

## The Teaching of Integrated Science and Teacher Support Services

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### Abstract

*This is an investigative and explorative study into the challenges of teaching integrated science in the public Junior High Schools in the Kwahu West Municipality. It also looked at the teacher support services available in the Municipality to help science teachers deal with challenges that might exist to hinder their performances. All the 60 integrated science teachers, the 50 heads of public Junior High Schools as well as the eight circuit supervisors and science coordinators in the municipality were purposively selected for the study. A descriptive survey design was used for the study. Data were collected with a set of questionnaire and an interview schedule and were analysed using frequencies, percentages and the independent sample t-test. It was found out that even though the support services were available in the Municipality, their quality cannot be said to be the best and enough to help the science teachers deal with challenges they might face. It was, therefore, recommended that there would be the need for regular organisation of professional development activities as well as provision of science workshop, science equipment and motivational strategies for science teachers by the Ghana Education Service to help them deal with the challenges.*

**Keywords:** *Integrated Science, Junior High Schools, support services, science teachers*

### 1. Introduction

The school is a service-providing set-up and the teacher stands at a focal point of delivering the teaching service without which the school would be non-existent. To make the education system work appreciably, effectively and efficiently, certain structures need to be put in place to guide and assist teachers. Teacher support services are put in place in schools to give the needed guidance, direction and assistance to the teacher in the performance of his duties.

According to Edzii (2000) teacher management support services include systems and structures put in place to direct, guide and assist the teacher in playing his role so that the primary objective of promoting teaching and learning can be achieved. These, according to Musaazi (1982) include the provision of opportunities for the teachers to develop professionally and academically, monitoring and supervising teachers' output, performing staff appraisal, induction and orientation of new teachers and improving staff motivation. The support services available for science teachers would be looked at under these sections: induction, teacher development/ in-service training, supply of teaching learning materials and the role of subject and parent teacher associations, job satisfaction and motivation.

#### 1.1 Induction Programmes

Induction is one of the very important stages in the staffing process of any institution or organisation. Wong and Wong (2003) explain induction as a process of preparing, supporting and retaining new teachers. They continue that induction is a comprehensive, structured and sustained group process that fosters a true learning community by a continual provision of support and training to new teachers into their tenure. To them, induction is a life-long experience and process that teaches the social and cultural practices that centre on learning. Rebore (2001) also asserts that the importance of the proper induction and orientation of new teachers cannot be overestimated. He continues that, too many potentially capable teachers resign their positions and give up teaching because of an unnecessarily and frustrating initial experience in a school that lacks comprehensive orientation programme. He believes that induction

should be designed for both newly employed as well as resigned employees.

The Independent Education Union (2004) believes that the school induction programmes should provide varied forms of assistance to the beginning teacher with information of a specific kind relating to the school and its community. The Union commends that an improved and comprehensive induction programme also give to all teachers, whether beginning or experienced, a considerable support in their work. In support of the above proposition, Luft, Roehrig and Patterson (2003) in their study provided some evidence that induction, especially science-specific induction programmes, helped teachers to develop more productive learning environments, while teachers without any induction programmes experienced more problems with classroom management.

### *1.2 In-Service-Training*

For the teacher to meet the expectations of the school's relevant publics, he/she has to be equipped to adequately play his/her roles. According to the Ministry of Education [MOE] (1996) in-service training for all categories of teachers and supervisors had been intensified to meet the demands of the reforms. The MOE (1996) further revealed that it is one of the duties of the head of school to provide training for teachers to enable them improve upon their professional performance. This has further been strengthened with the introduction of the capitation grant (GES, 2005). According to Ghana Education Service (GES, 2002), there are several reasons why in-service training should be provided for teachers. These include the introduction to syllabus changes, overcoming specific teaching problems and weakness and equipping new teachers with knowledge and skills among others. Top quality training and development are vital to all organisations. Heller (1999) and Rebore (2001) believe that helping the individual to achieve his potential through well-planned training sessions are in the best interest of the organisation. Whichever way one looks at it, staff training is an essential factor in developing quality teachers. Agyenim-Boateng (2009) supported the above statement by reiterating that training and development is a planned effort by an organisation for employees to learn on job-related behaviour. On the same subject of developing staff, Ukeje, Akabogu and Ndu (1992, p.244) contended by adding that "In any profession, if a practitioner ceases to study, that professional ceases to be effective".

### *1.3 Teaching and Learning Resources*

Teachers need to be equipped with the necessary teaching and learning resources (TLRs) to boost their performance. The GES had said that it is the duty of the school head to make sure that the necessary learning resources are available so that teaching and learning can go on smoothly (MOE, 1994). According to the GES, resources that facilitate teaching and learning in schools include good classrooms, workshops, offices, store, library facilities, tools and equipment, furniture, toilet facilities and availability of good water. The availability and accessibility of relevant teaching and learning resources is significant in having an impact on the performance of both teachers and students (Ossei-Anto, 1999; Ofori, 2005), since learning by doing is one of the cardinal principles of teaching more especially, the teaching of science.

### *1.4 Subject Associations*

Organisation of knowledge transmission in schools along the lines of subjects, programmes and disciplines adds on to the proper and continuing orientation of the science and technology teacher through professional association activities. Like most societies, Science Education Associations (SEAs) nurture personal interests and skills in democratic structures and operations, consensus building, leadership, voluntarism, self-help and accountability – positive attributes necessary for national development. The American Federation of Teachers (AFT, 2000) believes that teachers need help to improve their work. They think that teachers are good sources of help and evaluation of their peers. Based on the foregoing discussions, Tufuor, Mensah and Anthony- Krueger (2009) listed the following as the expected roles of SEAs among others: update and refresh the knowledge and skills of their members in science, mathematics and technology through national, district and local conferences and workshops, deliberate on appropriate teaching methodology for teaching various science topics practically and meet periodically to clinically diagnose strengths and weaknesses of the national examination system in the science subjects. Recent studies about the effectiveness of science and mathematics associations in the country show that membership is dwindling, the frequency and quality of workshops and organisation of competitive fairs, as well as the level of participation in associations' activities tend to show a downward trend (Tufuor et al., 2009).

### 1.5 Parent Teachers Associations

In Ghana today, school based association of parents and teachers (PTA) also support education. They provide many of the needs of schools. Parents usually support the teaching and learning process by buying materials such as exercise books, pens, calculators, mathematical sets and other apparatus for practical work. Agezo and Baafi-Frimpong (2000) listed the following among a host of others as some of the purposes of having a PTA; to encourage co-operation between parents and teachers so that both parties can best promote the interest of the school, to meet regularly on issues which promote the welfare of the pupils, teachers and the community and providing opportunity for teachers to explain to parents what they are doing. In the schools, the recognition given to teachers is also found as a form of support that they receive from parents.

### 1.6 Motivation and Job Satisfaction

Strong and effective educational management requires a thorough knowledge and application of the twin concepts of motivation and job satisfaction. It has been widely proved that the ability of management to motivate the people who do the work and accord them the reward they deserve as well as maintain good working relationship with them often makes the difference in the efficiency of the organisations. The Commonwealth Secretariat (1993) noted that "The key to effective management is the ability to get results from other people through other people and in conjunction with other people" (Module 3, p.17). Various independent aspects of the work environment or characteristics of the job such as the work itself, supervision, relationship with co-workers, fringe benefits and promotion opportunities are some of the indicators of job satisfaction.

It is in line with the above discussions, this study specifically takes a look at the kind of support services that is available to science teachers in the Kwahu West Municipality as to;

- (a) How do Integrated Science teachers in the Kwahu West Municipality view the help they receive from some recognised bodies in the educational sector?
- (b) What roles do the heads of schools play in the professional development of Integrated Science teachers in the Kwahu West Municipality?
- (c) What are the views of the Integrated Science teachers on motivational strategies in the Kwahu West Municipality?
- (d) How do induction and in-service training programmes benefit Integrated Science teachers in the Kwahu West Municipality?
- (e) In what ways do the supplies of teaching and learning materials affect the teaching of Integrated Science teachers in the Kwahu West Municipality?

## 2. Methodology

The study adopted a census sampling technique which was appropriate because the population was not large enough to be sampled. This is in line with the view of Nwana (1993, p.58) that every member of the population should be studied "when the population size of the whole population is small". Also, according to Krejcie and Morgan (1970) for smaller population say N=100 or fewer, there is little point in selecting a sample, rather the entire population must be surveyed. Based on the above assertions, the study had the following as the sample; 60 Integrated Science teachers and 50 headteachers of the public Junior High Schools, 7 circuit supervisors and one science coordinator. In all, the study had a total of 118 participants. The Integrated Science teachers, heads of schools, circuit supervisors and the science coordinators who formed part of the sample were all selected. This technique was more appropriate because they were the right people from whom the needed information could be solicited to meet the purpose of the study and also the view of every member was considered as important (MacMillan, 2004; Nwana, 1993).

### 2.1 Research Design

The research design used for the study was the descriptive survey. It has the characteristics of analysing the relationships, differences and trends that contribute to the challenges teachers face in the teaching of Integrated Science in the Junior High Schools. By this approach, the researcher could find clues to answer research questions which involved classroom related challenges (Cohen, Manion & Morrison, 2000; Sarantakos, 2005).

Fraenkel and Wallen (2000) identified three major difficulties associated with descriptive surveys which included the difficulty in ensuring that the questions to be answered are clear, getting respondents to answer questions thoroughly and honestly, and the difficulty of getting sufficient number of questionnaire completed and returned for meaningful analysis to be made. The above problems were overcome through the use of simple words, appealing to respondents to be frank and truthful and also making follow-ups during questionnaire administration.

## 2.2 Instrument

Questionnaire and semi-structured interview guide were the main instruments for data collection in the study. The questionnaire was used to gather information from the Integrated Science teachers and heads of public Junior High Schools while the semi-structured interview guide helped in gathering data from the circuit supervisors and the science coordinator. The questionnaire and the interview guide were developed through the extensive use of literature and consultations with fellow researchers. The questionnaire was pilot – tested and it yielded Cronbach's Alpha value of 0.79 which suggests that the items were measuring the same thing (Vogt, 1999).

## 2.3 Procedures

Permission was sought from the Municipal Director of Education, Kwahu West, who is in charge of the schools selected for the study, to seek the approval for access to the schools. Two weeks were devoted for the distribution of the questionnaire in all the seven circuits. The collection of the questionnaire also took another two weeks. In all, four weeks were used for data collection which were administered by the two researchers and had a return rate of 100 percent.

## 3. Results and Discussions

The study concerned itself with the support services available in the Municipality for science teachers. In an attempt to answer question, the following were of interest; provision of support by some selected bodies and by heads of schools, teacher motivation, induction, in-service training and issues on teaching and learning resources for teaching science.

To find out how often some recognised bodies in the educational sector such as the Science Teachers' Association, the Parent Teacher Associations and Heads of Schools provide support for the science teacher, the responses of the teachers have been analysed and presented in Table 1 using frequencies and percentages. A quick glance at the results presented in the Table 1 shows that in terms of providing support for professional development for science teachers, the heads of schools in the Municipality played a significant role. For example, as much as 46 (76.7%) of the respondents indicated that the heads of school often provided the science teachers with support. It could also be noticed from the results that, the Science Teachers' Association was among the bodies which provided the least support for the science teachers. This was confirmed with 40 (66.7%) out of the 60 science teachers opting for seldom or never in response to this statement. This confirms Tufuor, Mensah and Anthony-Krueger's (2009) findings that the effectiveness of Science and Mathematics Associations in the Ghana is dwindling and the frequency and quality of workshops, as well as the level of participation in the associations' activities also show a downward trend. Also 41 (68.3%) of the respondents indicated that they seldom or never got any support from the Parent Teacher Association. This outcome is in contrast with the findings of Agezo and Baafi-Frimpong (2000) and Meier (1995) which stipulated the benefits of parental involvement the activities of schools and the social gains

**Table 1:** Provision of Support for Science Teachers by Some Recognised Bodies

Statement	VO f %	VO f %	VO f %	VO f %
Science Teachers' Association	5 8.3	15 25.0	18 30.0	22 36.7
Parent Teacher Association	7 11.7	12 20.0	19 31.7	22 36.7
Head of School	21 35.0	25 41.7	12 20.0	2 3.3
Science Coordinator	5 8.3	22 36.7	22 36.7	11 18.3

N = 60; VO = Very often; OQ = Quite often; SD = Seldom; NR = Never

**Source:** Field Data, 2011

they enjoy from educating their children. It was revealed during the interview session that even though many parents attended meeting organised by the PTA, most of them did not take keen interest in what really happened in the schools.

As one circuit supervisor put it, some of parents felt the PTA meetings were just organised to collect levies and it was worse in the rural areas where some parents lacked formal education. As it has been indicated by Zuniga, Olson and Winter (2005) parents who have no formal education or low educational achievement are likely not to be aware of educational aspirations enough to enable them exhibit high signs of commitment towards the education of their wards.

Table 2 looks at some of the specific roles heads of school play as way of supporting science teachers towards professional development. The results as shown in Table 2 depict that, though 28 (56.0%) of the heads said they often organised induction courses for teachers on subject basis, 19 (38.0%) indicated that they seldomly did that. On the issue of organising in-service training for teachers on subject basis, only 5 representing 10.0% of the heads opted for very often, 25 (50.0%) opted for quite often while 15 (30.0%) opted for seldom. Ironically, the results show that as low as 16 (32.0%) out of the 50 heads of school indicated that they often invited subject coordinators to visit their schools. The question that arises is, how effective would the induction and in-service training programmes organised by the heads of schools be without the involvement of the subject coordinators who were considered to have stronger subject matter knowledge in their areas of jurisdiction? An interaction with the Municipal Science Coordinator brought to light that lack of funds had been a hindrance to the running of subject biased induction and in-service training programmes for science teachers in the Municipality. She added that though in-service training was one of things the capitation grant was required to be used for (GES, 2005), most heads of school did not see it as a priority as they were saddled with problems that came up in the day to day running of the schools. She however, reiterated that efforts were being put in place to solicit help from the Municipal Assembly and other NGOs in the form of funds needed to organise of such courses.

**Table 2:** Some Activities Performed By Heads of Schools towards Professional Growth of Science Teachers

Statement	VO		QO		SD		NR	
	f	%	f	%	f	%	f	%
Organising induction for teachers on subject basis	2	40	28	56.0	19	38.0	1	2.0
Organizing in-service on subject basis	5	10.0	25	50.0	15	30.0	5	10.0
Providing up to date TLMs for subject teachers	10	20.0	23	46.0	15	30.0	2	4.0
Encouraging parental involvement in schools	17	34.0	23	46.0	9	18.0	1	2.0
Inviting the subject coordinator to school	2	4.0	14	28.0	30	60.0	4	8.0
Sponsoring teachers to association programmes	12	24.0	21	42.0	12	24.0	5	10.0

N = 60; VO = Very often; QO = Quite often; SD = Seldom; NR = Never

**Source:** Field Data, 2011

It could also be noted that the heads of school were doing their best in encouraging parents to get involved in the activities of the schools. This was confirmed by the fact that 17 (34.0%) and 23 (46.0%) of the heads opted for very often and quite often respectively. The picture portrayed here is that the heads were doing their best and this is in line with Ukeje, Akabogu and Ndu's (1992) and MOE (1996) views on the fact that the head as an administrator must stimulate, guide and coordinate the effort of their workers towards efficient performance for the achievement of organisational goals.

Another issue looked at as a source of support for science teachers was teacher motivation. The focus was on some of the strategies that were used to motivate teachers. The results from the perspective of both the teacher and the head of school are presented in Table 3 and Table 4 respectively. A general observation that could be made from the results shown in Table 3 is that most science teachers were not highly motivated by strategies indicated in the study. For instance, about 30 (50.0%) which constituted half of the total respondents said they had never been recommended for promotion, 15 (25.0%) opted for seldom, 13 (21.0%), opted for quite often while only 2 of the respondents representing 3.3% said they were very often motivated through recommendations made for their promotion. The results also indicated that the teachers were hardly motivated through the use of surprise presents. This was confirmed by fact while 36 (60.0%) of the science teachers said they had never had a surprise present as a source of motivation, 11 (18.3%) of them said they seldom did. Again, the use of public praise as a strategy had 8 (13.3%) of the teachers opting for very often, 22 (36.7%) opted for quite often, while 14 (23.3%) and 16 (26.7%) settled for seldom and never respectively. On whether an opportunity to upgrade oneself served as a source of motivation, 7 of the teachers representing 11.7% of the total number of respondents said they were very often motivated by this strategy, 20 (33.3%) went for quite often, 23 (38.3%) opted for seldom while 10 (16.7%) of the teachers said they were never motivated this way. As Okumbe (1998) and Kane and Mallon (2006) see motivation as a process starting with a physiological or psychological need to activate a desired behaviour, then low motivation

**Table 3:** Some Strategies for Motivating Teachers as Viewed by Science Teachers

Statement	VO		QO		SD		NR	
	f	%	f	%	f	%	f	%
Public praise	8	13.3	22	36.7	14	23.3	16	26.7
Recommendation for promotion	2	3.3	13	21.0	15	25.0	30	50.0
Surprise parent	3	5.0	10	16.7	11	18.3	36	60.0
Opportunity for upgrading	7	11.7	20	33.3	23	38.3	10	16.7

N = 60; VO = Very often; QO = Quite often; SD = Seldom; NR = Never

**Source:** Field Data, 2011

of the science teachers, as depicted by the results might cause teachers to leave or remain in teaching though feeling disillusioned and lacking motivation.

On the other hand, views of the heads of school were also sought for on how frequent they got their teachers motivated by strategies mentioned already. Their views have been summarised and presented in Table 4. It could be noted from the results that the most of the heads of schools reported that with the exception of giving surprise presents, all the other strategies were somehow used frequently to motivate the teachers under them. The results revealed that 14 (28.0%) of the heads indicated that they very often motivated science teachers by making them take advantage of opportunities to upgrade themselves, 25 (50.0%) were for quite often, 8 (16.0%) said they seldom used this strategy and 3 (6.0%) of the heads reported they never used it.

**Table 4:** Some Strategies for Motivating Science Teachers as Viewed by School Heads

Statement	VO		QO		SD		NR	
	f	%	f	%	f	%	f	%
Public praise	12	20.0	31	62.0	5	10.0	2	4.0
Recommendation for promotion	18	36.6	25	50.0	3	6.0	4	8.0
Surprise parent	6	12.0	16	32.0	21	42.0	7	14.0
Opportunity for upgrading	14	28.0	25	50.0	8	16.0	3	6.0

N = 50; VO = Very often; QO = Quite often; SD = Seldom; NR = Never

**Source:** Field Data, 2011

The results also revealed that 14 (28.0%) of the heads indicated that they very often motivated science teachers by making them take advantage of opportunities to upgrade themselves, 25 (50.0%) were for quite often, 8 (16.0%) said they seldom used this strategy and 3 (6.0%) of the heads reported they never used it. On the use of public praise, 12 (20.0%) the respondents were for very often, 31 (62.0%) went for quite often, 5 (10.0%) for seldom, while 2 (4.0%) went for never. Also, it can be observed from the results that a greater number of the respondents were of the view that they frequently recommended their teachers for promotion. In support of this view, 18 (36.6%) opted for very often, 25 (50.0%) were for quite often, while 3 (6.0%) and 4 (8.0%) went for seldom and never respectively. As indicated already, comparing with the other strategies, surprise presents was least used by the heads. Records showed that only 6 (12.0%) of the heads used it very often, 16 (32.0%) used it quite often, 21 (42.0%) seldom used it and 7 (14.0%) never it used as motivational strategy. An interview with the circuit supervisors revealed that though the heads of schools were doing their best, other problems such as increased workload and paper work especially in the urban areas, unreasonable rate of changes coupled with a lack of resources, lack of concern from parents (Kane & Mallon, 2006) and lack of financial support to carry out practical lessons and field trips were some of the hindrances militating against quality teacher motivation in the Municipality.

Induction is one of the very important stages in the staffing process of any institution or organisation. In a continuum of strongly agree to strongly disagree, the teachers and the heads responded to statements expressing some benefits of an induction programme to the science teacher. The views of the respondents have been analysed and presented in Table 5 and Table 6. The results as depicted in Table 5 give a clear indication of a unanimous agreement among the science teachers on the benefits of an induction programme to the science teacher. This outcome affirms the views of Rebore (2001) and Wong and Wong (2003) on the benefits that are derived when teachers are properly inducted. As shown in the results, all the 60 (100.0%) teachers agreed on the statement that induction made teachers feel welcomed to the school. They also agreed that induction inspired the teacher towards excellence with about 59 (98.3%) of the teachers responding positively to this statement. In much the same way, all the 60 (100.0%) science

teachers agreed on the statement that induction gave information to teachers on students' attitude to school work, discipline and general behaviour in schools.

**Table 5:** Some Benefits of an Induction Programme as Viewed by Science Teachers

Statement	SA		A		U		D		SD	
	f	%	f	%	f	%	f	%	f	%
The induction makes teachers feel welcomed	26	43.3	34	56.7	0	0.0	0	0.0	0	0.0
It inspires teachers towards excellence	24	40.0	35	58.3	0	0.0	1	1.7	0	0.0
It helps teachers adjust to the environment	27	45.0	33	55.0	0	0.0	0	0.0	0	0.0
It provides teachers with information on students' attitude	26	43.3	34	56.7	0	0.0	0	0.0	0	0.0

N = 60; SA = Strongly agree; A = Agree; U = Uncertain; D = Disagree; SD = Strongly disagree

**Source:** Field Data, 2011

It is in line with this result that the Independent Education Union (2004) commended that an improved and comprehensive induction programme is given to all teachers, whether beginning or experienced, to support their work.

The views of the heads on the importance of induction were also sought for and their responses have been analysed and presented in Table 6. An inspection of the results shows that though the heads of school had diverse views on the statement that induction gives information to teachers on students' attitude to school work, discipline and general behaviour in schools, majority of them were in favour of the other issues raised. It could be observed from the results presented in Table 6 that, 42 (84.0%) of the heads agreed that induction gave information to teachers on students' attitude to school work, discipline and general behaviour in schools, 5 (10.0%) were uncertain, while only 3 (6.0%) disagreed to this view. During the interview session with the circuit supervisors, it was revealed that

**Table 6:** Some Benefits of an Induction Programme as Viewed by School Heads

Statement	SA		A		U		D		SD	
	f	%	f	%	f	%	f	%	f	%
The induction makes teachers feel welcomed	25	50.0	25	50.0	0	0.0	0	0.0	0	0.0
It inspires teachers towards excellence	22	44.0	26	52.0	2	4.0	1	1.7	0	0.0
It helps teachers adjust to the environment	26	52.0	24	48.0	0	0.0	0	0.0	0	0.0
It provides teachers with information on students' attitude	13	26.0	29	58.0	5	10.0	3	6.0	0	0.0

N = 60; SA = Strongly agree; A = Agree; U = Uncertain; D = Disagree; SD = Strongly disagree

**Source:** Field Data, 2011

though the importance of an induction programme cannot be underestimated most heads of school did not properly organise induction programmes for newly trained teachers or teachers on transfer to their schools. They confirmed that though an induction programme was organised for all newly trained teachers posted to the Municipality to formally welcome them, induction programmes on subject basis were hardly organised for teachers. The reasons they said were not far-fetched and these included lack of funds to effectively organise such programmes. They concluded that lack of induction for new teachers sometimes made their teaching become a haphazard activity which led to unsatisfactory performance and in the long run, affect the teachers' commitment to work. This outcome agrees with Stuart, Kunje and Lefoka (2000) and Luft, Roehrig and Patterson (2003) assertions that induction, especially science-specific induction programmes, helped teachers to develop more productive learning environments.

Another issue considered as a support service for science teachers was in-service training programmes. Views were sought for from the perspectives of both the science teachers and the heads of school. The responses from the teachers have been summarised and presented in Table 7. A deduction that could be drawn from the results presented in Table 7 is that almost all the science teachers agreed to the statements indicating some of the importance that could be derived from in-service training programme with response percentages ranging between 98.3% and 100.0% for all the issues raised. For instance, it can be observed from the results that all the 60 science teachers representing 100.0% agreed to the statement that in-service training programmes helped them to update the knowledge and also their improved pedagogical skills.

**Table 7:** Benefits of In-Service Training Programme as Viewed by Science Teachers

Statement	SA		A		U		D		SD	
	f	%	f	%	f	%	f	%	f	%
It helps to update my knowledge	39	65.0	21	35.0	0	0.0	0	0.0	0	0.0
It improves my skills in teaching	36	60.0	24	40.0	0	0.0	0	0.0	0	0.0
It keeps me abreast with programmes in the GES	37	61.7	23	38.3	0	0.0	0	0.0	0	0.0
It exposes me to effective evaluation of students' performance	31	51.7	28	46.7	1	1.7	0	0.0	0	0.0

N = 60; SA = Strongly agree; A = Agree; U = Uncertain; D = Disagree; SD = Strongly disagree

**Source:** Field Data, 2011

The picture from the side of the heads, as seen in the results presented in Table 8, did not seem to be different from that of the teachers when their views were sought for on some of the importance to be derived from an in-service training programme. About 59 (98.0%) of the heads said they agreed to the statement that an in-service training programme helped to update the knowledge of teachers in the various subject areas. In another instance, 57 (50.0%)

**Table 8:** Benefits of In-Service Training Programme as viewed by School Heads

Statement	SA		A		U		D		SD	
	f	%	f	%	f	%	f	%	f	%
It helps to update teachers' knowledge	36	72.0	13	26.0	0	0.0	1	2.0	0	0.0
It improves teachers' skills in teaching	33	66.0	16	32.0	1	2.0	0	0.0	0	0.0
It keeps teachers abreast programmes in the GES	34	68.0	13	26.0	3	6.0	0	0.0	0	0.0
It exposes teachers to effective evaluation of students' performance	25	50.0	22	40.0	1	2.0	2	4.0	0	0.0

N = 60; SA = Strongly agree; A = Agree; U = Uncertain; D = Disagree; SD = Strongly disagree

**Source:** Field Data, 2011

of the heads agreed on the statement that in-service training exposes teachers to effective evaluation of students' performance. On the whole, the indication is that an in-service training programme is vital in the professional development of the teacher as seen by Heller (1999) and Rebore (2001). One circuit supervisor agreed with the assertion of Ukeje, Akabogu and Ndu (1992) and reiterated that "for a teacher to be effective and stay on board there is the need for continuous learning and that is what in-service training programmes are meant for".

Teaching and learning resource was also considered as one of the support services for the science teacher looking at the important role they played in the teaching and learning process (Ossei-Anto, 1999). The results which are presented in Table 9 show the state of science teaching and learning resources from the views of both the science teachers and the heads of school. The study took a look at the condition of some teaching and learning resources in terms of their availability, adequacy and state with particular reference to the teaching of science. These resources included a source of water, science workshop, science equipment and science textbooks among others (MOE, 1994; Agyenim-Boateng, Atta & Baafi-Frimpong, 2000).

The experimental nature of science makes a reliable source of water an important teaching and learning resource. The results show that 34 (68.0%) of the heads indicated that they had source of water with the 16 (32.0%) responding in the negative. Out of the 34 (68.0%) who confirmed the availability of water, 31 (91.2%) also indicated that they had a good source while 3 (9.0%) said the state of the source of water was poor. The science teachers shared almost the same view with the heads on the condition pertaining to a source of water. The results show that 41(68.3%) out the 60 teachers indicated that they have access to water and 36 (87.8%) went further to say that the source was good.

**Table 9:** State of Teaching and Learning Resources

Statement	Response	Heads of schools		Teachers	
		f	%	f	%
Source of water	Available	34	68.0	41	68.3
	Unavailable	16	32.0	19	31.7
	Adequate	25	73.3	29	70.7
	Inadequate	9	26.5	12	29.3
	Good	31	91.2	36	87.8
	Poor	4	8.8	5	12.2

Statement	Response	Heads of schools		Teachers	
		f	%	f	%
Science workshop	Available	0	0.0	0	0.0
	Unavailable	50	100.0	60	100.0
	Adequate	-	-	-	-
	Inadequate	-	-	-	-
	Poor	-	-	-	-
Science equipment	Available	28	56.0	32	53.3
	Unavailable	22	44.0	28	46.7
	Adequate	3	10.7	0	0.0
	Inadequate	25	89.5	32	100.0
	Good	8	28.6	7	21.9
Science textbooks	Poor	20	71.4	25	78.1
	Available	50	100.0	60	100.0
	Unavailable	-	-	-	-
	Adequate	12	24.0	23	38.3
	Inadequate	38	76.0	37	61.7
	Good	40	80.0	52	86.7
	Poor	10	20.0	8	13.3

Source: Field Data, 2011

The Commonwealth Secretariat (1993) noted the important role textbooks as a resource play in the teaching and learning process. It is, therefore, encouraging to note that all respondents indicated that science textbooks are available in schools. On its adequacy, 12 (24.0%) heads of school and 23 (38.3%) teachers said though the science textbooks were available they were not adequate. On the state of the available textbooks majority of the respondents reported that the books were in good shape. This is supported with an affirmation of 40 (80.0%) and 52 (86.7%) heads and teachers respectively.

A distinguishing revelation that could be seen from the results is that all the respondents indicated that there was no science workshop or laboratories in their schools. This suggests that science practical lessons were not conducted under the required conditions and at the appropriate places. Since the availability and accessibility of relevant teaching and learning resources are significant in having an impact on the performance of both teachers and students (Ofori, 2005), then, a serious lack of them as portrayed in this result could impact negatively on the performance of both teachers and students. WAEC (2008) also indicated that many students lacked practical experience and therefore could not answer questions based on practical work. It therefore encouraged science teachers to expose the students to simple practical work. The science coordinator confirmed this anomaly and said efforts were being made to have a common workshop to serve a cluster of schools. She said when this materialises the few science resources left in the schools would be pulled together to be used and maintained by the schools.

It could also be noted that just about half of each of the respondents reported having science equipment in their schools. This was confirmed by 28 (56.0%) of the heads of schools and 32 (53.3%) teachers respectively. They both indicated that the available equipment were both inadequate and in poor state as depicted in the results. This outcome agrees with the assertion made by Levin and Lockhead (1993) that the learning resources that many developing countries are able or willing to allocate to educational institutions are sometimes inadequate. In summary, it could be observed that teacher support services were available in the Kwahu West Municipality, but their quality cannot be said to be the best and enough to give the needed support to the science teachers as expected.

#### 4. Conclusions

The study further revealed that the heads of schools provided the major support for science teachers in the Municipality. The support from parents and the science coordinator was shown to be low while that from the Science Teachers' Association was non-existing. On the issue of teacher motivation, the results showed that the science teachers were not highly motivated by strategies as public praise, surprise presents or recommendations for promotion as mentioned in the study. It was also found out that induction and in-service training programmes were of great benefit to the science teachers. However, the results indicated that for lack of funds they were hardly organised for science teachers in the Municipality. The study revealed that all the schools in the Municipality lacked adequate science equipment and none of

them had access to a science workshop. Thus, practical lessons were either not conducted or poorly conducted. However, it is worth noting that all the schools had good supplies of science textbooks for all the classes in the Junior High Schools in the Municipality. In the light of the findings and conclusion, the following recommendations are made:

1. The Ghana Education Service (GES) need to place more emphasis on the regular organisation of science-specific induction and in-service training programmes for both beginning and experienced teachers especially before a new school term begins. Alternatively, the heads of schools could be well resourced to enable them play this vital role.
2. Due to the lack of science workshops for the schools as depicted in the study, the GES must consider setting up science workshops to serve cluster of schools in the Municipality. These workshops could be maintained by the schools which would patronise the workshops.
3. The Municipal Education Directorate must put in efforts to encourage the activities of the Parent Teacher Associations and Science Teachers' Association in the Municipality. These groups could impact positively on the level of teaching and learning activities by providing learning resources, science textbooks and financial assistance as the case might be.
4. The Municipal Education Directorate must also institute some motivational strategies in the Municipality to help boost the morale of science teachers.

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