RESOURCES MANAGEMENT RESPONSIBILITIES OF BASIC SCIENCE AND TECHNOLOGY TEACHERS IN JUNIOR SECONDARY SCHOOLS IN MINNA, NIGER STATE

A. M. Hassan[1]., R. Y. Karfe[2]., U. B. Abdullahi[3]., D. Zhirin[4] & Z. Isah[5]

[1&4]Industrial and Technology Education Department, Federal University of Technology, Minna

[2]Directorate of Remedial and General Studies, Department of General Studies Federal University of Health Sciences, Azare, Bauchi State

[3]Department of Science Education, Federal University of Technology, Minna

[5]Department of Business Studies, School of Vocational and Technical, College of Education, Zuba

Email: yabhass@yahoo.com (Tel +2348035872654)

Abstract: Basic science and technology teachers are expected to possess resource management responsibilities. The extent to which the teacher performs his functions depends on their possession of relevant management capabilities. If the teachers lack management responsibilities a conducive learning environment will not be created for the learners. This study is to determine the resource management responsibilities of basic science and technology teachers. Four research questions and four null hypotheses tested at 0.05 level of significance guided the study. Survey research was adopted for the study. A total of 102 basic science and technology teachers were used. A structured questionnaire was used for data collection. Cronbath Alpha (a) reliability was used to determine the reliability of the instrument. It was face validated by three experts. The data were analysed with the use of mean, standard deviation and t-test for the hypotheses. It was found that, there was no significant difference in the mean ratings of the responses of experienced awl inexperienced teachers in their required management responsibilities on resources. It was recommended that the responsibilities identified in the study should be integrated into the course of would be basic science and technology teachers. Similarly, adequate resources should be made available by the administrators of schools and government.

Keywords: Basic science and technology, Resources management, teachers

Introduction

The senior secondary school's system in Nigeria is of two types, the conventional junior secondary schools and the technical colleges. Instruction^ these levels are more specified and comprehensive and arc designed to broaden students knowledge and outlook. Industrial technical education (basic science and technology) at this level would be examined in the two areas; secondary schools and technical colleges (Murphy, 2006). The resources to be considered for management arc human and material resources. The human resources include the workshop attendants, storekeepers and the students, while the material resources are tools, equipment, machines and instructional materials. The proper management of resources by teachers of basic science and technology has been identified as a major way through which stated aims and objectives could be achieved (Adesina, 1990).

Similarly, for a set goal to be achieved, facilities should also be supplied in adequate number that will enable students' work and learn effectively. the management of both human and material resources in schools is therefore very important in educational administration. There is a great need for an effective management and control of available materials and the ones to come. Hence, the basic science and technology teachers have a lot of responsibilities to ensure the effective management of these resources. Basic science and technology teachers are expected to possess the resources management skill in the area of planning, controlling, organizing and evaluating resources for imparting skills to the students. Resource management responsibilities arc obligations of teachers of basic science and technology to use basic science and technology materials for imparting knowledge and skills to the students as contained in the curriculum. The extents to which the teachers perform these functions depend on their experiences and their possession of relevant management capabilities in Basic science and technology resources (Suleiman. 2000).

A teacher in this study was one teaching Basic science and technology to students, making use of all the available resources. He could be described as experienced or inexperienced. An experienced teacher of Basic science and technology is one with a teaching appointment in Basic science and

technology for six years and above, lie must have acquired a professional knowledge and skills from a College of Education or in the University (Storm. An inexperienced teacher is one that is below six years teaching Basic science and technology and may fall short of a professional qualification from a College of Education or the University in a relevant subject. These two categories could be found in Secondary Schools in the Minna, Niger State teaching students and managing resources in Basic science and technology. According to Leonardo (1996) teachers like other practitioners, learn from the stories of their experiences, which shape the wisdom of practice enacted to classrooms, lie further stated that the wisdom of leaching can be found in teachers stories, which provide insights into their experiences, knowledge and emotions that characterize their everyday professional actions.

Management is mostly described as a "process", that is actively carried out by people along specific lines, it is of course, a mental process, because factors of thought, judgment and decision are essential to its performance. It is not of itself a "technique" but it uses techniques as its tools or aids. As indicated above, it is a process with economic and social facets, and often occurs within a technological setting. Basic science and technology is one of the vocational elective which is offered at the conventional senior secondary school level and one of the courses in engineering trades in technical colleges (Sani. 2009). For effective management of resources, the basic science and technology teachers have a lot of responsibilities to carryout. Some of these responsibilities are ensure security of tools and equipment, inventory of tools and equipment and safely of tools and equipment.

Basic science and technology teachers should be responsible for planning, controlling, organizing and evaluating the resources in school with regards to standardized classrooms, workshops, storage rooms, subject classes and other open spaces all designed with a view to incorporating flexibility, adaptability and optimum utilization of learning spaces (Suleiman. 2000). Resources can limit Basic science and technology programmes. Well planned and managed resources will not only enhance the day to day learning process but also pave way for launching new branches at Basic science and technology programmes in an institution. It is the responsibility of teacher to use the resources provided so that they create the kind of classroom/laboratory/workshop environment, which makes learning easier and more beneficial. Tor basic science and technology programmes to attain efficiency and effectiveness about its philosophy and corporative, all resources must be properly managed (Lyons. 2000).

Statement of the Problem

In the realm of education, particularly in junior secondary schools in Minna, Niger State, the effective management of resources plays a pivotal role in fostering a conducive learning environment and enhancing the quality of education. Basic science and technology teachers, being fundamental contributors to the educational process, are entrusted with the responsibility of managing resources that directly impact the teaching and learning experiences. However, despite the significance of their role, there exists a gap in understanding the specific challenges and complexities faced by basic science and technology teachers in Minna regarding resource management. The scarcity of studies addressing the resource management responsibilities of basic science and technology teachers in the context of junior secondary schools in Minna is evident. This research aims to address this gap by systematically investigating the following issues: what are the current practices of basic science and technology teachers in allocating and utilizing resources in junior secondary schools in Minna? Are there patterns or disparities in the allocation of resources among different teachers or schools and what challenges do basic science and technology teachers encounter in managing resources effectively? Are these challenges common across schools, or do they vary based on specific factors such as school size, location, or socio-economic conditions?

Purpose of the Study

1. To compare and analyze the planning processes and resource allocation strategies employed by experienced and inexperienced teachers of basic science and technology in junior secondary schools.
2. To investigate and evaluate the methods used by experienced and inexperienced teachers of basic science and technology to organize, manage, and maintain tools, materials, and equipment for effective instruction in junior secondary schools.
3. To identify and compare the classroom management and safety protocols implemented by experienced and inexperienced teachers of basic science and technology during practical workshops in junior secondary schools.
4. To assess and compare the evaluation techniques and feedback strategies employed by experienced and inexperienced teachers of basic science and technology to monitor and evaluate students' effective use of resources in learning activities.

Hypotheses

The following hypotheses were tested at 0.05 level of significance.

Ho_1: There was no significant difference in the mean responses of experienced and inexperienced teacher of basic science and technology on those responsibilities of teachers in planning resources for teaching basic science and technology in the junior secondary schools.

Ho_2: There was no significant difference in the mean responses of experienced and inexperienced teacher of basic science and technology on those responsibilities of teachers in organizing tools, materials and equipment for basic science and technology instruction in the junior secondary schools.

Ho_3: There was no significant difference in the mean responses of experienced and inexperienced teacher of basic science and technology on those responsibilities of teachers in controlling workshop in the junior secondary schools.

Ho_4: There was no significant difference in the mean responses of experienced and inexperienced teachers of basic science and technology in evaluating students use of tools equipment and material for effective learning of basic science and technology in the junior secondary schools.

Methodology

Survey research design was used for this study. The study was carried out in Minna, Niger State. The population for the study included basic science and technology teachers in junior secondary schools in Minna, Niger State The entire population consisting of one hundred and two basic science and technology teacher, were used. There was no sampling since the population is small. Questionnaire was used as the instrument for data collection. The instrument was validated by two experts from Science Education Department, Federal Universality of Technology, Minna. Chronbach Alpha (a) reliability coefficient was used to determine the reliability coefficient of the instrument. 'According to Uzoagulu (1993). Chronbach Alpha (a) reliability coefficient is used to estimate correlation of an instrument with an alternative form, which was composed of the same number of items. Ten teachers, of basic science and technology in Junior secondary schools outside the Minna were used to ascertain the reliability of the instrument. The value of the coefficient obtained was 0.86. which is suitable to accept the reliability of the instrument. The researcher distributed copies of the questionnaire with the help of research assistants since it covered seven states of the Minna, Niger State. Both descriptive and inferential statistical techniques were employed in the analysis of the data from the respondents. Specifically, the data from the respondents were analyzed using mean and standard deviation. The t-test was used for testing hypothesis at 0.05 level of ignorance. Calculation of the mean was made and any item with a mean value of 3.50 was regarded as not required. For the hypothesis, decision rule was based on whether the computed value of the t-test exceeds the table value.

Results

Table 1: t-testing analysis of mean rating of respondents on those responsibilities required in plaining resources for teaching basic science and technology

S/N	Planning responsibilities of resources	Exp Teachers $N_1 = 59$		Inexp. Teachers $N_2 = 43$		t-eal	t-tab	Remark
		$\bar{x}_1$	S_1^2	$\bar{x}_2$	S_2^2			
1	Formulate specific objectives for using tools and equipment for practical working basic science and technology	3.59	1.42	3.65	1.08	0.27	1.96	NS
2	Determine the tools, equipment and material required for practical lessons in basic science and technology	3.93	1.12	4.05	0.85	0.85	0.61	NS
3	Budget for resources required for practical basic science and technology lessons	3.92	0.85	3.56	1.35	1.70	1.96	NS
4	Identify the sources where high quality material resources could be procured	3.49	1.30	3.56	1.17	0.32	1.96	NS
5	Decide the method of storage required for each resource used in basic science and technology	3.61	1.37	3.51	1.49	0.12	1.96	NS

Data presented on table 1 above showed each of the items in the teachers responsibilities in planning resources for teaching basic science and technology except one i.e. item 6 had a calculated t-value less than the table value of 1.96 at 0.05 level of significance and 100 degree of freedom. This indicated that there was no significant difference in the mean ratings of the two groups (experienced and inexperienced) on their required responsibilities in planning resources. Hence the null hypothesis (H_o) of no significant difference was upheld.

Table 2: t-testing analysis of mean rating of respondents on their required responsibilities in organizing tools, materials and equipment for teaching basic science and technology in the junior secondary schools.

S/N	Organizing responsibilities for resources	Exp Teachers $N_1 = 59$		Inexp. Teachers $N_2 = 43$		t-eal	t-tab	Remark
		$\bar{x}_1$	S_1^2	$\bar{x}_2$	S_2^2			
6	Organize work study resources for practical lesson in basic science and technology	3.61	1.00	3.70	0.69	0.50	1.96	NS
7	Procure required resources for practical lesson in basic science and technology	3.86	1.46	4.05	1.10	0.85	1.96	NS
8	Organize seminar and basic science and	3.59	1.00	3.74	0.81	0.85	1.96	NS

S/N		$\bar{x}_1$	S_1^2	$\bar{x}_2$	S_2^2	t-eal	t-tab	Remark
	technology maintenance issues in the laboratory							
9	Store the procedure resources for practical	3.66	1.19	3.72	1.06	0.28	1.96	NS

Data presented on table 2 above shows that the responses of basic science and technology teachers on their required responsibilities in organizing tools, materials and equipment lor teaching basic science and technology. Out of the thirteen items on this table ten had their t-calculated less than the t-table value and three had their t-calculated greater than the t-table value based on 0.05 level of significance and 100 degrees of freedom. Hence, null hypothesis was accepted for the ten items while null hypothesis was rejected for only 3 items.

Table 3: t-test analysis of mean ratings of respondents (teachers) on their required responsibilities in controlling the use of resources by technical staff and students of basic science and technology in the junior secondary schools

S/N	Controlling the uses of resources	Exp Teachers $N_1 = 59$		Inexp. Teachers $N_2 = 43$		t-eal	t-tab	Remark
		$\bar{x}_1$	S_1^2	$\bar{x}_2$	S_2^2			
10	Ensure proper supervision of the activities of the technical staff and students in the basic science and technology laboratory	3.69	1.25	3.60	1.54	0.38	1.96	NS
11	Ensure that regular maintenance activities are carried out in the basic science and technology laboratory	3.64	1.80	4.00	1.51	1.40	1.96	NS
12	Liaise between the administration and the students to ensure adequate supply and utilization of resources for practical lesson in basic science and technology	3.88	1.32	1.07	1.24	0.75	1.96	NS

Data presented on table 3 showed the responses of basic science and technology j teachers on their required responsibilities in controlling students and technical staff; use of resources in basic science and technology. All the items on this table except item 40 had their t-calculated less than the t-table value. Hence thirteen items upheld the null hypothesis while only one item i.e. item 40 rejected the null hypothesis at 0.05 level of significance and 100 degree of freedom.

Table 4: t-test analysis of mean ratings of responses of basic science and technology teachers on their required responsibilities in evaluating students, use of resources in basic science and technology in junior secondary schools.

S/N	Evaluating students use of resources	Exp Teachers $N_1 = 59$		Inexp. Teachers $N_2 = 43$		t-eal	t-tab	Remark
		$\bar{x}_1$	S_1^2	$\bar{x}_2$	S_2^2			
13	Develop a list of objective indicative of performance in the use of resources in basic science and technology	3.12	2.10	2.81	1.96	1.09	1.96	NS
14	Determine the adequacy of available resources for a practical lesson in basic science and technology	4.10	0.92	4.00	0.91	0.51	1.96	NS
15	Develop instrument for assessing students perform ance in the use of resources during practical lessons	4.22	0.83	4.16	0.71	0.34	1.96	NS
16	Conducti process evaluation of students in the use of resources for practical's in basic science and technology	3.95	0.67	3.49	1.02	2.46	1.96	NS

Data presented on table 4 showed the opinions of basic science and technology teachers on their required management responsibilities in evaluating the students use of resources in basic science and technology in the junior secondary schools. All the ten items on this table except item 44 had their t-calculated less than the t-table value while item 44 had its t-cal greater than t-table value. Hence, for the nine items the null hypothesis was upheld j while only one item, item 44 had the null hypothesis rejected at 0.05 level of significance and 100 degree of freedom.

Conclusion
The study made the following contributions to knowledge and management of resources for effective teaching of basic science and technology in junior secondary schools in Minna, Niger State. The study revealed responsibilities necessary to be acquired by teacher of basic science and technology in the management of resources. If they must be effective in teaching basic science and technology in Minna, Niger State. The information provided by the study could be integrated into basic science and technology course for preparing teachers at NCE; and B.Ed levels. Resources in basic science and technology could last longer when teachers handled them with skillful hands curing teaching, thereby conserving cost for school and government.

Recommendations
On the basis of the finding made and the conclusion reached, the following recommendations were proffered.
1. The responsibilities identified in this study should be integrated into basic science and technology course for preparing teachers in Colleges of Education and Universities levels.
2. Administrators in Colleges or Education and Universities should make available, sufficient resources for training teachers towards their responsibilities in managing resources during teaching of basic science and technology.

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