J Sociology Soc Anth, 3(1): 15-27 (2012)
DOI: 10.31901/24566764.2012/03.01.03

Availability and Adequacy of Human and Material Resources for the Teaching and Learning of Skill-based Courses in Nigeria Public Universities

R. I. Osarenren-Osaghae[1] and Q. O. Irabor[2]

[1]Department of Educational Foundations and Management, Faculty of Education, Ambrose Alli University, P. M. B. 14 Ekpoma, Edo State, Nigeria
GSM: 08038725686, 08056165219, E-mail: iyalekhuosa@yahoo.com
[2]School of Languages College of Education, Ekiadolor, Edo State, Nigeria
GSM: 07040545562, E-mail: queenosay2k@yahoo.com

KEYWORDS Effective Communication. Goal Actualization. Public Universities. Skill-based Courses

ABSTRACT This study was carried out to access the availability and adequacy of human and material resources for the teaching and learning of skill-based courses in Nigerian Public Universities. In doing this, three (3) research questions and two (2) hypotheses were formulated. The population of this study consisted of academic staff and final year students of 2009/2010 academic session in Nigerian Public Universities. The instruments used to collect data were the questionnaire and checklist. The researcher personally visited the ten (10) institutions that were earlier selected through stratified random sampling, and administered questionnaires to the respondents who numbered 1750 but only 1500 were returned. Data was analyzed using the mean statistics, percentage and t-test, the finding amongst other findings was that: the human and material resources on ground for the teaching and learning of skill-based courses in Nigerian Public Universities did not match the minimum standard requirement recommended by the National Universities Commission. Based on these findings, recommendations such as government, non-government organization and good citizens should ensure to provide the needed human and material resources to help in the production of skilled graduates for national development were made amongst others, hopefully when adhered to, would yield positive results.

INTRODUCTION

The 4th Edition of the Nigerian Policy on Education (NPE) (2004) claims that education is an instrument for national development, fosters the worth and development of the individual of the individual and the general development of the society. It also believes that there is need for functional education for the promotion of a progressive and united Nigeria. Therefore, the school programmes need be relevant, practical and comprehensive. For education to be functional, it has to be geared towards self-realization, better human relationships, individual and national efficiency, effective citizenry, national consciousnesses, national unity as well as towards social, cultural, economic, political, scientific and technological progress. From the above, it can be seen that education is a priceless instrument for the attainment of individual and national development. This paper, however, focuses on the education gotten from the four walls of the university. According to Sanda (2001), higher institutions in Nigeria like its counterparts anywhere in the globe are a complex organization with objectives.

The Nigerian tertiary education objectives according to National Policy of Education (NPE) (2004) are as follows, that goals shall be pursued through: teaching, research and development, virile staff development programmes, general and dissemination of knowledge, a variety of modes of programmes including full-time, part-time, block-release, day-release, etc., access to training funds such as those provided by the industrial training fund (ITF), students industrial work experience scheme (SIWES), maintenance of minimum educational standards through appropriate agencies, inter-institutional co-operation, dedicated services to the community through extract-mural and extension services.

In order for these objectives to be successfully actualized, there are some fundamental needs that must be adequately provided. These basic needs include the resources of both human and materials. The universities' functions of teaching, learning, research and public service are often pursued with a view of satisfying these goals of manpower development for the society, skill development for its individuals and product of cultivated individual with survival value orientation as well as an objective view of society. There is more pressure on the socio-economic development of a developing nation like Nigeria. However, for her to actualize these goals

of skilled graduates, adequate human and infrastructural facilities need to be put in place. Undoubtedly the importance of a skilled graduate cannot be over- emphasized in the life of a nation trying to meet the development standards of the world. Many governments in federal, state and local are making policies that will help to actualize these but it is one thing to make sound policies, and another thing to implement these policies effectively and efficiently without the right quality and quantity of human and material resources especially in a school setting. The nation had one hundred public and private universities as at the time of this study and yet the nation has a dearth supply of quality skilled graduates in all technologically based courses. With these number of universities from a nation that is just 50 years old, the expectation of many is that by now Nigeria ought to be one of the world's leading producers and manufacturers in all fields of endeavor because there is the advantage of transferred technology and so there is no starting from scratch, instead we have a situation where Nigeria import technology and ask foreigners to run it. This is a distressing situation for many Nigerians because a lot of money has been supposedly pumped into the universities but no adequate result to show for it. The expectations of all stakeholders is that the university recipients are to be job creators, employers, contributors, but contrary to these expectations, employers employ graduates from the university only to retrain them because of the deficiency in their performance at work. The Nigerian graduate who travel abroad will soon discover that he is inadequately taught because the universities are not up to date with their facilities and even the staff are not knowledgeable in the use of current facilities used in other parts of the developed world and so when a teacher is handicapped in passing the required knowledge, there is a big problem, how is the learner going to know what he ought to know? The fact remains that all these laudable objectives may not be accomplished if students in the universities are not properly trained. Creating a conducive environment for teaching and learning by providing the right quality and quantity of teachers, well equipped workshops, studio, libraries, and laboratories with up-to-date materials, provision of adequate tools, machines and equipment will bring about quality skilled graduates that can help in the nations' development instead of waiting for the government to employ them.

Based on the above information, the problem of this study is that the graduates of skill-based courses from the Nigerian Public Universities fall short of expectations in their performance and this problem of unskilled graduates has resulted in unemployed graduates walking on the streets becoming a nuisance to the society instead of being a contributor to the nation's development. If these graduates were properly trained in school, they would be skilled in their various fields of endeavor, becoming job creators instead of job seekers. Undoubtedly, there are other factors that may contribute to this situation but this study is interested in looking at the human and material resources factors.

The general purpose of this research is to assess the availability and adequacy of human and material resources for the teaching and learning of skilled based courses in Nigerian Public Universities. Specifically this study is designed to:

1. Determine the availability of human resources for the teaching and learning of skill- based courses in Nigerian Public Universities.
2. Determine the availability of material resources in the teaching and learning of skill- based courses in Nigerian Public Universities.
3. Ascertain the adequacy of available human and material resources using the minimum standard requirement of the national universities commission for the teaching and learning of skill- based courses in Nigerian Public Universities.

At the end of this study, the following questions should have been answered.

1. How adequate are available human resources for the teaching and learning of skill- based courses in Nigerian universities?
2. How adequate are available material resources for the teaching and learning of skill- based courses in Nigerian Public Universities?
3. To what extent do available human and material resources meet the minimum standard requirements of the national universities commission for the teaching and learning of skill- based courses in Nigerian Public Universities?

From the above research questions, two hypotheses were formulated thus:

1. There is no significant difference in the mean response of the academic staff and final year student regarding the adequacy of human resources in the teaching and learning of the skill- based courses in the Nigerian Public Universities.
2. There is no significant difference in the mean response of the academic staff and final year students regarding the availability and adequacy of material resources in the teaching and learning of the skill-based courses in the Nigerian Public Universities.

Limitations

Material resources of skill- based courses were not exhaustively mentioned in this study and only Public Universities were used for this study.

Literature Review

The university graduates of any nation is a major contributor to the advancement of that nation hence the great expectations of them. This is why the National Policy on Education (NPE 2004) clearly states the goals and objectives of the university in order to produce quality graduates to help out in the development of the nation.

Human Resources in Teaching and Learning

No educational system rises above the quality of her teachers anywhere in the world. Thus the growth and development of skill- based courses in any country of the world largely depend on the quality and adequacy of teachers in these areas of professional endeavour. The bedrock of adequate foundation and training of needed manpower in a country irrespective of area of specialization is a function of the sound products from the teacher education in that country. This is why Gidado (1995) said that the major problems of teacher education in Nigeria is that the teacher that are being trained are not sufficiently prepared to meet the complex demand of the teaching profession in Nigerian schools. It is an educational truism that a teacher can only teach what he knows. Tanner and Tanner (2002) said that the success of a curriculum largely depend on teachers handling it. In skill- based courses, education as opposed to liberal education, teachers' preparation is more compounded because of the practical skills and competencies that must be imparted (Ulinfun 1990). This implies that teachers' quality is more critical in skill-based courses. Unfortunately availability and adequacy of qualified teachers is disturbingly absent in our institutions unless those that are trained abroad but when they come home to teach, the necessary materials are either not available nor adequate. In 1997, a survey report by the National Education Research Development (NERD) of the state of demand and supply of science and technology teachers nationwide indicated that about 320,000 representing 88% of the total needs were not available in 23 difference subjects. A similar survey by NERD (2004) in respect of polytechnics indicated a shortfall of 88%. This is in line with Agbenten (1985) who discovered that shortage of qualified teachers is a worldwide phenomena but more obvious in the developing countries where educational system are constantly expanding without sufficiency of qualified teachers. In support of this statement, Udofort (1994) lamented that insufficient qualified sciences and technology teachers in schools have often resulted in the employment of unqualified people and this de-motivates the students through bad teaching. Aina (2000) states that the quality and quantity of teachers in the schools have contributed immensely to the high failure rates being experienced in the programmes run by National Business and Technical Examination Board (NABTED) certificate examinations.

In a study carried out by Edobor (2007) regarding the availability of human and material resources in vocational course, in secondary schools in the south-eastern parts of Nigeria, the discoveries were in line with Odunsanya (2006), Aina (2000) and NERD (2004), confirming the inadequacy of human and material resources in the teaching and learning of vocational courses. Education in skill- based courses requires not only facts and information but also involves changing people's attitude. To actualize this dream, qualified teachers must be employed in the right numbers. The practical experience will make them more efficient, competent and up to date. Teachers require constant training exposure and interaction with profes-

sional experts through seminars, symposia, workshop and conferences. This will help to improve their competencies and professionalism. It is one thing to acquire knowledge and skills and quite another thing to be able to impact such experiences to someone else, says Parke (1977).

Andreyka (1976) stressed that the prime requisite for successful implementation of educational programs is qualified teachers who are occupationally competent and skilled in the use of teaching methods. However, doubt remain as to whether the schools preparing skilled teachers have the knowledge of what it takes to be the trainer. Do these institutions know the professional competencies involved? In other words, teachers should be trained in a competency-based setting because according to Bereday (1979) in Oladebo (1987), the strength of an educational system must largely depend on the quality of its teachers. In realization of the importance of skill- based courses to the nation, the Federal government of Nigeria encouraged polytechnics and universities to establish department of vocational and technical education which is a part of science and technology. Also, a register of graduated but unemployed technical teachers was complied with a view of engaging them (Mohammed 2000). In addition, the Technical Teacher Training Program (TTTP) was launched with the aim to produce technical teachers both in quality and quantity, but in spite of these efforts, technical teachers production has been inadequate (Abdulahi 1995). The problem was not just how to produce them but how to retain them. Majasan (1995) noted that if teachers are trained and are not well catered for, the problem of inadequacy remains unsolved because many of these teachers will find their way to more lucrative jobs in industries and commerce. In support, Biose (2002) stated that for the survival and development of skill- based courses something serious has to be done. It was also agreed that for a nation to grow it must have people who are well- skilled in technology. Fafunwa (1994) said that the quality of students produced in institutions is a direct reflection of the caliber of teachers.

Material Resources in Teaching and Learning

The major purpose of skill- based courses is to develop skilled manpower for self- sustenance, reliance, community and national development. In other words, when an individual is skilled, he is useful to himself and the society he belongs and this will extend to the larger society. The key word here is “skill”. For the students to acquire the desired skills to be able to function effectively, the necessary gadgets are needed to be supplied to the teacher to teach these students. The workshops in schools must be adequately stocked with functional tools and machines in the right number and quality. In addition to quality tools, competent teachers and workshop attendants’ demand, also to cope with new inventions, developments and constant changes, in the world of work. There is the need to update training facilities as may be needed and at the same time make training environment a replica of the industry (Bans 2007). The state of workshops in most-schools is such that cannot permit the stimulation for any worthwhile training. There are no workshops in many schools. In schools where there are workshops, tools, and materials are not available and where available are inadequate to cope with students’ population. Lack of equipment and necessary facilities hinder progress of skill-based courses. Nweke (1989), Nwokolo (1993), Ibeneme (1994) discovered that the discrepancy between school workshop facilities and the actual work facilities may adequately account for the amount of retraining given to Nigerian university graduates before they can effectively perform in the industries. Okoro (1993) discovered that the major purpose of vocational education is not to give certificate but to train workers who can actually function well in their places of employment. The tools and machines actually make education in skill- based courses unique. Such equipment, tools and materials in the workshop provide the students with worthwhile experiences and skills because this equipment is the initial thing that stimulates learning among them. Fajemirokan (1999) observed that instructional materials are either inadequate in quantity or are obsolete in quality and use. Odusanya (1999) in his study came to the conclusion that teaching of skill- based courses was more of theory oriented than a practical oriented one in Nigerian schools. Reasons for this were that tools and equipment were not adequately supplied to go round the students in the practical classes. There was a lack of current textbooks and writing materials in Nigerian schools. This

was noted by the report of the study group of funding education (1984). This shortage is more severe in science and technology subjects where there are fewer indigenous authors, vis-à-vis the arts and humanities. This study also found out that the school environment was not conducive for learning. Towe (2007) also reported that there was no evidence of practical work in a course which was supposed to introduce students to various skill-based programmes. Even where workshop and laboratories were available, they were deprived of functional essential tools, equipment and materials. Consequently programmes that are supposed to be practical are implemented on chalkboards. To ensure optimum teaching and learning under the best of conditions, vocational and technical departments in the schools are expected to be adequately provided with requisite instructional facilities and equipment where the requisite teaching and learning tools are non-existence or inadequate, effective instruction cannot take place. In recognition of the importance of the availability of standard equipment for these programmes, Ali (2006) stated that the economic advancement of any nation does not necessarily depend on its natural resources endowment but increasingly on the level of technological innovations capabilities. Nigeria is blessed with abundant local raw materials which have played major roles in industrial development of this nation but to be able to properly harness and use these raw materials without having to import experts from abroad, needs the expertise of skilled graduates. Ali asserts that this is only achievable through the necessary human and material resources in its right quantity and quality for the teaching and learning of skill-based courses. Teaching facilities and equipment help to stimulate interest and produce a sound and well- grounded skilled graduates (Anthony 2005).

This study used the survey research design to access the availability and adequacy of human and material resources for the teaching and, learning of skill-based courses in Nigerian Universities. The final year students of the ten (10) Public Universities from north, east west, and south of Nigeria, those who are studying skill-based courses were used. Stratified random sampling technique was used to select these public universities out of the one hundred (100) established universities in Nigeria. The simple random sampling using the ballot technique was applied to select respondents, 150 students and 25 lecturers from each university totaling 1750 questionnaires. Titled "Availability and adequacy of human and material resources for the teaching and learning of skilled based courses in Nigerian Universities (AAHAMRTALSBC NU)" that were administered but 1500 were recovered with an average of one hundred and thirty (130) students and 20 lecturers from each university. The four- point scale questionnaire of available, adequate, inadequate and unavailable was used, it had four sections, A, B, C. and D section 'A' was about the respondents background information (Biodata), section B had question on availability and adequacy of human resources, section C had questions on availability and adequacy of material resources and section D was the checklist on availability of adequacy of human and material resources on ground as compared to the minimum standard requirement as prescribed by the National Universities Commission (NUC) for the teaching and learning of skill- based courses. The questionnaire was validated by experts in the universities such as professors and consultants in the programmes. The split-half test was used to obtain the alpha coefficient of 0.78 after a pilot group of 50 final year students and 10 academic staff outside the sampled population was used. The mean statistics was used to analyze the number 1 and 2 research questions. For research questions 3 a checklist was used as the research instrument while percentage was used for the analysis. t-test for two independent samples was used to analyze the two hypotheses at 0.05 level of significance. Values assigned to the four-point like scale were as follows: 4,3,2,1, respectively. Any mean that was 2.50 and above was retained as being adequate while 2.49 and below was rejected and regarded as inadequate or unavailable as the case may be.

RESULTS

Research Question 1: How adequate are available human resources for the teaching and learning of skill-based courses in Nigerian Public Universities?

A summary of Table 1 indicates that the respondents agreed that two (2) items out of seventeen (17) items has adequate human resources. While they also agreed that there was inadequate

human resources on fifteen (15) items. The mean score of all items in research question 1 for academic staff was 2.22 while that of final year students was 2.15. Therefore the overall mean score was 2.19 which is less than the level of adequacy (2.50 and above). This result obviously showed the level of inadequacy of human resources for the teaching and learning of skilled based courses in Nigerian universities.

Research Question 2: How adequate are available material resources for the teaching and learning of skill- based courses in Nigerian Public Universities.

The Table 2 indicated that the respondents agreed on a total of 2 items to be adequate, 22 items to be inadequate and 2 items not available in material resources for the teaching and learning of skilled-based courses in Nigerian Universities.

The mean score for academic staff was 2.10 and the mean score for final year students was 1.93. The total means score of all the items in question two was 2.10 which is less than 2.50. This showed that the material resources were not adequate for the effective teaching and learning of skilled based courses in Nigerian Universities.

Research Question 3: To what extent do available human and material resources meet the minimum standard requirement of the national universities commission for the teaching and learning of skilled-based courses?

Table 3 revealed that there was gross inadequacy of human and especially material resources, in some cases these were not available at all. A personal visit to these institutions by the researcher revealed that in most universities academic staff had to improvise the materials they used where they could. The institutions where they had some of the materials, these materials were found to be for official use and not really to teach the students. In some cases, the few available materials to teach the students were without qualified personnel to use them, so the materials were locked up in a room pending when qualified staff would be employed and this could take a long time because qualified personnel are in short supply. In a nutshell, Table 3 shows that the human and material resources available in public universities were inadequate

Table 1: Means and standard deviation ratings for academic staff and final year students about the availability and adequacy of human resources

S. No.	*Items*	*Lecturers*		*Students*		*Decision*
		N^1	X^1	N^2	X^2	
1.	Available lecturers	200	2.10	1,300	2.36	Inadequate
2.	Available lecturers who has academic paper qualification	200	2.65	1, 300	2.70	Adequate
3.	Available lecturers with relevant industrial experiences	200	2.40	1, 300	2.04	Inadequate
4	Available lecturers/students ratio.	200	2.07	1, 300	2.06	Inadequate
5	Available lecturers who knows the methodology for effective learning of skilled based courses	200	2.85	1, 300	2.41	Inadequate
6	Available workshop support staff for students population	200	2.20	1, 300	2.03	Inadequate
7	Available lecturers psychomotor skill for skilled based courses.	200	2.33	1, 300	2.25	Inadequate
8	Available workshop attendant/students ratio.	200	1.90	1, 300	1.35	Inadequate
9	In-service industrial training exposure for available lecturers in skilled based courses	200	2.05	1, 300	2.43	Inadequate
10.	Available lecturers knowledgeable in techniques in-skilled based courses.	200	2.13	1, 300	2.11	Inadequate
11.	Available lecturers accessibility of skilled based courses latest technologies	200	1.98	1, 300	2.40	Inadequate
12.	Available lectures knowledge for skilled based courses: Theoretical perspective.	200	2.53	1, 300	2.84	Adequate
13.	Available lecturers knowledge for skilled based courses: practical perspectives.	200	2.13	1, 300	2.22	Inadequate
14.	Available workshop attendance who possess theory and practical skills skilled based courses.	200	1.53	1, 300	2.15	Inadequate
15	Available lecturers who participates in in-service professional development programmes.	200	2.20	1, 300	2.05	Inadequate
16.	Available lecturers who can utilize teaching materials.	200	2.20	1, 300	2.05	Inadequate
17.	Available lecturers who had workshop organization ability.	200	2. 28	1, 300	2.10	Inadequate

Source: Field study 2009/2010 session.

Table 2: Mean and standard deviation ratings for academic staff and final year student about the availability and adequacy of material resources

S. No.	*Items*	*Lecturers*		*Students*		*Decision*
		N^1	X^1	N^2	X^2	
1.	Workshop space for teaching skilled based courses.	200	1. 05	1,300	1.50	Inadequate
2.	Natural and artificial ventilation in the workshop.	200	2.65	1,300	2.55	Adequate
3.	Workshop safety provision for lecturers and students	200	1.20	1,300	2.20	Inadequate
4.	Hand tools available for students learning	200	1.90	1,300	1.80	Inadequate
5	Quality of available hand tools	200	2.75	1,300	2.87	Adequate
6.	Academic and administrative staff officers	200	2.96	1,300	2.05	Inadequate
7	Provision of classroom	200	2.15	1,300	1.50	Inadequate
8	Cloakrooms for students use after workshop practice	200	2.20	1,300	1.85	Inadequate
9	Provision of infrastructural facilities	200	2.30	1,300	2.48	Inadequate
10	Installation of machine tools	200	2.22	1,300	2.18	Inadequate
11	Regular maintenance of infrastructural facilities	200	2.48	1,300	1.05	Inadequate
12	Maintenance of machines and equipment available	200	2.05	1,300	2.40	Inadequate
13	Supply of training materials	200	2.37	1,300	2.32	Inadequate
14	Library facilities in the school	200	2.15	1,300	2.20	Inadequate
15	Stocks of relevant texts and journals	200	1.40	1,300	2.45	Inadequate
16	Accessibility of student to library	200	1.70	1,300	2.20	Inadequate
17	Functionality of machines	200	1.68	1,300	2.15	Inadequate
18	Provision of technological items for practical training	200	2.01	1,300	2.00	Inadequate
19	Provision of medical items for practical training	200	2.40	1,300	2.40	Inadequate
20	Availability of lifting equipment	200	2.35	1,300	2.26	Inadequate
21	Installation of diagnostic machines and equipment	200	1.80	1,300	2.18	Inadequate
22	Laboratory equipment	200	2.30	1,300	2.45	Inadequate
23	Field equipment	200	2.19	1,300	2.30	Inadequate
24	Home economics equipment	200	2.36	1,300	2.10	Inadequate
25	Availability of industrial machines.	200	2.10	1,300	1.19	Not available
26	Availability of current agricultural machines for students practicals	200	2.05	1,300	2.13	Not available

Source: Field study 2009/2010 session

and therefore had not met the minimum standard requirements of the national universities commission for the teaching and learning of skill- based courses. The study is in agreement with that of Oluyole (1996), Odusanya (1999), Mohamadu (2000), Aina (2000), Shafe (2004), Uzor (2006), Edobor (2007), Afolayan (2007). From the above findings, it is clear why most of the skill- based courses are yet to be fully accredited by the National Universities Commission. A commission has been set up by Federal government of Nigeria to be in charge of universities in Nigeria whose recommendations and dealings are upheld and fully backed by the law.

Hypothesis 1: There is no significant difference in the mean response of the academic staff and final year students regarding the availability and adequacy of human resources for the teaching and learning of skill-based courses in Nigerian Public Universities.

From Table 4, it can be seen that Hypothesis I: There is no significant difference in the mean response of academic staff and final year students regarding availability and adequacy of human resources for the teaching and learning of skill-based courses in Nigerian Universities was retained. In other words, the perceptions of both respondents were similar. The calculated value for each item was less than the critical or table value of 1.960, this made it possible to retain the null hypothesis.

Hypothesis 2*:* There is no significant difference in the mean response of the academic staff and students regarding the availability and adequacy of material resources for the teaching and learning of skill- based courses in Nigerian Public Universities.

The Table 5 of analysis shows that out of the twenty-six items, only two had differences in the mean of academic staff and final year students. The average calculated value of 1.279 was lower than the critical value of 1.960. This made it possible for the researcher to retain the null hypothesis which states that "There is no significant difference in the mean response of academic staff and final year students regarding the availability and adequacy of material resources for the teaching and learning of skill-based courses in Nigerian Universities."

Table 3: A percentage of the human and material resources on ground as compared to the minimum standard requirements of National Universities Commission for the teaching and learning of skilled based courses

S. No.	*Items*	*Average National Universities Commission requirement for skilled based courses*	*For each engineering options*	*For each medical sciences options*	*For each architectural science/ options*	*For vocational & technical education options*	*For each agricultural options*	*For each law options*	*For each arts and music options*	*For each sports options*	*For each information technology options*	*Average for all courses*	*Human and material resources available in universities visited*	*Remarked*
How adequate are lectures in each option of the skilled based courses?														
1.	Professors and associate professor	20	15	20	15	10	10	12	10	8	10	12.22		Inadequate
2	Senior lecturers	35	10	15	12	12	8	10	10	10	15	11.23		Inadequate
3	Lecturer I and below	45	25	40	20	15	20	20	25	18	20	11.33		Inadequate
4	Technicians	20	8	10	8	5	12	10	10	12	8	22.56		Inadequate
5	Technologists	20	10	12	8	7	10	10	5	8	10	9.22		Inadequate
6	Clinic assistants	20	-	8	-	-	-	-	-	-	-	8.87		Inadequate
7	Workshop assistants	20	8	-	5	5	10	-	8	-	6	8.00		Inadequate
8	Laboratory assistants	20	-	8	-	-	5	-	-	-	-	7.00		Inadequate
9	Studio assistant	20	5	10	5	8	-	-	-	-	-	6.50		Inadequate
10	Lecturers/students, ratio how available/adequate are material resources for teaching and learning	20/1	10	8	8	8	5	6	5	8	8	6.71		Inadequate
11	Workshop space for practical	30	10	8	10	10	8	5	12	8	5	7.56		Inadequate
12	Workshop safety provision	40	15	20	10	8	10	5	5	8	8	8.44		Inadequate
13	Hard tools for practical	30	18	20	10	8	10	5	8	8	10	9.89		Inadequate
14	Measuring tools/equipment	30	15	12	14	8	8	10	7	5	10	10.78		Inadequate
15	Cutting tools	30	17	15	15	10	12	16	10	5	10	9.89		Inadequate
16	Stocking tools	30	18	20	12	8	12	-	10	5	8	12.22		Inadequate
17	Assembly tools	30	15	18	12	5	10	-	10	15	10	11.88		Inadequate
18	Screw cutting tools	20	10	12	10	10	10	-	-	-	15	11.17		Inadequate
19	Drilling machines tools	20	10	12	10	8	5	-	-	-	10	9.17		Inadequate
20	Testing machine tools	20	8	10	8	5	8	-	10	8	8	8.13		Inadequate
21	Testing instruments	20	10	12	5	5	5	-	8	5	5	6.11		Inadequate
22	Joining tools/equipment	20	8	10	8	5	-	-	10	-	5	7.67		Inadequate
23	Battery charging equipment	20	8	-	-	2	-	-	-	-	8	6.00		Inadequate
24	Wheel balancing	20	5	-	-	8	-	-	-	-	-	6.50		Inadequate
25	Fire prevention equipment	20	5	10	5	5	5	5	5	5	5	5.56		Inadequate
26	Audio visuals	20	8	10	8	8	-	10	12	10	10	10.86		Inadequate
27	Cloak rooms	20	8	10	8	8	-	-	10	8	5	8.14		Inadequate
28	Library facilities	30	5	8	6	4	8	16	10	5	10	8.00		Inadequate
29	Lifting equipment	20	5	5	-	2	8	-	5	8	5	5.43		Inadequate

Table 3: Contd.....

S. No.	*Items*	*Average National Universities Commission requirement for skilled based courses*	*For each engineering options*	*For each medical sciences options*	*For each architectural science/ options*	*For vocational & technical education options*	*For each agricultural options*	*For each law options*	*For each arts and music options*	*For each sports options*	*For each information technology options*	*Average for all courses*	*Human and material resources available in universities visited*	*Remarked*
30	Diagnostic machines	20	8	8	-	5	8	-	-	-	5	6.80		Inadequate
31	Farm tractors/machines	30	-	-	-	-	-	-	-	-	-	5.00		Inadequate
32	Vehicles	30	2	15	-	-	2	-	-	-	5	6.00		Inadequate
33	Drawing tables	40	15	-	15	5	-	-	-	-	-	11.67		Inadequate
34	Computers	40	5	10	5	2	4	5	2	2	10	5.00		Inadequate
35	Alternative power supply	30	15	15	15	15	15	15	15	15	15	15.00		Inadequate
36	Alternative water supply	30	10	15	10	5	15	5	10	10	10	10.00		Inadequate
37	Typing pool	20	-	-	-	8	-	10	-	-	-	8.00		Inadequate
38	Cabinets	20	10	10	8	5	5	20	10	10	7	8.33		Inadequate
39	Chalkboard	20	20	20	20	20	20	5	20	20	20	20.00		Inadequate
40	Photocopier	20	5	5	5	5	-	5	-	-	5	5.00		Inadequate
41	Clocks	10	5	10	5	10	5	-	5	5	5	6.11		Inadequate
42	Telephones	20	-	-	-	-	-	-	-	-	-	0.00		Inadequate
43	Chemical laboratory	20	-	10	-	5	-	-	-	-	5	6.67		Inadequate
44	Farms architectural	20	-	-	-	-	15	-	-	-	-	15.00		Inadequate
45	Engineering workshop	20	10	-	-	-	-	-	-	-	5	7.50		Inadequate
46	Medical laboratory	20	-	10	-	-	-	-	-	-	-	10.00		Inadequate
47	Studio architectural	20	-	-	10	-	-	-	-	-	-	10.00		Inadequate
48	Fine art studio	20	-	-	-	-	-	-	-	-	-	5.00		Inadequate
49	Music/dance hall	20	-	-	-	-	-	-	-	-	-	5.00		Inadequate
50	Home economic laboratory	20	-	-	-	-	-	-	-	-	-	10.00		Inadequate
51	Seminar/workshop/conference halls for practicals	20	5	5	5	5	5	10	5	5	5	5.56		Inadequate
52	Arts equipment	40	-	-	-	5	-	-	10	-	-	5.00		Inadequate
53	Craft equipment	40	-	-	-	5	-	-	5	-	-	5.00		Inadequate
54	Musical equipment	40	-	-	-	-	-	-	-	-	-	5.00		Inadequate
55	Operating theatre	30	-	15	-	-	-	-	-	-	-	15.00		Inadequate
56	Home economics equipment	40	-	-	-	10	-	-	-	-	-	10.00		Inadequate
57	Medical equipment	40	-	15	-	-	-	-	-	-	-	15.00		Inadequate
58	Engineering equipment	40	-	15	-	-	-	-	-	-	-	5.00		Inadequate
59	Architectural equipment	40	-	-	10	-	-	-	-	-	-	10.00		Inadequate
60	Agricultural equipment	40	-	-	-	-	-	-	-	-	-	5.00		Inadequate
61	Sports equipment	40	-	-	-	-	-	-	-	10	-	10.00		Inadequate

Source: Field study 2009/2010 session

Table 4: t-test for the difference in the mean response of academic staff and final year students regarding the availability and adequacy of human resources in Nigerian Public Universities

S. No.	N^1	$\bar{X}^1$	SD^1	N^2	$\bar{X}^2$	SD^2	*Calculated t-value*	*Table value*	*Decision*
1.	200	2.10	1.15	1, 300	2.36	1.06	1.75	1.960	Retained
2	200	2.65	1.98	1, 300	2.70	1.35	1.50	1.960	Retained
3.	200	2.40	1.22	1, 300	2.04	2.21	1.21	1.960	Retained
4.	200	2.07	0.97	1, 300	2.06	0.68	0.87	1.960	Retained
5.	200	2.85	1.56	1, 300	2.41	2.06	1.35	1.960	Retained
6.	200	2.20	1.00	1, 300	2.03	1.56	0.97	1.960	Retained
7.	200	2.33	1.14	1, 300	2.25	1.08	1.54	1.960	Retained
8.	200	1.90	0.86	1, 300	1.35	0.95	1.42	1.960	Retained
9.	200	2.05	1.01	1, 300	2.43	1.20	1.31	1.960	Retained
10.	200	2.13	1.07	1, 300	2.11	1.05	1.46	1.960	Retained
11.	200	1.98	1.00	1, 300	2.40	1.18	1.58	1.960	Retained
12.	200	2.53	1.26	1, 300	2.84	1.42	-1.69	1.960	Retained
13.	200	2.13	1.06	1, 300	2.22	1.02	-2.73	1.960	Retained
14.	200	1.53	0.95	1, 300	2.15	1.08	-1.14	1.960	Retained
15.	200	2.20	1.09	1, 300	2.05	1.01	-1.26	1.960	Retained
16.	200	2.25	1.08	1, 300	1.13	0.60	0.72	1.960	Retained
17	200	2.38	1.22	1, 300	2.10	1.02	1.11	1.960	Retained

Source: Field study 2009/2010 session

Table 5: t-test for the difference in the mean response of academic staff and students regarding the availability and adequacy of material resources for the teaching and learning of skilled based courses in Nigerian Public Universities

S. No.	N^1	$\bar{X}^1$	SD^1	N^2	$\bar{X}^2$	SD^2	*Calculated t-value*	*Table value*	*Decision*
1.	200	1.05	0.62	1, 300	1.50	0.75	1.51	1.960	Retained
2	200	2.65	1.30	1, 300	2.55	1.27	1.65	1.960	Retained
3.	200	1.20	0.60	1, 300	2.20	1.60	2.10	1.960	Retained
4.	200	1.90	0.55	1, 300	1.80	0.90	1.87	1.960	Retained
5.	200	2.75	1.40	1, 300	2.87	1.43	0.56	1.960	Retained
6.	200	2.96	1.47	1, 300	3.05	1.56	0.22	1.960	Retained
7.	200	2.15	1.08	1, 300	1.50	0.75	-1.11	1.960	Retained
8.	200	2.20	1.12	1, 300	1.83	0.92	0.72	1.960	Retained
9.	200	2.30	1.15	1, 300	2.48	1.23	1.35	1.960	Retained
10.	200	2.22	1.10	1, 300	2.18	1.07	1.18	1.960	Retained
11.	200	2.48	1.20	1, 300	1.05	0.55	1.28	1.960	Retained
12.	200	2.05	1.02	1, 300	2.40	1.23	1.43	1.960	Retained
13.	200	2.37	1.17	1, 300	2.34	1.15	1.69	1.960	Retained
14.	200	2.15	1.07	1, 300	2.20	1.10	1.50	1.960	Retained
15.	200	1.40	0.70	1, 300	2.45	1.25	1.88	1.960	Retained
16.	200	1.70	0.85	1, 300	2.20	1.10	1.76	1.960	Retained
17	200	1.68	0.84	1, 300	2.15	1.08	1.39	1.960	Retained
18	200	2.01	1.00	1, 300	2.00	0.95	0.80	1.960	Retained
19	200	2.40	1.20	1, 300	2.40	1.18	0.91	1.960	Retained
20	200	2.35	1.16	1, 300	2.26	1.14	1.54	1.960	Retained
21	200	1.80	0.90	1, 300	2.18	1.10	1.82	1.960	Retained
22	200	2.30	1.20	1, 300	1.55	0.99	1.99	1.960	Retained
23	200	2.36	2.10	1, 300	1.17	0.95	1.75	1.960	Retained
24	200	-	-	1, 300	-	-	-	1.960	Retained
25	200	-	-	1, 300	-	-	-	1.960	Retained

Source: Field study 2009/2010 session

DISCUSSION

The findings above show that there was inadequacy of human and material resources in the public universities in Nigeria as perceived by academic staff and final year students of these institutions. With this existing condition, it is difficult for a nation like Nigeria to have her graduates skilled in their different fields of endeavour. They may be good in the theory aspect of their courses but deficient in the practical aspect. Studies have revealed that it is the prac-

tical aspect of a course that makes the student functional (Abdulahi 2001). How can a student function in his chosen career when he has not seen or trained with the necessary equipment that is paramount to his profession? This is a big question that needs a major answer. This present situation in the Nigerian Public Universities cannot produce graduates who understand the ways that will enable them to participate intelligently in critical thinking, problem- solving and decision- making about how science and technology are useful changing the society. Booster and Helgeson (1990) feel that a nation that is to grow technologically with the rest of the world must first and foremost provide the necessary requirements for her citizens.

This study also revealed that the available human and material resources in the public universities did not meet the National Universities Commission minimum standard requirements for the teaching and learning of skill-based courses. The inadequacy of qualified teachers coupled with the shortfall in material resources according to Adekola (2000) affect the practical skill acquisition required to produce skilled graduates. This has created a vicious cycle in the teaching of skill-based courses. Bajah (1975), Tanner and Tanner (2002), Mc Kenzie (2004) agree that the success of a curriculum largely depends on the teachers handling it. If the teachers to handle these courses are not well trained to function, how then can they pass the appropriate knowledge to the students. The Federal Ministry of Education (FME) (1985) submitted that it is highly imperative for successful implementation of vocational trades in schools, therefore there have to be adequately qualified trained teachers, supporting staff and materials. The apparent shortfall in these essential resources is manifested in the high failure rate and incompetent graduates. There is still no solution to the problems of light and water in Nigeria. These are basic problems that can be handled by competent engineers but for incompetency and corrupt practices solutions have yet to be found. For a country like Nigeria with many universities, not to have a solution to these basic needs is something worth worrying about. Towe (2007), Ali (2006) asserted that if adequate quantity and quality of human and material resources in the public universities are unavailable, then it may be impossible for Nigeria to meet the vision 2020 target. There are some educational implications deduced from the findings of this study.

1. Generally, inadequate supply of the right quantity and quality of teachers and supporting staff of a course hinder students' mastery of theory and practical skills.
2. Adequacy of facilities are vital for the competent training of students in a skills acquisition subject. Students' progress of practical knowledge are daunted when these materials are not available.
3. The shortfall of the minimum standard requirement means that there will not be accreditation for the courses, neither will the certificates obtained be recognized.

CONCLUSION

Based on the findings of the study, it was concluded that:

1. The human and material resources for the teaching and learning of skill-based courses in Nigerian Public Universities are inadequate and in most cases unavailable.
2. Most of the human and material resources for the teaching and learning of skill-based courses in Nigerian Public Universities did not meet the minimum standard requirement of the national universities commission (a body empowered by the Nigerian government to accredit programmes that satisfy at least the minimum standard for effective communication in class).

RECOMMENDATIONS

Based on the above findings, recommendations have been drawn up and hopefully when adhered to, will produce competent graduates and consequently yield a considerable improvement on the status development of the nation.

1. Government and well- meaning citizens must take studies like this one seriously and follow up with the recommendations.
2. It is of utmost importance that government give adequate training to teachers who consequently will be competent in both theory and practical aspects of their courses.
3. In-service training must be given to the existing teachers and supporting staff. This is to bring them abreast with latest technologies in their various skills.

4. All academic and non- academic staff must be literate in computer. They most know how to use and operate a computer.
5. School libraries must be stocked with current books, journals on skill- based courses and computer services.
6. Government, non-governmental organizations and good citizens must help the universities to salvage this situation by providing adequate quality materials for practical teaching and learning of the skill- based courses for this will greatly improve skills acquired by the graduates and consequently the nation's development.
7. While providing these materials, maintenance culture must be imbibed by those in charge of these materials for teaching.
8. Policy makers must have good picture of the situation in the Nigerian universities, so as to help them make intelligent policy decisions/statement that can help the nation's future graduates and consequently help the growth of the country.
9. Lack of needed materials can frustrate teaching and make teachers depressed. Due to this fact, teachers must make effort to improvise where possible.
10. The university managers know about the school needs. It is, therefore, paramount for them to put in more efforts to make sure that skill-based courses offered in their schools are accredited. This means making sure that there are adequate material and human resources that matches that of the Nigerian universities commission. This they can do by sourcing funds from all possible avenue including local and international communities.

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APPENDIX

Definition of Terms

1. *Skilled Based Courses:* These are courses that require practical teaching to be able to acquire the necessary skills to function. For example, vocational courses, Science and Technological courses, all branches of Medical Sciences, Engineering, Architecture, Information Technology, Education, Agriculture language etc.
2. *Human Resources:* The academic and non-academic staff in its right quantity and quality needed for the effective impartation of knowledge to students in skilled based courses.
3. *Material Resources:* These are adequate infrastructural and instructional materials, equipment or facilities needed for the teaching and learning of skilled based courses.