

Improvement needs of lecturers of Agricultural Education for teaching Agricultural Mechanization in colleges of education in North Central Nigeria

Abdullahi A. Odus^{1,2*} and Wever, D. G.²

¹Department of Agricultural Education, College of Education Akwanga, Nasarawa State, Nigeria.

²Department of Vocational Agriculture and Technology Education Joseph Sarwuan Tarka University, Markudi, Benue State, Nigeria.

*Corresponding author. Email: odusadebo@gmail.com

Copyright © 2023 Odus and Wever. This article remains permanently open access under the terms of the [Creative Commons Attribution License 4.0](https://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Received 17th February 2023; Accepted 26th February 2023

Abstract: This study is on the improvement needs of lecturers of Agricultural Education for teaching Agricultural Mechanization. Two research questions and Two null hypotheses were formulated. A survey research design was adopted for the study. A total of 175 lecturers of Agricultural Education in public colleges of education were used. A structural questionnaire called Improvement Needs Questionnaire (CINQ) was developed and used for data collection. Five (5) experts validated the instrument. The reliability coefficient of the instrument was 0.89 using Alpha-Cronbach Method. Seven research hypotheses were tested at a 0.05 level of significance. Weighted mean and Improvement Needs Index (INI) was used to answer research questions while t-test statistics was used to test the hypotheses. It was found that lecturers of Agricultural Education in colleges of education in North Central Nigeria did not possess improvement needs for teaching Agricultural Mechanization. It was also found that Agricultural Education lecturers in North Central Nigeria required improvement needs in all the stages of teaching. It was therefore recommended that refresher training is required to help the lecturers acquire the needed improvement in teaching. This can be done through lecturers attending conferences and seminars organized for training lecturers for teaching in North Central Nigeria.

Keywords: Agricultural Education, Agricultural Mechanization, improvement needs, teaching.

INTRODUCTION

Teaching in the opinion of Ekele (2015) is the interaction between a teacher and students under the teacher's responsibility in order to bring about the expected change in the student's behaviour. He further observed that teaching is a business of all those involved in the task of changing human behaviour and transforming society for the better, particularly, when the actions render them perceptibly significant, respectable and recognizable to others because of the achievement they accomplish and the unique manner they do them. Teaching is a process that causes or helps someone to learn about a subject by giving lessons about a particular subject to a student or learner. Kumar (2011) viewed teaching to include all the activities of providing education to others, the person who

teaches education is called a lecturer and he is capable of handling quality of instruction, teaching planning, classroom management, professional behaviour, and interpersonal relations.

Improvement needs in the opinion of Abdullahi and Ajoku (2015), is a concept that is concerned with creating or enhancing the ability of a society to perform specific tasks and attain national development objectives. Furthermore, improvement needs is a process of developing and strengthening the skills, instructions, abilities, processes and resources that organizations and communities required to survive. The opinion of Harrington (2014) involves improving a process to make it effective and adaptive. The author also explained improvement

needs as the updating of the initial or originally acquired knowledge and skill to enable an individual to perform better in an activity. In the context of this study, improvement needs is the knowledge, skills and attitudes required by lecturers of Agricultural Education for acceptable performance in the teaching of Agricultural Mechanization in Colleges of Education in North Central Nigeria. Improvement needs in the opinion of Abdullahi and Ajoku (2015), is a concept that is concerned with creating or enhancing the ability of a society to performed specific tasks and attain national development objectives. Furthermore, improvement needs is a process of developing and strengthening the skills, instructions, abilities, processes and resources that organizations and communities required to survive.

Agricultural Mechanization refers to the use of mechanization, and or is the art of using machinery to hasten or make production easy, to accomplish task and reduce fatigue and the use of human labour in order to produce better quality goods and services (Folaranmi, 2014). Almasi et al. (2005) observed that Agricultural Mechanization involves the selection, operation, utilization, and maintenance of mechanization devices and systems in agricultural operations, and their management in crop production for the utmost benefit of man.

In North Central Nigeria, lecturers of Agricultural Education in colleges of education were employed to impart knowledge, skills and attitudes in the area of their subject to the students. These lecturers, who are university graduates, teach with the aim of achieving the general objectives of Agricultural Mechanization in the college of education. The lecturers have the sole responsibility of teaching Agricultural Mechanization towards the achievement of the stated objectives. Despite the activities of lecturers of Agricultural Education in teaching Agricultural Mechanization towards achieving the objectives of Agricultural Mechanization in colleges of education, it was observed that performance in Agricultural Mechanization was below average.

In North Central Nigeria it has been observed that lecturers' performance in teaching Agricultural Mechanization, both in theory and practical aspects is below standard (Ekele and Wombo 2013). The low performance could be due to so many factors, but the lecturers of Agricultural Education have been a major factor implicated or blamed for this low level of performance. To improve the level of performance of lecturers of Agricultural Education teaching Agricultural Mechanization, there is need to improve the level of competence of lecturers of Agricultural Education, through refreshers courses, attending seminars and workshops to update their knowledge to improve their teaching. This gives the gap which is the dimension at which improvement needs is required.

Lecturers of Agricultural Education in North Central Nigeria are graduates from the universities like their counterparts lecturers in the North-central Nigeria. Hence,

lecturers of Agricultural Education in North Central Nigeria are not exonerated from the researchers' observations and comments, therefore, there is the need for improvement needs of lecturers of Agricultural Education in colleges of education in North Central Nigeria. Specifically, the study seeks to identify:

1. The improvement needs of lecturers of Agricultural Education in organizing for teaching Agricultural Mechanization in Colleges of Education in North Central Nigeria.
2. The improvement needs of lecturers of Agricultural Education in expert knowledge for teaching Agricultural Mechanization in colleges of education in North Central Nigeria.

Research questions

1. What are the improvement needs of lecturers of Agricultural Education in organizing the teaching of Agricultural Mechanization in North Central, Nigeria?
2. What are the improvement needs of lecturers of Agricultural Education in expert knowledge for teaching of Agricultural Mechanization in North Central Nigeria?

Hypotheses

H₀₁: There is no significant difference in the mean rating of improvement needs of lecturers' organizing and their performance in the teaching of Agricultural Mechanization in Colleges of Education in North Central Nigeria.

H₀₂: There is no significant difference in the mean rating of improvement needs of lecturers' expert knowledge and their performance in the teaching of Agricultural Mechanization in Colleges of Education in North Central Nigeria.

METHODOLOGY

The study adopts a survey research design. Survey research design according to Emaiku (2015) is a plan or blueprint which specifies how data relating to a given problem should be collected and analyzed. A survey research design is one in which a group of people or items are studied by collecting and analyzing data from only a few people or items considered to be representative of the entire group. The survey research design is suitable for the study because the study gathers information from respondents on the improvement needs of lecturers of Agricultural Education for the teaching of students in colleges of education in North central Nigeria.

The sample size for this study was 175 respondents. This is all Agricultural Education lecturers in both federal

Table 1. Improvement needs of Agricultural Education lecturers in organizing the teaching of Agricultural Mechanization in colleges of education in North Central, Nigeria (n= 174).

S/N	Competencies in Organizing Instruction	\bar{X}_n	\bar{X}_p	NPI ($\bar{X}_n - \bar{X}_p$)	Remarks
1	Study the instructional plan and become familiar with it	3.11	2.08	1.03	IN
2	Arrange the content of Agricultural Mechanization topics from simple to complex	3.16	1.98	1.18	IN
3	Arrange the objectives of the lesson in sequence	3.21	2.01	1.20	IN
4	Organize the materials sequentially in order of use for instruction	3.15	2.03	1.12	IN
5	Select relevant materials for the topic you want to teach.	3.17	2.01	1.16	IN
6	Prepare all Mechanize activities in Agricultural Mechanization for instruction	3.29	2.09	1.20	IN
7	Study carefully the Agricultural Mechanization textbooks for additional information to add to the lectures' knowledge of content.	3.29	2.04	1.25	IN
8	Organize farming activities within a time frame	3.30	2.06	1.24	IN
9	Organize relevant instructional textbooks in Agricultural Mechanization that could help students' understand the course content of the curriculum	3.29	2.02	1.27	IN
10	Organize appropriate instructional methods for Agricultural Mechanization	3.21	2.06	1.15	IN
11	Organize appropriate evaluation techniques for Agricultural	3.18	1.99	1.19	IN
12	Organize relevant field experiences for students' exposure.	3.16	2.02	1.14	IN
13	Identify skills in practical operations such as driving, operating tractor for students demonstration	3.24	2.03	1.21	IN
Grand NPI		3.21	2.03	1.18	IN

\bar{X}_n = Mean of Needed Category, \bar{X}_p = Mean of Performance Category, n = number of respondents, NPI = Needed-Performance Index, IN = Improvement Needed.

and state colleges of education in North Central Nigeria. There was no sampling because the population could be effectively managed by the researcher.

The instrument used for data collection was a 100-item structured questionnaire which was developed by the researcher known as Improvement Needs Questionnaire (CINQ). The instrument had two categories of response to needs and performance rating. The need category had a four-point response scale of Highly Needed (HN) 4, Averagely Needed (AN) 3, Slightly Needed (SN) 2, and Not Needed (NN) 1. While the performance category rating had a four-point response scale of High Performance (HP) 4, Average Performance (AP) 3, Low Performance (LP) 2, and Non-Performance (NP) 1. The instrument is divided into two clusters on the bases of the research questions for the study. They include: organizing for teaching and expert knowledge for teaching.

Weighted mean and improvement need index (INI) was used to answer research questions. To determine the mean needed, the real limit of numbers was utilized as follows: 3.50-4.00 (Highly Needed), 2.50-3.44 (Averagely Needed), 1.50-2.49 (Slightly Needed) 1.00-1.49 (Not Needed) any item whose weighted mean is 1.5 or above is regarded as needed while any item whose weighted mean is less than 1.5 is regarded as not needed.

The null hypothesis was tested using a t-test at a 0.05 level of significance. The result of the data analysis was used for the production of improvement needs of lecturers

which shall be used as a training package for lectures of Agricultural Education for teaching Agricultural Mechanization in colleges of education in North Central Nigeria.

RESULTS

Data in Table 1 reveals that all 13 items have need-performance index that ranges from 1.03 to 1.27, with a grand index of 1.18 and was positive. This result indicates that Agricultural Education lecturers needed improvement in all 13 items in organizing the teaching of Agricultural Mechanization in North Central, Nigeria.

Table 2 presents a t-test analysis of the mean ratings of respondents on the improvement needs of lecturers in federal and state colleges of education in organizing the teaching of Agricultural Mechanization in colleges of education in North Central, Nigeria at $p > 0.05$. The Table shows a p-value of 0.701 which is greater than the alpha value of 0.05 at 172 degrees of freedom ($0.701 > 0.05$). This implies that the test is not significant hence, there is no statistically significant difference in the mean ratings of the responses of Agricultural Education lecturers in federal and state colleges of education on the improvement needs of lecturers in organizing the teaching of Agricultural Mechanization in colleges of education in North Central, Nigeria. Therefore, the null hypothesis was not rejected.

Table 2. t-test analysis of mean ratings of respondents on improvement needs of Agricultural Education lecturers in federal and state colleges of education in organizing the teaching of Agricultural Mechanization in colleges of education in North Central, Nigeria

Status	N	Mean	Std.	Std. error mean	df	Sig.	t-cal	Alpha value	Remark
Federal COE Lecturers	47	2.0834	1.40918	0.20555	172	0.701	0.385	0.05	NS, NR
State COE Lecturers	127	1.9933	1.35568	0.12029					

N= Number of respondents, COE: College of Education, Std = Standard deviation, df = degree of freedom, Sig. = P-value; t-cal = t-calculated value; P >.05, NS = Not significant, NR =Not rejected.

Table 3. Improvement needs of Agricultural Education lecturers in expert knowledge for the teaching of Agricultural Mechanization in colleges of education in North Central, Nigeria (n= 174).

S/N	Competencies in expert knowledge	\bar{X}_n	\bar{X}_p	NPI ($\bar{X}_n - \bar{X}_p$)	Remarks
1	Have intellectual capability of the subject matter	3.14	1.94	1.20	IN
2	Understand different approaches of the subject matter	2.90	1.97	0.93	IN
3	Capacity to make decision in the classroom	2.68	1.92	0.76	IN
4	Ability to motivate students during teaching	2.91	1.81	1.10	IN
5	Have potentials in classroom management	2.78	1.86	0.92	IN
6	Good social skills in teachers – students relationship	3.23	1.85	1.38	IN
	Grand NPI	2.94	1.89	1.04	IN

\bar{X}_n = Mean of Needed Category, \bar{X}_p = Mean of Performance Category, n = number of respondents, NPI = Needed-Performance Index, IN = Improvement Needed.

Table 4. t-test analysis of mean ratings of respondents on improvement needs of Agricultural Education lecturers in federal and state college of education in expert knowledge for the teaching of Agricultural Mechanization in colleges of education in North Central, Nigeria

Status	N	Mean	Std.	Std. Error Mean	df	Sig.	t-cal	Alpha value	Remark
Federal COE Lecturers	47	1.9822	1.22387	0.17852	172	0.526	0.635	0.05	NS, NR
State COE Lecturers	127	1.8569	1.13072	0.100335					

N= Number of respondents, COE: College of Education, Std = Standard deviation, df = degree of freedom, Sig. = P-value; t-cal = t-calculated value; P >.05, NS = Not significant, NR =Not rejected.

Data in Table 3 reveals that all 6 items have need-performance index that ranges from 0.76 to 1.38, with a grand index of 1.04 and was positive. This result indicates that Agricultural Education lecturers needed improvement in all 6 items in expert knowledge for teaching Agricultural Mechanization in colleges of education in North Central, Nigeria.

Table 4 presents a t-test analysis of the mean ratings of respondents on the improvement needs of lecturers in federal and state colleges of education in expert knowledge for teaching Agricultural Mechanization in colleges of education in North Central, Nigeria at $p > 0.05$. The Table shows a p-value of 0.526 which is greater than the alpha value of 0.05 at 172 degrees of freedom ($0.526 > 0.05$). This implies that the test is not significant, hence, there is no statistically significant difference in the mean ratings of the responses of Agricultural Education lecturers in federal and state colleges of education on the improvement needs of lecturers in expert knowledge for teaching Agricultural Mechanization in colleges of education in North Central, Nigeria. Therefore, the null hypothesis was not rejected.

DISCUSSION

The findings from Tables 1 and 2 indicate that Agricultural Education lecturers needs improvement in all 13 items in organizing the teaching of Agricultural Mechanization in North Central Nigeria which have improvement needs index that ranges from 1.03 to 1.27 with a grand index of 1.18 and were positive. This was supported by Olaitan (2009) that lecturers should organized the materials sequentially in order of use, identify relevant textbooks that could assist understanding of the content, study carefully the textbooks for information to add to the lecturer's knowledge of the content. The author further opined that in preparation for teaching, the lecturer must organize himself before teaching the students: He must carried out this, obtain a copy of the instructional plan for the course he wants to teach, study carefully the instructional plan and become familiar with it, identify the material needed for teaching, select relevant material for content he wants to teach at a particular period, organize materials sequentially in order of use, identify relevant instructional textbooks that can assist understanding of the content,

study carefully the textbook for instruction to add to the lecturer knowledge of the content. This will make the lecturers to be properly equip with relevant skills and knowledge for teaching.

The findings from Tables 3 and 4 indicate that lecturers of Agricultural Education required improvement in expert knowledge for teaching Agricultural Mechanization which has 6 items that have need performance index ranging from 0.76 to 1.38 with a grand index of 1.04 and were positive. Which was supported by Ward and Ayyazo (2016), that lecturers should understand the process of teaching to enable them to manage the classroom effectively. The author further emphasis the pedagogical “knowledge base” of lecturers which includes all the required cognitive knowledge for creating effective teaching and learning environment, the author also categorize lecturers knowledge into the concept of principles and strategies of classroom management and organization that are cross-curricular and the knowledge which integrate the content knowledge of a specific subject and the pedagogical knowledge for teaching that particular subject. Lecturers are expected to be sound in all aspects of teaching before going to the classroom for teaching in College of Education in North Central Nigeria.

Conclusion

Based on the study results, the following conclusions were made;

1. Lecturers of Agricultural Education in public colleges of education in North Central Nigeria do not possess in planning for teaching which is the foundation for the needs for teaching. Their level of input remains low.
2. The teaching methods of lecturers in colleges of education in North Central Nigeria are generally poor due to lack of improvement, which has affected the educational standard of the students.

Recommendations

1. Lecturers are required to attend seminars and workshops to improve their knowledge.
2. Lecturers should attend conferences to update their knowledge to improve their teaching.
3. Government/management of colleges of education should encourage their lecturers through motivation.
4. Managements of various colleges of education in North Central Nigeria should provide modern teaching facilities to lecturers in order to improve their teaching.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

REFERENCES

- Abdullahi, A., & Ajoku K. B. (2015). Capacity building for sustainable industrial development – A Nigerian Perspective. Abuja Research and Development Council.
- Almasi, M., Kiyani, S. H., & Lavaimi, N. (2005). *A textbook of principles of agricultural mechanization*. Iran: hazratemaesomah Pub.
- Ekele, G. E. (2015). *Fundamental of farm management, extension and agricultural education*. Otis Digital Press, Makurdi, Benue State-Nigeria.
- Ekele, G. E. & Wombo, A. B. (2013). Meeting capacity building needs of small farmers in rice production for sustainable development in Kaduna State. *Nigerian Vocational Association Journal*, 18(2), 112-116.
- Emaiku, S. O. (2015). *Fundamentals of research methods and statistics*, Makurdi; Selfers Academy.
- Folaranmi, A. G. (2014). The role of agricultural mechanization in the enhancement of sustainable food production in Nigeria. Retrieved from <https://www.linkedin.com/pulse/20140617225331-162049572-the-role-of-agricultural-mechanization-in-the-enhancement-of-sustainable-food-production-in-nigeria>.
- Harrington, H. J. (2014). *Business process improvement: The breakthrough strategy for total quality productivity and competitiveness*. New York Mc Grand-Hill Inc.
- Kumar, D. (2011). Fish culture in undesirable ponds. Rome: FAO. p.17.
- Olaitan, S. O. (2009). *Agricultural education in the tropics*. New York. Macmillan, Publishers.
- Ward, P., & Ayyazo, S. (2016). Pedagogical content knowledge: Conceptions and findings in physical education. *Journal of Teaching in Physical Education*, 35(3), 194-207.