

An Assessment of Availability, Adequacy and Utilization of Training Facilities and Equipment in Federal Colleges of Forestry, Nigeria.

Appah, O. Rose

Federal College of Forestry, Ibadan, Forestry Research Institute of Nigeria.

Email: ogechukwuappah@yahoo.co.uk

Abstract

The provision of adequate training materials and equipment in any institution offering technical education and their efficient utilization determines the quality of education offered in such institution. This paper is a case study of assessing the availability, adequacy and utilization of training facilities and equipment in Federal Colleges of Forestry in Nigeria. Two colleges under the supervision of Forestry Research Institute of Nigeria were purposively selected and census approach used to select three hundred and eighty-two (382) students. This study adopted survey research design. Training Facilities Inventory ($r=0.79$) was used to collect data for the study. The data collected was analysed using descriptive statistics. The results revealed that majority of training facilities and equipment available in the colleges are not adequately provided and utilized by the students. It is therefore recommended that training facilities and equipment should be adequately provided and utilised by the students for effective implementation of the programme.

Keywords: Availability, Adequacy, Utilisation, Training facilities, Equipment, Federal College Forestry.

Introduction

Education ensures access to training and empowerment opportunities and it is a process by which one acquires effective knowledge and skills. Forestry education therefore, is crucial and unique in meeting and providing the needs of the society in sustainable forest management and attaining national development goals. This is because according to Bandyopadhyay (2008), the objective of any education is to equip the student with necessary skill, knowledge, capability to work in a team, system and strategic thinking, so as to become a useful and effective citizen for the globe and nation. However, one of the goals of technical and vocational education as stated in the National Policy on Education (FRN, 2013) is to give training and impart necessary skills to individuals who will be self-reliant. Thus, forestry education which leads to acquisition of practical and applied skills that promote self-reliance requires effective instruction and motivation of students. This will make the students to be actively involved in the learning task and thereby, learn more than when they are passive recipients of instruction. Beside the quality of teaching personnel and their instructional delivery, there must be adequate learning facilities for practical works.

The provision of adequate resources in a school and their efficient utilization determines the quality of education offered in such school. Therefore, technology laboratories, scientific laboratories, practical study sites and the entire environment where technical and highly skilled education of this nature is given must be adequately equipped and efficiently utilized to reflect the actual working environment. Okorie (2000) supported this view saying that lack of teaching and learning facilities are among factors that contribute to decrease in the rate of skill acquisition among students. The school environment should look like the actual environment where the students will work after the training. Federal Colleges of Forestry in Nigeria, under the supervision of Forestry Research Institute (FRIN), offer technology education meant to provide technical knowledge and vocational skills in forestry and agricultural development. The colleges therefore, require adequate laboratory equipment needed for practical work. This is necessary because technology education is a system of education which, according to Uwaifo (2008), relies upon the teaching of skills and therefore demands the professional or

expert use of hand. In this way, students can then acquire skills and scientific knowledge needed to enable them function effectively in their field. But this is not always the case, as observed by Esiobu (2005), who asserted that one of the major problems facing quality of education in Nigeria is lack of infrastructure. Also, Nwogu and Nwanoruo (2011), in their study on vocational technical education and training for self-reliance geared towards national development, reported that lack of adequate training facilities and equipment is one of the challenges facing vocational educational and training.

Availability and utilization of training facilities and equipment in schools have the potential to enrich and deepen teachers' skills as well as motivate and engage students in learning which in turn helps to relate school experiences to work practices. Umunadi (2012), reported that technical school workshops need to be well equipped so that students can acquire the skills and knowledge needed to enable them function effectively in the world of work. Thus, the use of training facilities is very important in forestry education because they improve the quality of education for effective academic performance of forestry students. Forestry education also involves a lot of activities which the students must be engaged in so as to acquire the necessary skills and experiences. This can only be achieved with the aid of training facilities in the school.

Forestry education should make use of facilities that would enable students to easily perceive learning situations in a positive way and in turn improve their performance. Study conducted by Oladipo (2001) reported that positive relationship exists between availability of learning facilities and students' academic performance. Other studies carried out include that of Okwori (2012) on assessment of facilities used for teaching woodwork technology at Federal College of Education, Pankshin and Plateau State, Nigeria. The findings of this study showed that some of the facilities were not available and those available were inadequate for teaching woodwork technology in the school. Osami (2013) also examined the implementation of vocational and technical education programme in Rivers state. The study revealed that the quality of teaching staff in vocational and technical schools is moderately high but relatively inadequate and the school facilities were also inadequate and in poor conditions.

Therefore, necessary materials needed for enhancement of the programme and learning the necessary skills should be provided in the colleges. For instance, students of forestry should have access to materials such as simple forestry and farm tools, nursery and nursery tools, survey equipment, farm and forestry machinery and implements etc. These facilities should be available at all times and not just for the purpose of examination, only, because availability, adequacy, accessibility and utilization of such facilities enhance effective teaching and learning activities which ultimately results in attainment and achievement of quality education.

Purpose of the Study

The main purpose of this study is to investigate the availability, adequacy, and utilisation of facilities and equipment for effective teaching and learning in Federal Colleges of Forestry, Nigeria. Specifically, the objectives of the study are to find out:

1. The availability of training facilities and equipment in the colleges.
2. The adequacy of the training facilities and equipment in the colleges.
3. The Usability of training Facilities and equipment in in the colleges.

Research Questions

The following research questions will guide the investigations.

1. To what extent do Federal Colleges of Forestry make training facilities and equipment available?
2. How adequate are the training facilities and equipment in the colleges?
3. How often do students make use of the training facilities and equipment available in the colleges

Methods

This study adopted survey research design, since the study sought to examine what was already prevalent. The target population for this study comprised all year two National Diploma (ND 2) students of Federal College of Forestry, Ibadan and Federal College of Forestry, Jos, under the supervision of Forestry Research Institute of Nigeria (FRIN). The two colleges were purposively selected since they have the same programme and therefore share the same programme objectives. Census approach was used to select all the current year two National Diploma students from the two colleges considering the size of population of the students. A total of three hundred and eighty-two (382) students comprising two hundred and thirty-eight (238) students from Federal College of Forestry Ibadan and one hundred and forty-four (144) from Federal College of Forestry Jos.

The instrument used for this study known as Training Facilities and Equipment Inventory (TFEI) was developed by the researcher using the list of tools, instruments and equipment recommended by National Board for Technical Education (NBTE). This instrument was used to obtain information on availability, adequacy, and utilization of facilities and equipment for effective teaching and learning in Federal Colleges of Forestry. The instrument comprised of two sections: A and B. Section A consists of information on background such as name of school, gender, age, etc. Section B was made up of thirty-six (36) items. The information on availability and adequacy was provided by the instructors and store keepers. The information on utilization was provided by the students of FCF. Items for availability are presented on a three-level rating scale namely number available, number required and differences. The number required is the number that is expected to be used by the number of students that are required to carry out a particular task at a time. The information for adequacy was also, provided at a three-level rating scale namely: Highly Adequate (when the number available is greater than 100%); Adequate (when number available is equal to 100%) and inadequate (when the number available is less than 100%). This instrument was drafted and given to experts in Forestry training and Institute of Education, University of Ibadan, for face validation. After the necessary corrections had been effected, the instrument was pilot tested on 50 students of Federal College of Agriculture Moore plantation Ibadan; this was done to establish the reliability of the instrument. The reliability coefficient of the instrument using Cronbach Alpha was 0.79. The data collected was analysed using descriptive statistics.

Results

Research questions: 1 & 2

1. To what extent do Federal Colleges of Forestry make training facilities and equipment available in the colleges?
2. How adequate are the training facilities and equipment?

Table I: The Distribution of Availability and Adequacy of Training Facilities and Equipment in FCF

S/ N	PHYSICAL FACILITIES	AVAILABILITY			*ADEQUACY		
		Number Available	Number Required	Difference	Highly adequ	Adequate	Not Adequate

					ate
1	Nursery	8(100%)	8 (100%)	-	√
2	Green house	2(100%)	2(100%)	-	√
3	Herbarium	2(100%)	2(100%)	-	√
4	Meteorological garden	2(100%)	2(100%)	-	√
Nursery Tools					
5	Watering can	40(160%)	25(100%)	+15(60%)	√
6	Seed sower	15(60%)	25(100%)	-10(40%)	√
7	Root pruner	16(64%)	25(100%)	-9(36%)	√
8	Plant lifter	14(56%)	25(100%)	-11(44%)	√
9	Planting hoe	60(240%)	25(100%)	+35(140%)	√
10	Spade	15(60%)	25(100%)	-10(40%)	√
11	Pick axe	18(72%)	25(100%)	-7(28%)	√
12	Budding knife	15(60%)	25(100%)	-10(40%)	√
13	Hand trowel	21(84%)	25(100%)	-4(16%)	√
14	Wheel barrow	10(125%)	8(100%)	+2(25%)	√
15	Head pan	25(100%)	25(100%)	-	√
16	Instrumental store	4(100%)	4(100%)	-	√
Measuring equipment					
17	Girthing tape	20(80%)	25(100%)	-5(20%)	√
18	Abney level	18(72%)	25(100%)	-7(28%)	√
19	Haga altimeter	20(80%)	25(100%)	-5(20%)	√
20	Bark gauge	16(64%)	25(100%)	-9(36%)	√
21	Calliper	12(48%)	25(100%)	-13(52%)	√
22	Relascope	10(40%)	25(100%)	-15(60%)	√
23	Steel band	9(36%)	25(100%)	-16(64%)	√
24	Blue altimeter	12(48%)	25(100%)	-13(52%)	√
25	Ranging pole	40(160%)	25(100%)	+15(60%)	√
26	Prismatic compass	16(64%)	25(100%)	-9(36%)	√
27	Hypometer	12(48%)	25(100%)	-13(52%)	√
28	Engineering chain	14(56%)	25(100%)	-11(44%)	√
29	Tripod stand	10(40%)	25(100%)	-15(60%)	√
30	Arrows	80(320%)	25(100%)	+55(220%)	√
31	Soil laboratory	1(50%)	2(100%)	-1(50%)	√
32	School clinic	2(100%)	2(100%)	-	√
33	Water supply (borehole)	5(83.3%)	6(100%)	-1(16.7%)	√
34	Electricity (generator)	3(75%)	4(100%)	-1(25%)	√
35	Library equipped	2(100%)	2(100%)	-	√
36	ICT	2(100%)	2(100%)	-	√

*highly adequate (when numbers available $\geq 100\%$); adequate (number available = 100%) not adequate (number available < 90%).

The result shown on table I presented availability and adequacy of required facilities for ND programme in Federal Colleges of Forestry as perceived by the researcher with the aid of the instructors and store keepers. It is revealed that nursery, green house, herbarium and meteorological garden are fully available (100%) in the colleges for the effective implementation of the programme. The table equally revealed that nursery, green house, herbarium and meteorological garden are adequate in the colleges for effective implementation of the programme. It is observed also from the table that watering can and planting hoe recorded availability of 40(160%) and 60(240%) respectively as against the required number of 25 (100%) for each item. The wheel barrow 10(125%) as against the required 8(100%) are highly adequate, while head pan 25(100%) and instrumental store 4(100%) are just adequate. All the other nursery tool items are however inadequate. Almost all the measuring equipment made available by the colleges are inadequate for effective

implementation of the programme with exception of ranging pole and arrows. As shown in the table, only 50% of soil laboratory is made available. Although the required number of library is made available, however one of the libraries lack forestry and agriculture textbooks and periodicals needed for effective implementation of the programme.

Research question 3: How often do students make use of the training facilities and equipment in the school?

Table II: The Distribution of Usability of Training Facilities and Equipment in FCF

S/ N	PHYSICAL FACILITIES	USABILITY			
		Weekly	Monthly	Semester	Not in use
1	Nursery	382(100%)	-	-	-
2	Green house	-	77(20.2%)	305(79.8%)	-
3	Herbarium	-	24(6.3%)	319(83.5%)	39(10.2%)
4	Meteorological garden	-	9(2.4%)	147(38.5%)	226(59.2%)
	Nursery Tools				
5	Watering can	382(100%)			
6	Seed sower	91(23.8%)			291(76.2%)
7	Leaf prunner	90(23.6%)	30(7.9%)	250(65.4%)	12(3.1%)
8	Plant lifter	105(27.5%)	1(0.1%)	244(63.9%)	32(8.4%)
9	Planting hoe	382(100%)			
10	Spade	134(35.1%)	8(2.1%)	240(62.8%)	
11	Pick axe			382(100%)	
12	Budding knife	118(30.9%)	8(2.1%)	251(65.7%)	5(1.3%)
13	Hand trowel	82(21.5%)	21(5.5%)	269(70.4%)	10(2.6%)
14	Wheel barrow	101(26.4%)	12(3.1%)	254(66.5%)	15(3.9%)
15	Head pan		382(100%)		
16	Instrumental store	309(80.9%)	39(10.2%)	23(6.0%)	11(2.9%)
	Measuring equipment				
17	Girthing tape	29(7.6%)	4(1.0%)	341(89.3%)	8(2.1%)
18	Abney level	32(8.4%)	1(0.3%)	341(89.3%)	8(2.1%)
19	Haga altimeter	35(9.2%)	1(0.3%)	344(90.1%)	2(0.5%)
20	Bark gauge	31(8.1%)	2(0.5%)	348(91.1%)	1(0.3%)
21	Calliper	31(8.1%)	3(0.8%)	347(90.8%)	1(0.3%)
22	Relascope	2(0.5%)	-	313(81.9%)	67(17.5%)
23	Steel band	19(5.0%)	4(1.0%)	286(74.9%)	73(19.1%)
24	Blue altimeter	-	4(1.0%)	293(76.7%)	85(22.3%)
25	Ranging pole	53(13.9%)	329(86.1%)	-	-
26	Prismatic compass	47(12.3%)	331(86.6%)	4(1.0%)	
27	Hyposometer	59(15.4%)	85(22.3%)	238(62.3%)	-
28	Engineering chain	35(9.2%)	104(27.2%)	243(63.6%)	-
29	Tripod stand	59(15.4%)	85(22.3%)	238(62.3%)	
30	Arrows	206(53.9%)	168(44.0%)	8(2.1%)	
31	Soil laboratory	-	-	87(22.8%)	295(77.2%)
32	School clinic	382(100%)			
33	Water supply (borehole)	382(100%)			
34	Electricity (generator)	382(100%)			
35	Library (equipped)	382(100%)			
36	ICT	331(86.6%)	51(13.4%)		

key: weekly (make use of at least once a week), monthly (make use at least once a month) semester (at least once in a semester)

Evidence from Table II shows the percentage and frequency distribution of the extent to which Federal Colleges of Forestry allow students make use of training facilities and equipment available in the colleges as perceived by the students. It is observed from the table that most of the students indicated that they make use of the facilities and equipment that are available in the colleges. For instance, all the students 382(100%) that responded to the items

indicated that they always make use of nursery (item 1), watering can (item 5), planting hoe (item 9), school clinic (item 32), water supply (item 33), electricity (item 34), library (item 35). The table also revealed that more than 80% of the students reported that they make use of instrumental store (item 16) and ICT (item 36) regularly.

Result from the table also shows that 226 (59.2%) of the students reported that meteorological garden is not in use, while 147(38.5%) of them indicated that they make use of the facility once in a semester. The number of students 77(20.2%) indicated they make use of the green house once a month, while 305(79.8%) indicated they utilize the green house once in a semester. However, apart from watering can (item 5) and planting hoe (item 9), which they indicated that are utilized once a week, majority of the students claimed that they make use of other nursery tools at least once a month. In the case of measuring equipment, apart from ranging pole (item 25) and prismatic compass (item 26) which the students 329(86.1%) and 331(86.6%) respectively indicated they make use of them monthly, majority of the students reported that they make use of other provided measuring equipment once in a semester.

Discussion

The findings of this study as shown in Table I revealed that majority of the needed facilities required by the Federal Colleges of Forestry for effective implementation of the ND programme are available in the colleges. This is a good development because the availability of these facilities in schools has the potential to enrich and deepen teachers' skills as well as motivate and engage students for effective learning. Availability of needed facilities also helps the students to relate the acquired skills from schools to outside (working places) which are expected in technical and vocational education. This finding correlates with that of Uwaifo (2008) who observed that technology education relies so much upon the teaching of skills and therefore demands the professional or expert use of hand. Hence, availability and adequacy of required facilities in Federal Colleges of Forestry will help students acquire the knowledge and skills needed in the field of forestry and agriculture.

The result from this study also revealed that some of the needed facilities for effective implementation of Federal Colleges of Forestry programme are adequate. These include nursery, green house, herbarium and meteorological garden. However, majority of the measuring equipment are inadequate. The reason could be attributed to lack of fund in the colleges. This agrees with William (2004) who stated that insufficient fund makes it difficult for agricultural science teachers to acquire learning materials. This finding also correlates with the report of Obioha (2006) who reported there are inadequate resources for teaching science subjects in schools in Nigeria. The colleges should ensure availability and adequacy in quality and quantity of these facilities so as to enable students acquire relevant skills and knowledge needed for achieving the desired educational goals.

Table II shows students' responses as to what extent Federal Colleges of Forestry allow the students make use of the training facilities and equipment that are made available in the schools. The findings of the study revealed that majority of the students of Federal Colleges of Forestry reported that facilities such as nursery, green house, water supply and library are available for them to make use of in their colleges. This might be attributable to the fact that such facilities are adequately available in the colleges. This correlates with the submission of Oyedun (2000) that, for effective and positive production in any establishment, there must be enough working tools to be used. The practical study sites and the entire environment where technical and highly skilled education of this nature is given must be adequately equipped and the students allowed the use of them whenever the need arises. Students having access to physical facilities and equipment in the schools makes the learning environment more

attractive, conducive and realistic as well as enhance effective teaching and learning activities which ultimately results in the attainment of quality education. As regards those facilities such as plant lifter, Seed sower, and soil laboratory which majority of the students reported that they do not make use of; it could be as result of not being adequately provided or the fact that the students are not allowed access to them. This agrees with Ogunleye (2002) that there were inadequate resources for teaching Science subjects in schools in Nigeria.

Conclusion and Recommendations.

The fact that majority of the needed facilities required by the Federal Colleges of Forestry for effective implementation of the ND programme are rated high shows that most of the facilities and equipment needed by the students are made available except soil lab which is not in one of the colleges. These training facilities and equipment are not yet adequate for effective use of the students especially the nursery tools and the measuring instruments. It is therefore recommended that adequate and training facilities and equipment should be provided and students allowed access to them for effective implementation of the stated programme objective of the colleges. Also, the students of the colleges should be allowed to make use of available training facilities in the colleges more frequently to make learning environment more attractive, conducive and realistic as well as to enhance effective teaching and learning activities.

References

- Bandyopadhyay, D.K. (2008). Education for Industry in India: outlook for 2020. Presented at Asia Pacific Forestry week Hanoi 24th April, 2008.
- Esiobu, G. O. (2005). Genre Issues in Science and Technology Education Development In: Uwowi, U.M.O., Ed. Science and Technology Education for Development, NRRDC Press, Lagos 137-156.
- Federal Republic of Nigeria (2013). National Policy on Education, (4th ed). Lagos: Nigeria Educational Research and Development Council (NERDC).
- Nwogu, P. O. & Nwanoruo, C. C. (2011). Vocational Technical Education and Training for Self-reliance: Towards National Development. *Mediterranean Journal of social sciences* 2 (5).
- Obioha, A. O. (2006). STAN Physics for Senior Secondary Schools. Heinemann Education Book Publishers. Nigeria.
- Ogunleye, B.O. (2002). Towards the Optimal Utilization and Management of Resources for the Effective Teaching and Learning of Physics in Schools. Proceedings of the 41st Annual Conference of the Science Teachers' Association of Nigeria, (STAN'00), University of Lagos, Nigeria, 215-220.
- Okorie, J. U. (2000). Infrastructural Faculties for Growing Vocational Technical Institutions in Nigeria, PME Nkechi and Obumneke (ed) *The imperatives of Vocational and Technical Education for Developing Nation*. Owerri: Cape Publishers International Ltd.
- Okwori, R.O. (2012). An assessment of Facilities used for Teaching Woodwork Technology at Federal College of Education, Pankshin, Plateau State, Nigeria. *Universal Journal of Education and General Studies* 1(5) 113-118. May, 2012. Retrieved from <http://www.universalresearchjournals.org/ujegs>
- Oladipo, F.O. (2001). *Introduction to Agricultural Journalism and Audio-visual Methods*. Ilorin: KWCOED, Ilorin.
- Osami, I. (2013) Implementing Vocational and Technical Education Programmes in South-South Nigeria: A Case of Rivers State. *International Journal of Scientific Research in Education*, 6(2), 128-148.
- Oyedun, O.S. (2000). Effects of Instructional Materials on Students Performance in Geography in Secondary Schools in Ilorin South LGA of Kwara State. *Unpublished*

PGDE Project, UNAD.

- Umunadi, E.K. (2012). Resource Management and Planning in Vocational and Technical Education for National Development: African Journal of Education and Technology. 2(1), 48-59
- Uwaifo, V. O. 2008. Industrializing the Nigerian Society through Creative Skills Acquisition Vocational and Technical Education Programme in Nworgu, B. G. (Ed). Education in the Information age: Global Challenges and Enhancement Strategies. Proceedings of the First International Conference of the Faculty of Education. University of Nigeria Nsukka.
- William, E. (2004). Fundamental Principles of Agricultural Education, (2nd. ed.) (pp. 1673). Nsukka: Dramond Publishers Limited.