



# An Assessment of Science, Technology and Mathematics (STM) Teachers' Involvement in Professional Development Activities in Sokoto State, Nigeria

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**Abstract-** This study examined the level of involvement of Secondary School Science, Technology and Mathematics (STM) teachers in Sokoto State in professional development activities. A sample of 373 STM teachers was drawn from the population of science teachers in the state. A questionnaire was used to collect data for this study. Results indicated that STM teachers in Sokoto State are not regularly involved in professional development activities. It was also discovered that lack of sponsorship is the greatest hindrance to teachers' involvement in professional development activities. It was recommended among others that STM teachers should be sponsored to attend conferences seminars, workshops and refresher courses to enable them up-date their knowledge.

**Keywords-** Science, Technology, Mathematics, Professional Development

## I. INTRODUCTION

Effective management of the curriculum is a measure of the success or otherwise of any educational organization. Teachers' role in this management comes in by way of ensuring effective H teaching and learning. It is the teacher that translates the curriculum into the forms through which school objectives can be achieved. For teachers to do this effectively they must acquire the necessary competence, sound mastery of the subject matter, a repertoire of teaching skills and disposition, the ability to translate theories and principles of education into practice and in modern methods and techniques of instruction (Wasagu, 2008).

Staff training and development is an essential aspect of teacher education. According to Obanya (2004) developing teachers means that training should not end with graduation from a teacher-training institution but should continue at any stage of the development of the teacher's career. Similarly, Madugu (2001) emphasized that the training a teacher received determines the quality of his services, that if a teacher does not undergo good pre-service and in-service training, the quality of his teaching will be low.

Teachers of science, Technology and Mathematics (STM) in particular needs to undergo continuous training and re-training to enable them have the necessary disposition towards the performance of their duties and responsibilities. According to Eze (2006) the fact that science is dynamic in nature and new methods and strategies are continually being evolved to facilitate its teaching underscores the need to evolve ways and means of up-dating science teacher's knowledge in their respective subjects of specialization.

To be effective therefore, STM teachers must undergo regular training and re-training. This is because such training helps to promote the personal, intellectual and professional growth of teachers. According to Ochu (2006), teachers who are denied the opportunity of in-service training lack the knowledge of current innovative practices in the teaching and learning of science. It is therefore the aim of this study to examine the level of involvement of STM teachers in professional development activities in Sokoto State.

## II. PURPOSE OF THE STUDY

It is the purpose of this study to investigate the level at which secondary school teachers of STM in Sokoto State are involved in professional development activities such as seminars, conferences, workshops and refresher courses with the view to finding out whether they are in tune with current trends in STM teaching.

## III. RESEARCH QUESTIONS

The following research questions were raised to guide the study:

- 1- To what extent are secondary school STM teachers in Sokoto State involved in professional development activities.
- 2- What specific training areas are STM teachers involved?
- 3- Are there factors hindering STM teacher's involvement in professional development activities?

#### IV. METHODOLOGY RESEARCH DESIGN

The study was a survey research. All secondary school STM teachers in Government owned secondary schools in Sokoto State formed the population of this study.

#### V. SAMPLE AND SAMPLING TECHNIQUES

Proportionate sampling Technique was used to select a sample of 373 STM teachers from each of the six zonal education offices in the state.

#### VI. INSTRUMENT FOR DATA COLLECTION

A questionnaire was used to collect data for this study. The questionnaire was validated by experts in test and measurement and science educators. The reliability of the instrument was obtained using test-retest method. Reliability index of 0.68 was obtained using Pearson product moment correlation coefficient.

#### VII. RESULTS AND FINDINGS

##### A. Research question I

To what extent are secondary school STM teachers in Sokoto State involved in professional development activities.

TABLE I. LEVEL OF INVOLVEMENT OF STM TEACHERS IN PROFESSIONAL DEVELOPMENT ACTIVITIES

Responses	No of Respondents	Percentage
Regularly	34	9
Occasionally	127	34
Never	212	57
TOTAL	373	100%

Table I depicts that 57% of the teachers indicated that they have never attended any professional development activity. This shows that STM teachers in Sokoto State are poorly exposed to professional development activities.

##### B. Research question II

What specific training areas are STM teachers involved?

TABLE II. SPECIFIC TRAINING AREAS IN WHICH STM TEACHERS ARE INVOLVED

S/N	In-service training - Seminar/ Workshop refresher courses etc.	Responses	
1	Teaching of difficult topics in science	51	13.6
2	Continuous assessment	83	22.2
3	Teaching methods and strategies	69	18.4
4	Fostering students interest in science	38	10.1
5	Management of large classes	39	10.4
6	Improvisation	93	24.9
	TOTAL	373	100%

Table depicts the specific training areas in which STM teachers' indicated their involvement. From the table it could be observed that most teachers attended training programme in improvisation as against other important areas that they need to train.

##### C. Research question III

Are there factors that hinder STM teacher's involvement in professional development activities in Sokoto State?

TABLE III. FACTORS HINDERING STM TEACHER'S INVOLVEMENT IN PROFESSIONAL DEVELOPMENT ACTIVITIES

S/N	Factors	Number of Respondents	Percentage
1	Lack of sponsorship	95	25.46
2	Lack of support from school administrators	48	12.86
3	Lack of funds from Ministry of Education	60	16.08
4	Lack of study leave	20	5.36
5	Non-relevance of professional development activities to classroom practices.	22	5.89
6	Non-recognition of additional qualification	30	8.04
7	Lack of knowledge of the importance of in-service training	20	5.31
8	Improper scheduling of training programme during holidays	32	8.73
9	Poor orientation of teachers towards profession development activities.	24	6.43
10	Lack of time to attend conferences, Seminars and workshop	22	5.84
	TOTAL	373	100%

Table 3 shows that greater percentage of teachers (25:46%) indicated that the major problem that hinders their attendance to professional development activities is lack of sponsorship.

#### VIII. DISCUSSION

Results of this study indicated that STM teachers in Sokoto State are not regularly participating in professional development activities. It was also observed that the area in which teachers received training is mostly in the improvisation of instructional materials. The greatest hindrance to STM teacher's participation in professional development activities in Sokoto State was found to be lack, of sponsorship. Findings of this study supported earlier studies by Eze (2006) and Ochu (2006). Eze conducted his study in Enugu State and discovered that STM teachers in the state are not sufficiently exposed to in-service training. Ochu conducted his own study in Makurdi, Benue State and also discovered that greater number of STM

teachers in that state are unqualified and do not attend regular in-service training.

It is an acknowledged fact that human skills needed for all forms of development are acquired only through a sound and well-articulated Science and Technology Education. This is because science constitutes an idea on which development and progress of both the individual and the nation depend. According to Isaac (2007) national development must be predicated on economic efficiency, expansion of productive capacity, improvement and modernization of human resources youth inclusive, technological advancement and industrial diversification and capability in the face of rapidly changing world.

The aim of science education is to produce people that have acquired the spirit of science and those that can manifest that spirit in all relevant contexts. These are people that have acquired scientific know-how and the habit of mind characteristic of scientists. The significance and relevance of teachers, in this direction cannot be over-emphasized. For skills to be acquired by the learners the teacher must possess the required professional competence.

STM teaching in particular requires bright, reflective and sensitive teachers who are effective in content management, in the manipulation of methods, valid and reliable in evaluation techniques and must possess sufficiently broad and flexible knowledge of their subject fields to be able to produce best quality engineers, medical doctors, technologists and scientists. This is because the quality of teachers determines the quality of the product. Therefore, preference must be given to STM teachers training-on the job with the view to equipping them with skills for continued study, for adaptation not only to new findings in science but also to new instructional strategies.

#### IX. CONCLUSION

The findings and results of this study indicated that STM teachers in Sokoto State are not regularly exposed to in-service training and that their greatest hindrance to involvement in professional development activities is lack of sponsorship. Science being a dynamic enterprise requires teachers that are involved in life-long learning activities so as to broaden their knowledge base, skills and understanding for as Wasagu (2005) noted "who dares to teach must never cease to learn".

#### X. RECOMMENDATIONS

Based on the findings of this study, the following recommendations are put forward.

- 1- State government should embark on well planned in-house workshops, seminars and conference periodically for STM teachers to enable them up-date their knowledge and reflect on their classroom practices. Teachers should also be encouraged to attend regular workshops, seminars, conference and refresher courses that are relevant to their disciplines such as those annually organized by Science. Teachers Association of Nigeria (STAN), Mathematics Association of Nigeria (MAN) etc.
- 2- Automatic Sponsorship should be given to STM teachers to attend workshops, seminars and conferences to upgrade their disciplinary and pedagogical knowledge.
- 3- Training programmers should be extensive enough to cover all areas of STM teaching e.g. teaching methods and strategies, continues Assessment etc.

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