TOWARDS IMPROVING THE QUALITY OF SCIENCE TEACHING: NEED FOR TRAINING, RE-TRAINING AND RETENTION OF STM TEACHERS

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ABSTRACT

The central place of the teacher in the educational system is highlighted in this paper. It also discussed the need for STM teachers' training, re-training and retention. It identified some of the problems associated with these three important areas of teacher management and recommended that teachers' condition of service should be improved in order to motivate the teachers to remain on the job and put in their best for effective educational development.

Introduction

The importance of teachers has been clearly under scored In the National Policy on Education which states that "No education system can rise above the quality of its teachers (N.P.E, 2004). The policy further stressed that "all teachers in Nigerian educational institutions shall be required to undergo training in the methods and techniques of teaching (NPE, Sec 61). Similarly, the policy drew our attention to the institutions that are recognized .and mandated to train teachers. It states thus "all teachers in educational institutions shall be professionally trained and the following institutions among others shall give the required professional training provided they continuously meet the required minimum standards. They are Colleges of Education, Faculties of Education, Institutes of Education etc. The institutions provide training in general education, academics, professional studies in education, teaching and professional practice.

Nwachukwu (1998) postulated that "the value of an organization would improve as qualified employees are attracted, trained and developed while the asset value of the organization will decrease as skilled staff leave the organization. This is applicable to the education industry, for as Ukeje (2000) puts it "excellent educational policies are meaningless unless there are equally excellent teachers to see to their realization. Government may vote sufficient funds as enabling resource for education and adequate material resources may be procured but unless the teachers are properly prepared and positively motivated little productivity will be achieve.

In the past, the job of a teacher was thought of as being mere dispersal of information. However today's teacher is faced with great challenges, the biggest of which is how to accommodate the ever growing variety of knowledge in the area of subject matter contents, skills, techniques, machinery and sophisticated equipments. This no doubt requires teachers to engage in endless search for knowledge for as Wasagu (2005) puts it "the world of a teacher is simply a world of learning". He further opined that teachers whose professional knowledge and skills are not yet up-to-date are not only obsolete but also down right dangerous to the society. This therefore calls, for professional development of the teacher, which involves the participation of teachers in various training activities intended to improve their skills and acquire current knowledge in professional fields (Njoku, 2004).

The STM teacher is the live-wire of the science classroom in which the students learn science. He must have specialized knowledge and intensive academic preparation to be able to perform his function effectively. However, science teaching is facing serious problem of insufficient number of professional teachers at all levels of education. According to Lemma & King (1979) one of the biggest bottle-neck in the application of science and technology in developing countries is the shortage of trained manpower. The dislike, poor performance and perception of STM especially mathematics as a difficult, tedious and brain stressing exercise to student is the result of faulty foundation laid by larger percentage of unqualified STM teachers from primary schools through to secondary schools.

This inadequate preparation for teaching and lack of continuous professional development has made it difficult for the STM teachers to ensure effective delivery of the science curriculum. According to Nwosu (1999) the quality, dedication and exposure of science teachers to science programme is a major determinant on the level to which curriculum on science education can be effectively implemented.

Training

This involves continuous professional support given to employees geared towards equipping them with the necessary knowledge and skills to enable them effectively

and efficiently perform their duties. Such training is aimed at changing the behaviour of an employee at work place into efficiency and higher performance standards (Nmado, 1990). According to Ogunsaju (2000) in Ojedele (2002) school children in Nigeria are being taught by unqualified and inexperienced teachers many of who, received very little supervision and that such teachers lack relevant experience in some specialized subject areas requiring that the knowledge of such teachers should be updated regularly to make them effective and efficient on the job. Among the importance of training enumerated by Nmado (1990) are:

- Increased productivity
- Heightened morale and
- Increased organizational stability and flexibility.

Two types of training are of special concern to us here. These are the pre-service and in-service training.

Pre-Service Training

According to Ogunleye (2005) pre-service training refers to a process of education and development which prospective teachers go through as they get ready to enter the class-room for the first time in their roles as teachers.

This is preparatory training given to teachers at the training institutions. Here a student-teacher is given training in specified number of courses in specific area with some form of teaching practice after which he/she obtains a certificate. Such a student is assumed to have obtained enough experience for teaching. In real sense however we know that the training is not sufficient enough to introduce him/her into the actual teaching. According to Wasagu (2005) newly recruited teachers should expect to be gradually introduced into the real world of teaching. According to Obanya (2004) teacher training should not end with graduation from a teacher training institution but should continue at every stage of the development of the teachers career. Teaching is both an art and a science. Some aspects of it may be innate but the science of teaching has to be cultivated (Ukeje 2000). As such, we should not just assume that any body could teach. Therefore newly recruited teachers should be given some sort of orientation or induction courses especially in professional ethics and methodologies.

We also have teachers with various academic qualifications such BSC, B.A, OND, and HND etc. in the teaching profession especially in the sciences. For example in most of our schools you hardly find a profession handling subjects like Physics and Mathematics rather you find graduates of other related fields. This is rather unhealthy for a country aspiring for technological break through, for as Lassa (1996) puts it "Education particularly technical education is the mill for the production of the much

desired technologists, engineers, technicians etc needed to turn our technological backwardness round and usher in the much desired technological renaissance which we very much need for our elevation from a consumer nation to a producer nation and from a third world to first world country" we need to give such teachers some training to enable them function efficiently. Similarly members of the National Youth service Corp posted to our schools in most cases are not trained teachers. Some of them have never had any opportunity of going to classroom to teach. They need to be given training in teaching methodology before they enter the classroom.

In Service Training/Retraining of Teachers

In-service training according to Ogunleye (2005) refers to courses and other formal and informal opportunities experienced teachers go through in order to keep them informed and on top of the newest information, trends and practices implemented in their field.

Retraining of teachers involves broadening the knowledge base, skills and understanding of the teaching personnel. The present day teachers are in dare need to expand the frontiers of their knowledge so as to meet the challenge of the modern time. As Wasagu (2005) opined "who dares to teach must never cease to learn". Also Otu (2006) opined that one of the qualities needed of a good teacher is an insatiable appetite for knowledge. The modern teacher therefore must pursue general and specialized education in both subject matter field and professional education. He should also have professional attitude. A teacher who has professional attitude is interested in improving himself through attending courses, reading books in his area and exchanging ideas with other teachers. Thus the need for teachers to engage in life-long learning. As is popularly said "Learning starts from cradle to grave".

Principles of Professional Development

Professional development has a number of principles. According to (Wasagu 2005), they include:

1. **Mentoring:** Here, newly recruited teachers are attached to more experienced teachers who serve as their mentors or professional guide. The new teachers serve as apprentice under the experienced teachers until they excel on the job. This strategy is very effective, cheap and efficient option for staff development.

2. **Peer Teaching:** This is a strategy where new teachers are assisted professionally by their peer groups. The fact of the matter is that colleagues

often learn better from each other. This improves the professional development of a young teacher.

3. **Subject Lead Teacher Approach:** In this strategy, the subject team plans how to cover the syllabus in good time, teach difficult aspect of the subject, and plan every other thing geared towards learner improvement in the subject. Each of the subject teams meets at designated periods in a week so that less experienced teachers learn from more experienced ones.

4. **Cluster Lead Teacher Approach:** This is another strategy in which teachers assist each other. Cluster of several schools in a given zone come together such that their teachers meet regularly to share experiences where talented or more experienced teachers teach others.

5. **Orientation Program For New Teachers:** This is a situation where newly recruited teachers are gathered and given orientation/induction course which focuses on such areas as school community, nature of learners in schools, rules and regulations for staff and students, record and record keeping and. other ethical issues related to the teaching profession.

Teachers Retention

Retention simply means remaining on the job. Education is an industry that depends perhaps more than any other, on the stability of its staff. It is often said that a good teacher, becomes even better the longer he/she stays in the classroom (or on the job). Therefore, retention of teachers in the teaching profession is very desirable for effective educational development (Aleyideino 2000).

Teachers retention is to do with teachers' motivation since for a teacher to remain on the job he/she must have job satisfaction. Fagbamiye (2000) in Ojedele (2002) posited that while effective teachers can be produced through training and skill development, efficiency is a function of human frame of mind and motivation which is necessary requirement for effectiveness in the long run. Motivation is divided into extrinsic and intrinsic forms, in which the former refers to the influence of external forces while the later spurs from the individuals personal will to achieve in a given area. Of the two, the extrinsic one is the most important (Yoleye, 1993).

The popular saying that experience is the best teacher is believed by most educators (Adeola, 1998 and Aminu 2000). The duos have it that, it takes several years and huge resources to produce effective teachers.

Despite the central position of the experience teacher, teaching profession is regrettably experiencing serious poor turn over rates (Ali 2000 and Aminu 20a), a syndrome popularly referred to as brain drain. According to Maduewesi and Eya (2006) in Ezeoka (2008) many of those who are trained as teachers abandoned the job for better options thus teacher education institution continue without an end to produce teachers who come and go into other professions. This is a succinctly put by Bruce (1964) thus: "Of all the problems which boards of education have to content with the turn over of teachers is perhaps the most troublesome and confusing"

Both scientific (Gideon 1963 and Foster 1967) and empirical studies have pointed out to some key factors responsible for poor teachers retention in the teaching profession. These include:

- Low teacher status
- Low teacher morale
- Low salary
- Excessive teaching load
- Inadequate supervision
- Discipline problems
- Inadequate facilities
- Lack of security
- Lack of promotion opportunities
- God fatherism
- Poor mastery of subject area

Recommendation

The following measures are recommended to improve on the effectiveness of STM teachers.

1. **Teachers Take Home Pay:** Since the world of today is highly materialistic there is need for improved wages/allowances for teachers. Before the realization of the much-talked about teachers salary scale (TSS) the following could go a long way to improve the take home of the teacher hence encourage and motivate him/her:
   a. Teaching allowance of 40% of basic salary.
   b. Increase housing allowance to 40% of basic salary

2. **Automatic Sponsorship for Further Studies:** Automatic sponsorship for further studies is required in the teaching profession. This will not only improve the subject area content of the teacher but will also have a motivating effect. The continuing teacher needs to further his or her education for

effective discharge of their teaching. The N.C.F. and diploma holders should go for B.Sc/B.Ed. course. Those with first degree should go for masters and so on.

3. **In House Workshops Seminars and Conferences:** These should be organized periodically for all categories of teachers so as to broaden their knowledge and make them abreast with the contemporary developments and, innovations in both their respective subjects matter and methodologies:

4. **Attendance to National/Professional Workshops and Conferences:** Teachers should be encouraged to attend regular workshops, seminars and conferences that are relevant to their professional discipline. This can be achieved through annual sponsorship of teachers to attend conferences such as those organized by the Science Teachers Association of Nigeria (STAN), Mathematics Association of Nigeria (MAN) and their likes. These conferences can serve as refresher courses that enhance academic as well as professional knowledge of teachers.

5. **Involvement in Evaluation Exercises:** Teachers should be encouraged to actively participate in Co-ordination and Marking of WASCE and NECO and NABTEB examinations. These also serve as a refresher course in examination area.

6. Teachers should be motivated by providing them with adequate teaching materials and resources for learning since there is limit to improvisation.

7. **Provision of Teachers/Resource Centers**: There is need for teachers' centers or resource centers to be located at a strategic place in a Local Government Area or Zonal Offices. The NPE (2004) have already recognized the important role of such centers hence says, "Each state and Local Government shall establish teachers resource centers where teachers will meet for discussion, investigation, study workshop, short course and conferences. These centers could also be used for the development and testing of teaching materials" (Wasagu 2005). These centers should have conference Hall, a Library and Curriculum materials and workshop.

8. **Mentoring** - where, newly recruited teachers are attached to more experienced teachers who serve as their mentors or professional guide. The new teachers serve as apprentice under the experienced teachers until they excel on the job. This strategy is very effective, cheap and efficient option for staff development.

9. **Regular Orientation for new teacher** - this is very important for it provides bath old and new teachers with up to date knowledge in their profession.

Conclusion

In this paper, the central place of the teacher was highlighted. The need for his/her sound training, retraining and retention discussed. It proffers recommendations for improved teacher effectiveness in these all-important areas with the hope that it will go a long way in improving the quality of teachers.

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