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# THE STATUS OF RESOURCES FOR TEACHING BIOLOGY IN COLLEGES OF EDUCATION IN ANAMBRA STATE

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## ABSTRACT

*The study investigated the status of resources for teaching biology in colleges of education in Anambra State. The design of the study was a descriptive survey which involves the Biology Department of the Federal College of Education (Technical) Umunze and Nwafor Orizu College of Education, Nsugbe. The population of the study comprised all the 121 academic staff, supporting staff and students from both colleges. The instrument used to collect data was a checklist based on the National Commission for College of Education (NCCE) minimum standard syllabus, developed by the researchers which was validated by experts. The reliability coefficient was 0.81. The data was analyzed using percentage, mean and standard deviation. The study revealed that the number of academic staff met the requirements of the NCCE minimum standard while the supporting staff and material resources did not. It was also found that the available materials are not used always for teaching biology. Based on the findings, some recommendations were made.*

## INTRODUCTION

The place of science in the development and fulfillment of the needs of many countries is not in doubt, for instance, major advances in science and technology have helped nations to promote efficiency, self-reliance and overall well-being of humanity through inventions in telecommunications, transportation, health, agriculture among others (Agusiobi, 2010). The National Policy on Education (FME) (2008) stated clearly that the learner would be given opportunity to acquire basic practical skills for self-reliance and employment. For the effective acquisition of these practical skills and achievement of objectives, adequate provision of essential laboratory equipment for the teaching and learning of science are inevitable.

Teaching and learning of science, technology and mathematics requires the intensive application of resources that would appeal all the sense of perception to improve the effectiveness of inspiration as well as maximize learning. Ige (2000) noted that science teaching can only be meaningful and effective if backed up with the necessary resources to enrich instruction. Other researchers have found that

resources are potent tools, which could be used to effectively communicate science while enriching the learning experiences of the learners (Ango, 1990; Umeh, 2006; Lawal, 2006 & Cifat, et al., 2006). Teaching resources help the learners to learn faster and better. Resources can be human and materials and aid teaching and learning.

Human resources are people who possess more authentic knowledge and needed information and skill, and are also willing and able to communicate to students information, and have the right to give the information out; such people are experts (Umeh, 2006). Material resources are described as information carrier designed specifically to fulfill objectives in teaching learning situation. Ifeakor (2006) noted that material resources can be wide variety of equipment and materials used for teaching and learning, which include consumable and non-consumables like chemical, electrically, charts, computer, and projection microscope among others.

The biology teacher is an indispensable human resource who has vital role to play in the

utilization of all other resources, therefore he must be aware of the various types of resources available, how to get them, and the situations where they can be effectively put to use (Ige, 2000). Research work on the labour market prospect of Nigeria graduates by Dabaleni, Oni and Adekola (2000) has found that employers are unwilling to recruit Nigeria graduate because: graduates are poorly trained, and unproductively in their job; graduates skills have deteriorated over the past decade; and graduates have shortcomings on their oral and written communications and applied technical skills. Also, Onwuakpa and Akpan (1999) reported that teachers in our school are half baked. Adeyegbe (1991) Obemeta (1992) and Akpokiere (2004) have attributed poor quality of education, low performance and poor skill acquisition to unavailability of human and material resources such as qualified teachers, laboratory and equipment.

The colleges of education as teacher trainers are expected to have resources for the production of efficient science teachers, as no education can rise above the quality of its teachers. It must therefore, be in this regard that the National Commission for College of Education (NCCE) has stipulated the minimum requirement of resources for science department in the minimum standard syllabus. The availability of those materials in the college could be an indicator of the quality of training and skills received by prospective teachers. Therefore, it becomes necessary to find out the status of resources for teaching biology in colleges of education in Anambra State. Specifically, the study will find out:

- the status of human resources for teaching biology in colleges of education in Anambra State.
  - the availability of material resources for teaching biology in colleges of education in Anambra State.
- the extent of use of these material resources for teaching biology in colleges of education.

### Research Questions

The following research questions guided the study:

1. What is the status of human resources for biology teaching in colleges of education in Anambra State?
2. To what extent are material resources available for teaching of biology in colleges of education in Anambra State?
3. How often are these material resources used for teaching biology in colleges of education in Anambra State?

### Research Method

The study was a descriptive survey design which involves the department of biology of the Federal College of Education (Technical) (FCET), Umunze, and Nwafor Orizu College of Education, Nsugbe (NOCEN). The population of the study comprised all the 121 academic staff; and supporting staff (non academic staff), and students from biology department of the colleges: thus FCET, Umunze has biology lecturers (12), laboratory technologist (1), laboratory assistance (1), typist (1) and “300 level” students (40). NOCEN has biology lecturers (8), laboratory attendants (1) laboratory technologist (1), typist (1) and “300 level” students 55. Only the 300level biology students were used because they were much familiar with biology resources in the college than other levels. All the 12 respondents were used for the students.

The information on the resources of these colleges was obtained by means of a checklist comprising the human and material requirements contained in the minimum benchmark of the National Commission for College of Education (NCCE). It was developed by the researchers and validated by two experts

from science education department and measurement and evaluation. The checklist has three sections: A-C. Section A dealt with the information on staff and students population, while section B contained information on the availability of material resources and section C dealt with the use of material resources in the teaching and learning of biology in the two colleges of education. The reliability coefficient of the instrument was determined using Cronbach Alpha and the value was 0.81.

The instruments were administered to the 121 respondents and data were collected on the spot. Data obtained were analyzed using percentage, mean and standard deviation.

A mean of 2.50 and above was an indication of availability and mostly used material resources.

## RESULT

### Research question 1

What is the status of human resources in biology department of the colleges of education in Anambra State?

**Table 1:** Human resources in biology department of the two colleges of education in Anambra State

Colleges of education	Human resources	Biology dept.	%ge
FCET, Umunze	Academic staff	12	60%
NOCEN	Academic staff	8	50%
NCCE Minimum standard	Academic staff	8	
FCET Umunze	Laboratory attendant	1	60%
NOCEN	Laboratory attendant	1	60%
NCCE Minimum standard	Academic staff	1	
FCET Umunze	Students population (300 level)	65	40%
NOCEN	Students population (300 level)	55	45%
FCET Umunze	Teacher-student ratio	1:65	40%
NOCEN	Teacher-student ratio	1:65	45%
NCCE Minimum standard	Teacher-student ratio	1:30	
FCET Umunze	Laboratory technologist	1	50%
NOCEN	Laboratory technologist	1	50%
NCCE minimum standard	Laboratory technologist	1	
FCET Umunze	Laboratory attendants	1	50%
NOCEN	Laboratory attendants	1	50%
NCCE minimum standard	Laboratory attendants	1	
Umunze	Cleaner	-	0
NOCEN	Cleaner	-	0
NCCE minimum standard	Cleaner	1	
FCET Umunze	Curator	-	0
NOCEN	curator	-	0
NCCE minimum Standard	curator	1	
FCET Umunze	Typist	1	50%
NOCEN	Typist	1	50%
NCCE minimum standard	Typist	1	
FCET Umunze	messenger	1	50%
NOCEN	Messenger	1	50%
NCCE minimum standard	Messenger	1	

From table 1, the result shows that the number of lecturers is fairly adequate since the minimum number of lecturer stipulated by NCCE minimum standard for single major department is 8. The state and federal colleges of education have strength that meet the

minimum standard for teaching staff. On the other hand, the minimum standard required a total of 8 supporting staff for each science department which includes: a technologist, technicians, laboratory attendant, cleaner, curator, typist and messenger. In the two

colleges of education, it was found that there were no technicians. The messenger did the work of the cleaners. The non academic staff was found to be below the minimum NCCE standard.

### Researche question 2

To what extent are material resources available for teaching of biology in colleges of education in Anambra State?

**Table 2:** The mean availability of equipment required in NCCE minimum standard in the biology department of FCET and NOCEN

Material resources	FCET		NOCEN	
	$\bar{X}$	SD	$\bar{X}$	SD
1. Biology laboratory	3.54	1.98	3.53	1.97
2. Hand lenses	3.12	1.02	3.02	1.02
3. Incubators/sterilizer	0.50	0.21	0.52	0.25
4. Microscope	2.71	0.67	2.57	0.85
5. Autoclave (portable)	1.01	0.33	1.96	0.92
6. Hot plates	1.28	0.63	1.10	0.55
7. Refrigerator	3.56	1.18	3.60	1.88
8. Water filter	0.52	0.25	0.51	0.23
9. Hygrometer	2.74	0.91	2.86	1.42
10. Drying oven (30 <sup>o</sup> c-120 <sup>o</sup> c)	2.86	0.95	2.81	0.93
11. Microtone/stage micrometer	0.30	0.15	0.52	0.25
12. Automatic tissue processor	0.01	0.00	0.00	0.00
13. Centrifuge	0.21	0.06	0.19	0.03
14. Herbarium cabinet	0.52	0.24	0.49	0.22
15. Herbarium index boxes	0.00	0.00	0.00	0.00
16. Air pumps	0.01	0.00	0.01	0.00
17. Photometer	0.00	0.00	0.00	0.00
18. Kymograph	0.02	0.00	0.03	0.00
19. Dissecting microscope	0.21	0.06	0.19	0.03
20. Insect light traps	0.86	0.28	0.83	0.22
21. Slide Projector	1.28	0.63	1.23	0.58
22. Overhead projector	1.27	0.61	1.19	0.47
23. Steel frame aquaria	2.74	0.91	2.86	1.42
24. Oxygen meter	0.00	0.00	0.00	0.00
25. Binocular microscopes	2.94	1.48	3.00	1.68
26. Embedding bath	0.00	0.00	0.00	0.00
27. Maresty still	0.00	0.00	0.00	0.00
28. Water bath	0.52	0.25	1.28	0.63
29. pH meter	1.54	0.51	1.84	0.92
30. Tissue grinter	0.00	0.00	0.00	0.00
31. Calorimeter (electric)	0.00	0.00	0.00	0.00
32. Auxanometer (electric)	0.00	0.00	0.00	0.00
33. Soil auger	0.52	0.25	0.56	0.26
34. Plant press	1.28	0.63	0.52	0.25
35. Wooden quadrates	2.01	0.60	2.62	0.82
36. Soil treating kit	2.86	0.95	2.74	0.91
37. Measuring tape	3.54	1.98	3.56	1.81
38. Dissecting kit	3.64	1.99	3.66	1.99
39. Dissecting boards	3.60	1.88	3.63	1.92
40. Gas cylinder	2.84	1.46	2.82	1.21
41. Test tube rack	2.82	1.21	2.84	1.26
42. Prepared plates/ animal specimen	2.81	0.93	2.94	1.48
43. Mettler balance	1.00	0.33	0.96	0.28
44. Top loading balance	2.56	0.81	2.74	0.91
45. Thermostat	0.86	0.28	0.52	0.25
46. Centrifuge	2.86	0.95	2.81	0.93
47. Oven	2.73	0.91	2.71	0.67
48. Steam bath	0.00	0.00	0.00	0.00

Result from table 2, shows that the colleges lacked most of the required materials for teaching biology, for instance, water filter, autoclave, microtome, herbarium index boxes, air pump, insect light traps, centrifuge, embedding bath among others. Material like hand lenses, dissecting kit, dissecting board, steel frame aquarium, measuring tape among others are found in large numbers.

### Research question 3

How often are these material resources used for teaching biology?

**Table 3:** Mean and standard deviation on the usage of material resources for teaching biology

Material resources	FCET		NOCEN	
	$\bar{X}$	SD	$\bar{X}$	SD
1 Biology laboratory	2.71	0.64	3.00	1.80
2 Hand lenses	2.10	1.05	2.00	0.60
3 Incubators/sterilizer	0.40	0.17	0.50	0.21
4 Microscope	1.84	0.92	1.94	0.68
5 Autoclave (portable)	0.21	0.06	0.26	0.08
6 Hot plates	0.02	0.01	0.22	0.07
7 Refrigerator	2.74	0.91	2.71	0.67
8 Water filter	0.31	0.17	0.21	0.06
9 Hygrometer	1.27	0.61	1.28	0.63
10 Drying oven (30 <sup>0</sup> c-120 <sup>0</sup> c)	1.28	0.63	1.27	0.61
11 Microtone/stage micrometer	0.02	0.01	0.50	0.21
12 Automatic tissue processor	0.00	0.00	0.00	0.00
13 Centrifuge	0.07	0.01	0.06	0.01
14 Herbarium cabinet	0.42	0.21	0.19	0.03
15 Herbarium index boxes	0.00	0.00	0.00	0.00
16 Air pumps	0.01	0.00	0.00	0.00
17 Photometer	0.00	0.00	0.00	0.00
18 Kymograph	0.00	0.00	0.00	0.00
19 Dissecting microscope	0.03	0.00	0.05	0.02
20 Insect light traps	0.21	0.06	0.03	0.01
21 Slide Projector	1.10	0.55	1.28	0.63
22 Overhead projector	1.48	0.67	1.10	0.55
23 Steel frame aquaria	1.37	0.61	1.54	0.64
24 Oxygen meter	0.00	0.00	0.00	0.00
25 Binocular microscopes	2.75	1.13	2.82	1.21
26 Embedding bath	0.00	0.00	0.00	0.00
27 Maresty still	0.00	0.00	0.00	0.00
28 Water bath	0.56	0.26	1.00	0.33
29 pH meter	1.28	0.63	0.52	0.25
30 Tissue grinder	0.00	0.00	0.00	0.00
31 Calorimeter (electric)	0.00	0.00	0.00	0.00
32 Auxanometer (electric)	0.00	0.00	0.00	0.00
33 Soil auger	0.10	0.03	0.08	0.02
34 Plant press	1.28	0.63	1.10	0.55
35 Wooden quadrates	2.84	1.26	2.82	1.21
36 Soil treating kit	1.34	0.51	1.84	0.92
37 Measuring tape	2.94	1.48	3.00	1.68
38 Dissecting kit	2.82	1.21	2.84	1.26
39 Dissecting boards	2.86	0.95	2.74	0.91
40 Gas cylinder	1.28	0.63	1.34	0.92
41 Test tube rack	2.01	0.61	2.00	0.59
42 Prepared plates/ animal specimen	3.21	1.64	3.00	1.62
43 Mettler balance	1.10	0.55	1.16	0.56
44 Top loading balance	1.43	0.65	1.37	0.61
45 Thermostat	1.56	0.62	1.46	0.51
46 Centrifuge	1.48	0.67	1.37	0.61
47 Oven	1.75	0.81	1.62	0.73
48 Steam bath	0.00	0.00	0.00	0.00

Result from table 3 show that most of the available material resources are not often used to teach biology since the mean fall below 2.50.

### DISCUSSION

Result from table 1 show that lecturers are fairly adequate in both colleges of education since the minimum number of lecturers stipulated by the NCCE minimum standard for single major department is 8. Also the non academic staff strength was found to be below the minimum requirement of syllables in the college surveyed. This result is in line with Akano and Akpokiere (2006) who noted that lecturers in colleges of education in Niger State meet the minimum NCCE standard while the supporting staff did not.

Also, from the result in table 2, it was revealed that the colleges lacked most required materials for teaching biology. The result is also in line with Akano and Akpokiere (2006); Ifeakor (2006) who reported lack of material resources for teaching science in colleges and schools. Furthermores, table 3 results showed that most of the available material resources are not always used during biology teaching. This is in consonance with Ifeakor (2006) who noted that some laboratories are open only during examinations. And also that some teachers are not skilled enough to use some science equipment. Also, in all, the number of equipment available in the colleges fell below the minimum standard of the NCCE. This could indicate poor training of teachers as lack of adequate material has been linked to students poor performance and acquisition of skills (Adeyegbe, 1991 and Akpokiere, 2004)

### CONCLUSION

The study has revealed that human resources in the colleges of education in Anambra State are adequate in terms of teaching staff but not adequate in area of supporting staff. Also, teachers also not make adequate use of material

resources while teaching biology. Material resources are far from being adequate when measured with the NCCE minimum standard. There is need to provide sufficient human and material resources to teacher training colleges.

### RECOMMENDATIONS

The following recommendations were therefore made:

- The NCCE accreditation teams should emphasize the need for college to have at least minimum materials in the laboratory.
- The federal and state governments should ensure that the numbers of supporting staff needed in the science department are provided by releasing funds for staff recruitment.
- Teacher should attend workshops and training to improve their competences in the use of material resources for science teaching.

### REFERENCES

- Adeyegbe, S.O. (1991). "The senior secondary school science curricula and performance. An appraisal of 1st cycle of operation". A paper delivered at the W.A.E.C. monthly seminar on 25th April, 1991.
- Agusiobi, B.C. (2010). "Inducing higher level of resources utilization on the integrated science teachers". *Unpublished Ph.D. Dissertation, university of Lagos.*
- Akpokiere, R. (2014). "Comparative academic achievement of chemistry student in adequate and inadequate equipped senior secondary schools in Niger State". M. ed thesis of the University of Ilorin, Nigeria.
- Ango, M.L. (1990). *Basic science laboratory.* Jos: Ehindero publishers Ltd.
- Cirfat, A.B.; Zumyil, C.F.; & Tongjure, J.D.C. (2006). "An evaluation of the availability of resources for biology teaching in secondary school. A case study of Plateau

- State Central Senatorial Zone” *47th proceeding of STAN*. 128-133
- Dabalén, A.; Oni, B. & Adekola, O.A. (2000). “Labour market prospects of university graduates in Nigeria”. Background study conducted to inform design of the Nigerian university system innovation project.
- Federal Ministry of Education (FME) (2008). *National Policy on Education*. Revised 5th Edition, Lagos: NERDC Press.
- Ifeakor, A.C. (2006). “The status of resources for effective teaching of chemistry in Nigeria secondary schools”. *47th annual proceeding of STAN* 173-177.
- Ige, T.A. (2000). “Boosting resources utilization in biology classrooms”. *41st annual conference proceedings of science teachers association of Nigeria (STAN)* 141-145.
- Lawal, F.K. (2006). “Availability and impact of material resources on achievements in biology in selected secondary schools in Katsina Metropolis. *47th annual proceeding of STAN*: 147-151.
- Obemata, J.O. (1992). “Raising the standard of performance in public examinations in Nigeria”. A paper presented at the WAEC. symposium, university of Ibadan. 24th April, 1992.
- Onwuakpa, F.W. & Akpan, B. (1999). “A descent survey of resources concentration in Imo State secondary school”. *Journal of STAN*. 23 (1α2).
- Umeh, M.O. (2006). “Availability and use of human and material resources in the teaching of ecology and genetics in biology education in secondary school in Anambra State”. *47th annual proceeding of STAN* 128-133.