

SCIENCE TEACHER'S PROFESSIONAL GROWTH IN CROSS RIVER STATE: A CASE FOR INCREASED EMPHASIS

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Abstract

This study was set up to find out the extent of involvement in professional organizations of science teachers in Cross River State. Six hundred and fifty science teachers drawn from 124 secondary schools made up the sample for the study. The instrument was a 15 - item questionnaire in which the science teachers were asked to indicate the extent to which they got involved in professional organizations and reasons for non-involvement. Findings were that the level of involvement of science teachers in professional activities was generally low. Also, financial considerations out - weighed on -- financial considerations as reasons for non — involvement. The conclusion is that the science teachers themselves, the students and the society benefit when science teachers get involved in professional organizations and grow professionally.

Introduction

In the last three decades there has been a tremendous knowledge explosion which Toffler (2005), has observed began in the mid - sixties. He then suggested that because of the rapid obsolescence of knowledge due to knowledge explosion, education will have to be recycled every ten years. About twelve years later Afolayan (2002), opined that keeping abreast requires not just a ten year recycling of knowledge but a continuous process of education and re-education which must include both subject matter and evolving methodologies.

Scientific knowledge is particularly flexible and the store of knowledge keeps changing. This, as rightly observed by Opong (1981), has been possible because of new instruments and techniques that have come to enhance the human senses in scientific investigation. Given the rapid accumulation of scientific facts and the high rate of change of the existing facts, it is apparent that no matter the efficiency of the pre - service training we give to teachers, there could of necessity be areas of inadequacies thus the need for in -service programme (FME, 1981).

However, where the employers are not sufficiently committed to the provision of in - service training for teachers, teacher's professional associations appear to be the only alternative forum to keep the teacher alert and abreast of new developments in the various fields of knowledge and their areas of specialization. Writing on the professional growth of teachers, Thurber and Collate (2004), cautioned that: upon graduation from college the teacher should not consider himself a finished product. He must keep informed about the new developments in science and new methods and materials which will make his teaching more effective. Participation in in-service workshops, attending professional meetings, enrolling in graduate programmes and reading some professional journals are some activities which help the teacher to grow professionally.

As observed by Silber (2001), science teaching organizations have a major role in encouraging, assisting and developing good teachers. Such an assistance, is usually through publishing journals for teachers, holding well planned conferences, seminars, symposia and workshops, producing other useful publications, teaching materials, equipment and curriculum development. In an empirical study, Uche (2000), found that in Lagos State, teachers with less educational achievement (Grade 1 and NCE) participated more in professional organizations than the B.A/B.Sc and masters degree holders. Contrary to expectations, teachers who hold masters degree showed no interest in belonging to professional organizations.

The Problem

Some few years after graduation from the training institution and routine teaching, teachers tend to be "burning out" except they are constantly being "recharged". In a situation where serving teachers do not undergo refresher courses, they tend to lose trend with current developments in their areas of specialization. To keep alert and abreast of current developments and to maintain a positive professional orientation, science teachers need to get involved in professional activities (outside their normal classroom teaching) which are mostly through the forum of science teaching organizations.

Purpose of the Study

This study is designed to assess the professional orientation of serving science teachers in the post primary institutions in Cross River State. Professional orientation is determined by their membership of science teachers organization and participation or involvement in professional activities outside the regular classroom teaching.

Significance of the Study

From the findings of this study, it's hoped that, teachers professional bodies will design and organize their activities to meet the needs of teachers at the grassroots. It will also help the practicing teacher to evaluate himself or herself in relation to his/her professional orientation. In addition, it will call the attention of teachers' employers to the need for emphasizing teachers' participation in professional activities as a source of professional growth and advancement.

Procedure

Sample: one hundred and twenty four (124) out of existing two hundred secondary schools in Cross River State were randomly selected. All the science teachers in the selected schools participated in the study. In all there were 656 science teachers, comprising 452 males and 204 females.

Instrument

A fifteen item survey questionnaire was designed by the researchers and used for the study. The questionnaire sought information on the qualifications, teaching experience, and areas of specialization of science teachers. It also sought to know whether science teachers participated in professional activities which include membership in professional organization, attending conferences, seminars and workshops, participating in writing books and booklets, publishing articles in science journals-and- periodicals, and participation in other forms of curriculum planning and development. The questionnaire also sought to know what benefits teachers (who are involved) derived from professional activities and what factors contributed to science teachers non - involvement in professional activities.

The questionnaire was validated by three science educators, from the department of science education.

Method of Data Analysis

Data collected were analysed using simple percentages. For those items which needed teachers opinion, nominal scores were attached to the options on a 5 - point scale as follows: strongly agree, 5; agree 4; not sure 3; disagree 2; strongly disagree 1.

The score of each option were summed up and the arithmetic mean calculated for each option. The means were used in assessing the degree to which each option determined the characteristics. A cut off point of 3.01 determined whether the options were significant or not. Any mean greater than this standard mean was considered significant and any mean below it not significant. For the purpose of analysis teachers were classified into four categories thus: Group 1 - Holders of master degree and above Group 2 - Holders of bachelors degree, HND/NTTC Group 3 - Holders of NCE, and Diploma in education Group 4 - Holders of OND, H.Sc and GCE "A" level The results are tabulated and presented in Tables 1, 2, 3, and 4.

Table I: Teachers Qualification and Teaching Experience[^]

Table 1: Teachers Qualification and Teaching Experience

Groups	Qualification	Years of experience					
		No	%	1-3 7-9	4-6	10+	
Group 1	M.Sc/M.Ed	32	4.9	8	4	76	20
Group 2	B.Sc(Ed)/B.Ed						
Group 3	/NTTC/HND	248	96	76	60	-	
Group 4	NCE/Diploma						
	OND/H.Sc/ GCE "A" level	40	8	24	-		
		6.1	8				
Total		656	180	176	188		
		100	112				

Table 2; Science Teachers' Participation in Professional Activities

Professional involvement	Group 1	Group 2	Group 3	Group 4	Total
	N = 32 No. %	N = 300 No. %	N = 248 No. %	N = 40 No. %	N = 656 No. %
1. Membership of professional teaching organizations	16 (50.0)	124 (41.3)	68 (23.9)	--	208 (31.7)
2. Attendance at seminars/conference/refresher courses	20 (63.5)	152 (50.7)	96 (33.8)	24 (60.0)	292 (44.5)
3. Participation in writing books/booklets	4 (12.5)	16 (5.3)	16 (5.6)	--	36 (5.5)
4. publication of articles in professional journals	--	8 (2.7)	--	--	8 (1.2)
5. participation in curriculum planning & development at school level	4 (12.5)	8 (2.7)	--	--	12 (1.8)
6. participation in curriculum planning & development at state level	--	--	--	--	--
7. participation in curriculum at national level	--	--	4 (1.4)	--	4 (0.6)

Table 3: Mean Scores on Science Teachers' Reasons for not joining Professional Organization

Factors	1 Group 1	2 Group 2	3 Group 3	4 Group 4
	x	x	x	X
Not aware of such organization Inability to meet financial obligation Inability to foresee any gain to be derived Meetings usually held in faraway places The School would not Sponsor	3.0	1.8	2.2	2.4
	2.3	2.9	3.0	3.1*
	2.8	1.8	2.3	2.8
	2.8	2.9	3.5*	3.5*
	2.3	2.9	4.0*	3.3*

significant

Table 4: Total Scores means and Ranks for Teachers' Reasons for not attending conferences

Reasons	E x	x	Rank
	Not aware of conferences The school would not sponsor Never consider conferences necessary Conferences usually hold in far away places	928	3.18*
980		3.36*	1 st (most likely)
472		1.62'	4 th (Least likely)
940		3.22*	2 nd

* Significant.

Discussion

While there are a few higher degree holders among science teachers in Cross River State, there are still some unskilled hands (H.Sc/A'GCE/OND) among them. The bulk of the profession is made up of First University degree holders, NCE holders and others with equivalent qualifications. The paucity of science teachers who are masters degree holders vis - a - vis the large numbers of first degree holders (Table 1), who have taught for up to ten years and above, may be an indication of science teachers' inability to improve upon their academic and professional qualification.

The reason for their inability may not be far-fetched. In the first instance, the science teachers may be afraid to risk their jobs since those teachers who vacated their jobs for further education find it difficult to be re-absorbed into the service.

They may be financially handicapped since the government (the employer) no longer makes award for in-service training for teachers. Beside the economic consideration, the general tendency is for people to

settle down and seek some comforts in life after the first university degree and in the process they may forget about self-educational improvement unless there is a motivation to do so.

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The scarcity of highly qualified science teachers may pose a problem in the implementation of The National Policy on Education in the sense that if and when teachers who are holders of the Nigerian Certificate in Education (NCE) proceed to teach in primary schools as proposed in the National policy on Education (2004), teaching in Secondary Schools in Nigeria will as a matter of necessity demand more highly qualified staff than first University degree holders.

The first University degree teachers will probably proceed to teach in Junior Secondary Schools. Indeed, the content of the Senior Secondary Curriculum, as of now, demands more from the science teacher than a mere first University degree.

The content has been raised to include some of the topics that are usually encountered at the post - secondary level. The-secondary-school teachers-who graduated from the University ten years ago or over may be obviously disadvantage unless teaching is backed up with attendance of workshops, refresher courses and of course reading beyond the prescribed texts.

In Table 2, (first row) a higher percentage of science teachers from categories I and 11 (University Undergraduate) have membership in professional organization than those of category 3 and 4 (non-graduate science teachers).

These findings seem to be in conflict with those of Uche (1980), who found of the Lagos State teachers that those with less educational qualifications (Grade 1 and NCE) participated more in professional organization than the University degree holders. The pattern of attendance of conference (Table 2), tends to matter of membership in professional organization already discussed. Except for the irregularity noticed about attendance of conference of teachers in category 4 (H.sc/OND/A GCE), it appears to hold true for the other categories of science teachers that the higher the educational attainment of science teachers the more they seek to have membership in professional association and the more they attend conferences, workshops and seminars meant for the professional improvement. The unexpected higher level of attendance at conferences and seminars, of untrained teachers (Group 4) may have motivated our personal awareness of their professional deficiencies and a desire to have better grasps of their teaching functions.

The level of involvement of science teachers in other professional activities like writing for publication and in curriculum planning development at different level is low (Table 23-7).

The common excuse among teachers is that they spend endless hours preparing notes of lessons and as such there is no time left for them to read and write beyond the prescribed texts. The burden of notes of lesson has taken so much grip on the teaching profession that wherever publications by the teachers are not pre-requisites for promotion (as in the with secondary schools) many good teachers take their exit without a line in print left in their memory.

Secondly, the government, which is the largest employer of the science teachers, sees the teacher first and foremost as the curriculum implementer not a planner and developer. As such, the classroom teacher is often left out of curriculum development processes. The chances sometimes open at the National and State levels cannot go round ail the teachers. The biggest chance open for the science teachers to participate in curriculum development process is at the school level where new ideas could be initiated about the curriculum and new experimental procedures sought.' Such as chance is often non-existent for science teachers in secondary schools in Nigeria because (hey are usually kept busy preparing students for external examination which the later are meant to take in their final year in school. The secondary school students themselves place a check on the teachers who dare to introduce something outside the syllabus.

Of the five reasons suggested as the causes for lack of science teachers, participation in professional organization (Table 3), three reasons stand out significantly to teachers in categories 3 and 4 (non graduate science teacher's). These are:

- Inability of the non - graduate science teachers to meet financial obligation arising from membership in professional organizations;
- Meetings are usually held in faraway places
- The school would not sponsor them.

The above three reasons are inter-related in the sense that they all involve financial commitment for the non graduate teachers. The fact that financial reasons override other reasons corresponds with the data in Table 4, where the given reasons are ranked in the continuum of the most likely reasons to the least likely reason for non-participation in professional organization.

In Table 4, then, we find the two: financial factors of the school could not sponsor/membership held in faraway places ranked first and second, while the non-financial factors of not being aware of conferences (never consider conferences necessary) are ranked third and fourth respectively. This would imply that financial consideration override non-financial considerations for failure of science teachers in professional organizations.

It is consoling to note that a greater number of science teachers are not unaware of the existence of professional organization though they may not belong to any. It is noticeable in Table 4, that neither the financial nor the non-financial considerations hold out significantly for graduate science teachers and others with equivalent qualifications (categories 1 and 2). These categories of teachers probably feel that they know everything that there is to teach at the secondary school level and as such find no need to get involved in professional organizations.

Table 4 summarizes benefits to be derived in gaining membership in professional organization to the exchange of ideas, refreshing of memory, exposure to articles, journals and books and keeping a breast with discoveries and innovations except for teachers in categories 4 (H.Sc, OND, A¹ GCE) who did not indicate the benefits to be derived because they did not belong to any such bodies. There were significant reasons why science teachers join professional organizations.

Recommendations

1. The employers of science teachers (mainly the governments) should as much as possible encourage these teachers to acquire professional efficiency and competency by;
 - Making provision for sponsorship at conferences, workshops and seminars.
 - Granting the science teachers study leave with pay to enable them study further
 - Reabsorbing them into the service as soon as they complete their studies.
 - Making participation in professional organization one of the conditions for promotion.
2. The Faculties of Science in Universities in Nigeria should emulate faculties of education of some Universities in the country by running long vacation programmes for the award of higher degrees in science. Alternatively, they should liaise with the Faculty of Education within the same University to draw up compulsory long vacation programmes in science education to enable science teachers attain higher qualifications not just in pedagogy but in the subject matter of science without a risk to their jobs.
3. Professional organization meant for science teachers should establish local committees and organize their activities within local government areas to supplement national and statewide activities. This will help to bring these activities closer to the people, cut the cost of participation on the part of teachers and so encourage more teachers to participate.
4. Science teachers should learn to apply themselves in professional activities like reading beyond the text, researching into new methods and materials and of course, making known their

findings to other science teachers through publication within the time available to them.

Conclusion

Science is dynamic with new knowledge, new methods and new materials always developing. The only avenue open to science teachers to update their knowledge outside formal enrolment in Universities is through participation in professional organization where science teachers receive information about new development in the field of science, meet and interact with their counterparts, exchange ideas, open up correspondences and get refreshed generally. U is also at the meeting of professional organizations that manufacturers and publishers of teacher's equipments and materials display their products to the benefit of the members (Ivowi, 1983). Science teachers who disassociate themselves from professional organizations are most likely to transmit obsolete information to the students, implement the curriculum poorly and "burn out" easily and of course soonest.

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