

ASSESSMENT OF THE EXTENT TO WHICH SCIENCE TEACHERS ARE MOTIVATED AS THIS IS THE KEY TO REFORMING SCIENCE AND TECHNOLOGY EDUCATION IN NIGERIA

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Abstract

This study aimed at investigating the extent to which science and technology teachers are motivated as this is the key to reforming science and technology education. The study was restricted to the views of lecturers in science education of tertiary institutions in Anambra State. The research design was the descriptive survey design. Simple random sample technique was used in the selection of 129 out of 258 lecturers. The instrument for data collection was questionnaire. Four research questions guided the study. Mean and standard deviation were used to answer the research questions. The major finding is that science lecturers are not adequately motivated which is why the other areas of reform has not been successful. Based on this, the researcher recommended among other things that teacher motivation should form a pillar upon which other considerations rest in order to achieve the much-desired reform in science and technology education in Nigeria.

Introduction

Science, technology and mathematics education have been regarded as the major forces propelling modern socio-economic growth and development of most nations of the world. Science, technology and mathematics education (STME) are taught in schools, but the declining enrollment and cognitive achievement of science students at all levels of education are creating a lot of concern for educators and counselors (Njoku, 1994, Nwachukwu, 2005, Ogunlege 1995). Bajah (1998), opined that Nigerian students are not developing scientific attitudes and mis-educated about science because of poor science classroom environment, teaching strategies, among others. This, explains why some STME researchers have in recent times concentrated their research efforts on finding teaching strategies that promote teaching and learning of sciences so as to increase achievements and enrolments in science (Osuafor, 1999).

Emphasis have shifted from traditional methods that are more teacher centered and only encouraged role memorization of facts to strategies that are more learner - centered (Nzewi and Osisioma 1995).

These innovative strategies encouraged participation by the learners and the acquisition of science process skills, which in effect will make students the much-needed good scientists and technologists of tomorrow for man power development and nation building (Ifeakor, 2005).

Despite all these teaching strategies, students performance in science and technology at all levels of education in Nigeria had consistently been reported to be poor and unimpressive (Ali and Anaekwe, 1997; Njoku 1997). There is therefore, an urgent need to restructure, redesign, reform, reengineer and refocus science and technology education in Nigeria to achieve results since it is the bedrock of nation building and for any sustainable development. This could be in the form of science curriculum reform, "Nigerianization of technologies, motivation of science, technology and mathematics teachers, leadership styles, among others. The researcher strongly advocated that this much needed reform can only be achieved by the motivation of STME lectures in colleges of education and university science education department, who are responsible for impacting knowledge to their students who are being trained as future science teachers in secondary and primary schools where the basic foundation of sciences are laid.

The action or inactions of these lectures therefore, affect science and technology education directly or indirectly, positively or negatively since it has a multiplier effect. This is therefore, in agreement with Ezeliara (2005), who opined that science has the power to inspire people but takes educators with imagination and passion to help bring science to life.

Motivation, is one of the key elements in employee performance and productivity. Even when people have clear work objectives, the right skills and a supportive work environment, they would not get the job done without sufficient motivation to achieve these work objectives (Abba, Anazodo and Okoye, (2004). When workers are properly motivated, the organization will easily achieve her objectives. Every good administrator has used motivation of one kind or (he other to make people take part or be involved in purposeful action that will intimately lead to the achievement of goals of the organization

(fgboenyasi, 2004). Motivation, is therefore, the force that pushes, propels or energizes workers for better performance. Anagbogu (2003), is of the opinion that such strategies can come in the form of promotion, salary increase, salary advance, prizes or fringe benefits provided for workers without agitations, demonstration or work to rule. Motivation of science teachers could also come in the form of availability and adequacy of resource materials-and cordial relationship between these teachers and the school Administration.

Fringe benefits are some kind of incentive motivation that is based on the principle that the best way to get compliance and better performance from workers is through some kind of benefits and incentives. These often done in form of money as pay bonuses, gifts, letters of recommendations, promotion and allowances, Obi, in Oforjebe (2006). Teachers who are aware of being rewarded are prone to work harder.

Material Resources (MR) are described as information carriers designed specially to fulfill objectives in teaching learning situations. Okokc (1995), noted that, MR can be referred to as the wide variety of equipment and material used for teaching. They include consumables and non-consumable like chemicals, plants, animals, electricity, charts, television, projectors, computers etc. When MR are available and adequate, the teacher is highly motivated to work for enhanced teaching learning process. Empirical studies within and outside Nigeria have established that students achieve greater learning as evidenced in cognitive and psychomotor skills when material resources are used for instructional purposes, (Benedict, 1994; Ezekamiagba and /feakor, 2000).

The type of relationship existing between the science teachers and the school administration is a motivational factor, if this relationship is cordial. This could be in the form of participation in decision making, provision of staff quarters by the school administration, being interested in teachers welfare and ensuring that this teachers are carried along among others. When this relationship is cordial, the lecturers feel recognized, are proud of the institution and therefore, will work harder for its upliftment in terms of teaching and learning. Having seen the importance of motivation of science teachers as the key to reform e.g. science and technology education, and the various ways by which science teachers can be motivated, the question now is; to what extent are science teachers-provided with fringe benefits for enhance teaching of science?

Are the available material resources adequate for the teaching and learning of science? What type of relationship exists between the science teachers and the school administration? What bottlenecks are envisaged to hinder the motivation of science teachers? The answers to these questions underscore the need for this study.

Purpose of Study

The purpose of the study is to assertion the extent to which science and technology teachers are motivated as this is the key to reforming science and technology education in Nigeria. Specifically, the study sought to:

1. Ascertain the extent to which science teachers are provided with fringe benefits for enhanced teaching and learning of science.
2. Assess the adequacy of available material resources for the teaching and learning of science.
3. Ascertain the relationship between the science teachers and the school administration.
4. Determine the envisaged bottlenecks to motivation of science teachers.

Research Questions

The following research questions guided this study.

1. Are science teachers provided with fringe benefits for enhanced teaching and reading?
2. Are the available material resources adequate for improved teaching and learning of sciences?
3. What is the relationship between science teachers and the school administration as a motivational factor?
4. What are the envisaged bottlenecks to motivation of science teachers?

Population and Sample

The population consisted of all the 258 lecturers in the school/ faculty of science education in all the tertiary institution in Anambra State. Simple random sampling technique was adopted in selecting a sample of 129 lecturers (50 percent of the target population). The population sample comprised 70 male and 59 female lecturers.

Instrumentation

The instrument used for data collection was a questionnaire developed by the researcher. The questionnaire was structured to elicit the degree of agreement and disagreement with the item statement based on a 4-point likert scale of strongly agree (SA) - 4, Agree (A) = 3, Disagree (D) = 2 and strongly disagree (SD) = 1.

Validation of Instrument

The instrument was subjected to face validity by one expert in science education, and one in measurement and evaluation. They were asked to validate the instrument with reference to clarity of words and ambiguity of statement.

Reliability of the Instrument

The data collected were used to compute a reliability coefficient of internal consistency of 0.85 using cronbach Alpha.

Method of Data Collection

The researcher in the administration of the instrument adopted a direct delivery technique. Out of the 129 questionnaires administered, 120 were returned representing 93.00 percent. The researcher therefore, worked, with questionnaires from 120 respondents, constituting 63 males and 57 females.

Presentation and Analysis of Data

The options were given values of 4,3,2,1, respectively. It gave a total of 10 and a mean of 2.5 and above was adopted as the agreement level for the items. Mean and Standard Deviation were used for analysis of the four research questions.

Research Question 1

Table 1: Mean and Standard Deviation responses on the provision of fringe benefits for science Lecturers. •

	Provision of fringe benefits	X	SD	Decision
1	Promotions are regular	2.83	0.86	Agree.
2.	The institution regularly sponsors conferences seminars and workshops.	2.50	0.92	Agree
3.	Monetary incentives are provided for high performers	1.33	1.79	Disagree
4	Science lecturers are usually recognized through letters of recommendation or by merit or honor awards.	1.80	0.98	Disagree
5.	Research grants are regular and adequately provided.	2.00	0.99	Disagree
6	The lecturers are paid science allowance.	1.75	2.00	Disagree
7	There is provision for regular disagree study/sabbatical leave.	2.34	1.10	Disagree
8	The institution sponsors recreation/field trips for the science lecturers.	1.50	1.98	Disagree
9.	There is provision for salary advancement	2.63	0.88	Agree

Table 1: Reveal that only items 1, 2, and 9 are the fringe benefits provided for science lecturers while items 3,4,5,6,7 and 8 are not used for motivation of these lecturers.

Table 2: Mean and Standard Deviation responses on the adequacy of available material resources.

	Adequacy of material Resources	X	SD	Decisions
1.	Science Laboratories.	3.54	1.98	Agree
2.	Teachers preparatory office	2.81	0.93	Agree
3.	Library books/journals/ periodicals.	2.41	0.80	Disagree
4.	Electricity/stand by generator.	2.01	0.60	Disagree
5.	Water supply.	1.94	0.64	Disagree
6.	Non-consumables like beakers slides, charts, models., weighing balance etc.	2.63	0.88	Agree
7.	Consumables like chemicals, plant and animal materials, papers etc.	2.73	0.91	Agree
8.	Visual and Audio-visual aids			
	(a) Video and audio tapes	1.89	.59	<i>Disagree</i>
	(b) Overhead projectors	2.10	1.15	Disagree
	(c) Computers and peripherals.	2.00	0.66	Disagree

As revealed from table 2, items 1,2,7 rated high above a cut off point of 2.50. This showed that they are adequate. Items 3,4,5,6,8a,b,c, rated below 2.50 and are therefore not adequate.

Table 3: Mean and Standard deviation response on the relationship between science teachers and school Administration.

	Relationship between science teachers are school administration	X	SD	Decision.
1	The school administration carries everyone along in decision making.	2.10	0.88	Disagree
2.	Lecturers participate in decision-making.	1.78	0.94	Disagree
3.	Lecturers participate in decision-making.	1.78	0.94	Disagree
4.	Provision is made for personal growth			
5.	Staff welfare is paramount to the school administration and the science lecturers.	1.47	1.16	Disagree
6.	There is a strong inter personal relationship between the school administration and the science lecturers.	2.20	0.79	Disagree
7.	Management readily makes fund available for sciences.	2.25	0.82	Disagree
8.	Science lecturers are properly informed and participate in formulating science programmes.	1.88	0.89	Disagree

All the items in table 3 are rated below 2.50. This showed that the relationship between science teachers and the school administration is not cordial.

Table 4: Mean and standard deviation responses on the envisaged bottlenecks to the motivation of science teachers. -f

	Envisaged bottlenecks	TT	SD	Decision
1	Adequate funding.	2.96	0.75	Agree
2.	Corruption and embezzlement of funds.	2.97	0.75	Agree
3.	Lack of training and retaining of teachers.	2.55	0.68	Agree
4.	Lack of adequate material resources.	2.67	0.73	Agree
5.	Over crowded curricula content.	3.91	1.57	Agree
6.	Lack of information flow from top to bottom.	2.87	0.67	Agree
7.	Lack of ICT facilities and ICT laboratories.	3.56	0.99	Agree
8.	Curriculum assessment and evaluation are bedeviled by massive examination malpractice.	2.63	0.72	Agree
9.	Political instability.	3.4	0.87	Agree
10.	Lack of seriousness on the part of the students.	3.10	0.90	Agree

In table 4, the items rated high above 2.50 which indicates that there are envisaged bottlenecks that will impede the motivation of science teachers

Discussion

Table I, revealed that science and technology lecturers in institutions of higher learning are not provided with enough fringe benefits. This is because out of the nine items high- lighted only three were prevalent in the institutions, which represents just 33.3%, these of course are not enough to boost the teachers morale for greater performance

Table 2, showed that the available material resources for teaching science and technology are grossly inadequate. This demoralizes the lecturers and it does not only make their work tedious it also makes learning difficult for the students. The availability of material resources will not only enhances the teaching of sciences but will help the students acquire the much talked about process skills in science.

Table 3, revealed that the relationship between the science lecturers and their school administration is neither cordial nor favourable to motivate these teachers to perform. They are neither carried along nor their welfare and personal growth considered, thus leading to low morale and subsequently low performance.

Table 4, revealed that funding of science education has often become problematic in the face of other demands (Maduewesi in Ifeakor 2006), based on this, there are some envisaged bottlenecks to the motivation of S and T lecturers. This is surrounded around adequate funding, which is the basis of all educational attainment.

Recommendations and Conclusion

The study shows that for any meaningful change/reform in science and technology education to take place, science and technology teachers at all level of education especially those in the science education of tertiary institutions who train future S and T teachers, must be adequately motivated so as to stimulate their interest as well as spur them into action to ensure that other areas of reform succeeds for a complete systems change so as to achieve sustainable development. Based on these, the following recommendations are made

1. S and T teachers motivation should form a pillar upon which other considerations rest.
2. Teachers should be involved in decision - making especially when they are directly involved.
3. Funds and material resources should be adequately provided so as to concretize science.
4. Hard working and innovative science teachers should be recognized through honor/merit awards both by the institution and government.
5. Special salary structures should be put in place for STME teachers at all levels of education.

References

- Abba, U.E; Anazoclo, R.O. and Okoye, J. C. (2004). *Management and organizational behaviour: Theories and applications in Nigeria*. Onitsha Abbot Books Lid.
- All, A and Anaekwe, M.C. (1997). Science and technology for national development: The effects of students' interactive patterns on cognitive achievement in Chemistry. Perspectives on crucial issues on Nigerian and African education. A publication of Institute of Education. Nsukka: University of Nigeria, 1,1-8.
- Anagbaogu, M. A. (2003). An analysis of teacher attrition and its effect on teaching profession: The counselors view. *Oriental Journal of Educational Research* 2 (1), 31-41.
- Bajah, S. T. (1998). Evolution, renovation and innovation in science education. An Inaugural Lecture, University of Ibadan, Nigeria.
- Benedict, O. (1994). Effects of two types of media presentation on the cognitive and psychomotor performance of Fine Art students. *Journal of Professional Educator*, 3, 95-103.
- Ezeliora, B. (2005). Cultivating an early interest in science for sustainable development using science career oriented learning center. *International Journal of Forum for African Women Educationists Nigeria / (1)*, 49 - 56.
- Ezekannagha, G. N. and Ifeakor, A. C. (2000). Enriching STM for national development. The need for improvisation in teaching and learning of Chemistry in Nigerian secondary schools. *41st Annual Conference Proceedings of STAN*, 179-182.
- Ifeakor, A. (2006). Evaluating students achievement pattern: Effect of commercially produced computer assisted instruction package and gender on secondary school Chemistry students. *Inter Disciplinary Education Journal*. 7 & 8, 39 - 46.
- Igboenyese, A. E. (2004). Motivational strategies for effective school administration. Unpublished Ph.D thesis, Nnamdi Azikiwe University, Awka
- Njoku., Z.C.-(1994). An analysis of secondary students performance in science subjects implications and proposals for remedy. *Readings in Nigeria secondary education*. Onitsha: Hornbill Publishers Limited.
- Nwachukwu, C.O. (2005). Observed gender-related differences in students achievement in Chemistry: implications for curriculum change. *International Journal of Forum for African Women Educationalist Nigeria I, (1)*, 140-146.
- Okeke, R. J. (1995). Principles of development, selection, utilization, evaluation, storage and retrieval of instructional materials. In F. A. Okwo and G.A. Ike (eds) *Educational Technology: Basic Concepts of Issues*. Nsukka: University Trust Publishers.

