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PROFESSIONAL DEVELOPMENT AND RETENTION OF PERSONNEL FOR EFFECTIVE SCIENCE, TECHNOLOGY AND MATHEMATICS (STM) EDUCATION IN NIGERIA

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ABSTRACT

It is believed that effective Science, Technology and Mathematics (STM) education would provide the required antidote for the current backwardness in Nigeria's technological growth. Against this background, the Federal Government of Nigeria introduced the 6-3-3-4 system of education, the curricula of which shall expose its recipients to the various tenets of STM. As a measure towards realising the laudable objectives of the new system, teacher vacation courses/workshops are organised regularly to update teachers' knowledge. A decree has also been promulgated to professionalise teaching, all with the intent of providing enough fertile grounds for retaining competent teachers for STM education.

Despite these daring moves by the government to boost educational output in the country, it is realised that STM education in Nigeria still suffers chronic inadequacies in teaching/administrative personnel and equipment.

This paper attempts to elucidate some causes of the shortages in STM teachers and to proffer solutions towards retention of competent personnel for effective STM education in Nigeria.

INTRODUCTION

With education as a means of raising an enlightened, self sufficient citizenry (Taiwo, 1980) and as an avenue for providing the necessary ingredients for national growth and development, the role of effective teaching of science, Technology and Mathematics in our schools is strategic. Based on this, great emphasis is placed on the importance of science, Technology and Mathematics education in most schools at the primary, secondary and even at the tertiary levels. Ogwuazor (1992), suggests that science education aims at assisting the learner in developing certain skills, attitudes and knowledge pertaining to the orderliness of nature. Technological education on the other hand is aimed at assisting human civilization in their effective utilization of natural resources for their well-being through the application of relevant techniques. Thus, science and Technology equip individuals with the knowledge and abilities to solve problems associated with the human environment. Mathematics education may be regarded as the exposure of students to process skills using abstract methods in solving problems related to the environment and space.

Despite all the emphasis on the study of Science, Technology and Mathematics in the country, the trend has been a growing decline in students enrolment in Science (Akpan, 1986), occasioned by lack of interest, poor performance in the qualifying examinations, as well as lack of adequate qualified teachers (Osafehinti, 1986).

Effective teaching of STM calls for professionally qualified scientists and engineers, (Teibo, 1981m; in Akpan 1986). However, in Nigeria the available scientists and engineers shun teaching jobs for the more lucrative research, company or self employment.

This paper suggests that proper recognition and enumeration of professional teachers, increased funding of educational institutions and provisions of adequate safety measures on the job among others

shall enhance the retention of personnel for effective STM education in Nigeria.

SOME PROFESSIONAL TRAINING PROGRAMME AVAILABLE TO S.T.M EDUCATOR

Professional training is a phase or organised learning designed by bodies recognised by government and education experts as agents for proper co-ordination and dissemination of relevant educational institutions for the professional growth of teachers.

As a measure to develop most teachers for effective STM education, some of them are exposed to the following training programmes.

1. TTC/TTIP/PGDE: The first two programmes are run in Colleges of Education with Technical bias, but PGDE is run in some Universities. They are structured to provide serving graduate teachers, who, hitherto, had no professional teaching qualification, with adequate training to qualify as professional educationists. The qualification obtained coupled with their graduate courses will now make them professionally competent to teach science and technology-based courses in our schools.

Also, as part of professional development of personnel for effective STM education, serving teachers often avail themselves of opportunities provided by in-service activities.

In-service education is a programme designed by a school or a professional organisation to aid the professional progress of its members" (Olaitan and Agusiobo, 1981). These writers identify several types of in-service educational training activities some of which are adapted below as follows:

(a) WORKSHOPS

These are organised for serving teachers to assist them tackle major educational problems. Kelly (1951) in Olaitan and Agusiobo (1981) highlight several functions of teachers workshops, some of which are:-

1. To put teachers in situations that will breakdown the barriers between them so that they can more readily communicate.
2. To give teachers an opportunity for personal growth through accepting and working towards a goal held in common with others.
3. To give teachers experience in co-operative learning.
4. To give teachers an opportunity, in collaboration with others, to produce materials that will be useful in their teaching.

(b) CONFERENCES.

Conferences make room for large number of teachers from different educational institutions to attend and exchange ideas. The conference could be at local, national or international levels. Conferences are usually planned to focus the attention of participants on important issues that are of special educational, social or economic importance. It is expected that all participants at such conferences participate in making decisions about goals and works procedure during the conference instead of sitting passively in the halls (Hugget and Stinett, 1963).

(c) LONG/SHORT COURSES

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Employees of most establishments are usually sent on certain on-the-job training courses as soon as they are employed. But in the educational sector such competency training (long or short courses) are usually granted to beneficiaries after a certain period of time on the job. In instances where unqualified personnel are employed for STM education, it would have been very late before such teachers are allowed to proceed for professional competence training.

(d) PROFESSIONAL ORGANISATIONS AND MEETINGS.

Professional organisation such as STAN provide forum for teachers to meet to discuss scientific educational problems and plan ways of improving the teaching and learning of science and technology in Nigerian schools. It is essential that employers of teachers should encourage their employees to belong to professional organisations.

(e) STUDY CLINICS

A study clinic provides an opportunity for teachers to study specific problems. Study clinics are organised with subject experts invited to analyse educational problems and give solutions towards solving them. Study clinics could be organised at school, zonal or state levels.

But often times, lack of funds restrict the number of people sponsored to benefit from such training programmes. STM education suffers gross inadequacies in terms of funds for training, retraining and upgrading (Ogunniyi, Eniayeju and Emereole, 1992). The consequence of this drawback is that a lot of people not benefitting from such training programmes fail to learn the trends of improvement in science, Technology and Mathematics Education.

PROBLEM OF RETENTION OF S.T.M. EDUCATORS.

As opposed to some aspects of the economy, recipients of professional development training for effective STM education do not receive commensurate promotion when they return to their work places. Also, they are not officially allowed to engage in private practice. So with their scientific, technical and mathematical skills they opt for employment in private establishments or go into self employment where the enumerations are better.

The low status accorded the teaching profession in the Nigerian society is also responsible for the acute shortage of teachers (Osafehinti, 1986). He reports that:

> the teacher is not highly respected in the society as his colleagues in other professions and this had affected the attitude to teaching stability on the job.

Also, the country has no definite plan to achieve national technological development through STM education. Ali (1986), writes that Nigeria has tackled the task of achieving technological and scientific self-sufficiency haphazardly as evident from her total commitment to the illusive transfer of technology, and the shift from traditional to modern and then back to traditional mathematics, all in addition to the problem of materials and equipment.

The teaching profession does not provide teachers the means of affording some basic necessities such as cars, a home upon retirement as well as financial resources for giving good education to their children. It is no wonder then that teachers seek greener pastures. Unless the teachers are properly remunerated, no amount of financial input into our educational system will yield the desired goals. (Ekanem, 1992).

in almost every rung of the Nigerian educational strata.

Finally the trying work environment of the teacher is deplorable as opposed to that of his colleagues (of similar qualification) in the non-teaching field. Most teachers teach in classrooms without ceilings and students' chairs, in laboratories without equipment, and live in staff quaters whose state of furnishings are better imagined than experienced.

TOWARDS THE RETENTION OF TEACHERS FOR EFFECTIVE STM EDUCATION IN NIGERIA

Effective STM education, needs a conductive environment for its smooth implementation. Unless something is done Science, Technology and Mathematics education shall continue to witness a very slow growth. The need for adequately equipped Science and technology laboratories, well ventilated office and classrooms as a measure to entice teachers to the job cannot be over-emphasized.

Money is essential for satisfying many needs. The amount of money provided relative to market situations, economic conditions, importance of the job affects the individual's contribution (McGregor, 1983; Lockyer 1984). McGregor opines that if the amount of money is not fair, the employee may refuse to accept the job, or will accept, but perform it unsatisfactorily.

As trainers of future leaders of the nation, teachers deserve equal or better conditions of service with their counterparts in the private sectors of the economy. This is a major factor that could stem the drift of competent personnel from the teaching field.

There should be increase in the funding of educational institutions. This may ensure that more people benefit from the training program organised by the relevant professional bodies. But this shall depend on the use to which administrators may put the money to.

The decree which ascribed the status of essential service to education should be amended to enable teachers engage in private practise. The professionalization of teaching should be in the true sense of the word. Teaching personnel who have no professional teaching qualification should be encouraged to obtain same immediately. Education should be protected from being used as a substitute for lack of viable jobs.

Furthermore, the retention of personnel for STM education must emphasise the safety of the personnel. Laboratory/workshop safety should be ensured through the provision of boots, coats, goggles, gloves, helmets and fire extinguishers (Carol and Carol 1983). Government should also ensure that the incessant religious crisis in certain parts of the country which had caused forceful mobility of labour in several instances is checked. Alternatively, an insurance policy scheme be introduced for all categories of teachers in Nigeria.

CONCLUSION

There is no alternative to retention of qualified personnel if science, technology and mathematics education is to be effectively implemented in Nigeria. This shall hopefully beef up the Scientific/technological literacy among Nigerians which is currently very low (Ali 1986). It is strongly hoped that with the removal of the barriers between policy making and implementation, coupled with adequate motivation of STM teachers, the latter would remain on the job and equip their learners with the appropriate knowledge and skills needed for playing their full role in the socio-economic development of the nation.

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