exercise to teach principles of bovine reproductive management. *Journal of Animal Science* 82: 1543-1549.
- Resnick, L.B and M.T Chi (1988). Cognitive psychology and science learning. In M. Druger (ed) *Science for the fun of it: A guide to informal education*. National Science Teachers Association, Washington, D.C.
- Ryan, M.R., and H. Campa (2000). Application of learner-based teaching innovations to enhance education in wildlife conservation. *Wildlife Society Bulletin* 28: 168-179.
- Warren, M (1998). Practising what we preach: Managing agricultural education in a changing world. *Journal of Agricultural Education and Extension* 5 (1): 53-65.
- World Bank (1995) Staff Appraisal Report of India. Document of the World Bank Report No 13517. A HRD, March 9, 1995, South Asia Department of Agriculture Operations Division, Washington, D.C
- White, B.Y and J.R Fredericksen (1998). Inquiry, modeling, and metacognition: Making science accessible to all students. *Cognition and Instruction* 16: 3-118.
- Youdeowei, A. and Kwarteng, J. (1995). Development of training materials in agriculture, UK Sage Publishing.
- Young, D.B (1997). Science as inquiry. In A. Costa and A. Liebmann (eds) *Envisaging process as content: towards a renaissance curriculum*. Corwin Press, Thousand Oaks, CA. pp.120-139.
- Zinnah, M.M, Steele, R, Carson, A and F.Annor-Frempong (2001). Assessment of tertiary agricultural education in Ghana. Proceedings of the 17th Annual Conference, Association of International Agricultural Extension Education, AIAEE-Baton Rouge, Louisiana, USA. April 4-7, pp 383-391.