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PRIMARY SCHOOL TEACHERS' ATTITUDE TOWARDS THE TEACHING OF SCIENCE

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ABSTRACT

The purpose of the study was to examine the attitude of primary school teachers towards the teaching of science in Ghana.A sample of 114 teachers from 20 primary schools in the Abura - Asebu- Kwamankese District was selected for the study. Data for the study was collected by the use of a questionnaire. The responses of the teachers on the questionnaire were collated for the purpose of analysis. The results of the study showed that primary school teachers had a positive attitude towards the teaching of science. There was also no significant difference in the attitude of male and female primary school teachers towards the teaching of science. However, the study found out that, teachers had difficulties in teaching topics such as basic circuits, waves and building simple circuits.Primary school teachers should be encouraged by education units to attend science subject association conferences and workshops. The association should concentrate on the teaching of the themes namely “Cycle, Energy and Systems" as it is a major problem for most primary school teachers.

INTRODUCTION

One of the important pillars in the development of every nation is a strong scientific and technological base. The importance of science and technology cannot be over-emphasized. This is because a nation cannot develop without the use of science and technology. From the statements above, it is clear that the world is constantly being moved by the progress being made in science and technology; especially in the developed countries of the world. A strong scientific and technological knowledge base therefore constitutes the bedrock for social and economic transformation of nations. Countries that have developed have utilized the opportunities offered by the current phenomenal increase in science and technology especially information and communication technology, biochemistry and material science. Such nations have scaled the poverty barrier and moved into the club of rich countries (Anamuah-Mensah, 2004). Many governments in the world today are investing heavily in science and technology in their country. One major area of focus is science education. Ghana is one of such countries allocating substantial financial resources for the development of science and technology. Science education in the country has received tremendous improvement over the years. There have been some changes in the syllabi for teaching and learning of science in our country Ghana.Science and technology form the basis for inventions, for manufacturing and for simple logical thinking and action. This means that scientific and technological literacy is necessary for all individuals, especially in developing countries which have to move faster in an attempt to raise the standard of living of their people. Over the years, science education in Ghana has received significant attention by government, organizations, and individuals. The country recognizes the role science and technology education plays in the development of a country's economy, environment and social life. This is why the first post-independent government committed considerable resources to the development of science and technology in the country. They did so by introducing science in primary and secondary schools in the 1960's, establishing the Kwame Nkrumah University of Science and Technology and the University College of Science Education (now the University of Cape Coast) for training scientists, engineers and science teachers (Anamuah-Mensah, 2004). Despite this investment, including spending about 35% of the total government recurrent budget on education, Ghana's economy continues to rely heavily on traditional agrarian practices, extractive industries and tourism after more than four decades of self-rule. The National Development Planning Commission (NDPC) noted in one of its reports that majority of farmers still use traditional methods of agriculture, which help to explain the very slow improvement in crop yields over the years (NDPC, 2010). The country continues to be a net exporter of raw materials for factories overseas. Some of countries such as Singapore, South Korea and Malaysia, which in the 1960s were at the same developmental level as Ghana, have witnessed improvement in their economies through the development and application of science and technology.

It is also observed that the level of scientific literacy among the youth who constitute about 44% of the total population in the country is very low; that of the adult population is even much lower. Available records indicate that less than 15% of Ghanaians aged 15 years and above are scientifically literate (Government of Ghana, 2003). Science and technology thus, do not seem to have any influence on the lives of the majority of people. Sanitation has become a major issue; heaps of garbage are found in and around major towns; gutters are choked with waste materials including plastics, thereby preventing the flow of liquid matter. Malaria is recognized as a major killer but we tend to look on almost helplessly to the devastation being caused by malaria parasites. Forest reserves are dwindling rapidly as a result of deforestation, illegal harvesting of trees and farming practices.From the foregoing, it appears that pupils do not get it right with the fundamentals of science in schools. Reports from the West African Examinations Council and the Ministry of Education show that Integrated Science results of students in the Basic Education Certificate Examination (BECE) and West Africa Senior Secondary Certificate Examination (WASSCE) have been poor over the years (Chief Examiner's Report, 2006).

The solution to the situations enumerated above lies in the development and implementation of effective science and technology education at all levels of education, especially at the pre-university level. Such curricula should cultivate the spirit of innovation and change that enables people to create new things and find better ways of doing things. However, the current practice of science and technology education in the schools does not provide the enabling environment for developing the human and social capital required for nation building. Many factors militate against the effective teaching and learning of science and technology in the schools. There are also various reports of poor preparation of students for these examinations. The poor preparation of students and the reduction in the number of students who obtain good grades in integrated science could be attributed to many factors among which perhaps are the teachers' attitudes towards the teaching of science at the primary school level. This study therefore focuses on the attitude of teachers towards the teaching of science in Ghanaian primary schools. The study sought to address the following research questions:

1. What is the attitude of primary school teachers towards the teaching of science?
2. Which of the topics in the integrated science syllabus do teachers find difficult to teach
3. What is the relationship between gender and attitude towards the teaching of science in primary schools in Ghana?

RESEARCH METHODOLOGY

Research Design

The research design used for the study was the descriptive survey. The descriptive survey intends to describe a specific set of phenomena in and of themselves. Gay (1997) sees descriptive survey as a process of collecting data in order to test hypothesis or to answer questions concerning the current status of the subject of study and report the way things are. Leedy and Omrod (2005) also described the design and said it "involves either identifying the characteristics of an observed phenomenon or exploring possible correlations among two or more phenomenon".

Population

The study was conducted in the Abura - Asebu - Kwamankese District in the Central Region of Ghana. The Abura - Asebu - Kwamankese District is one of the 17 districts in the Central Region of Ghana. Its capital is Abura - Dunkwa. The total area of the district is 324 km^2. The total population of the district according Abura - Asebu - Kwamankese District Statistical Office is 90,093. The district shares borders with Assin South District, Cape Coast Metropolis, Twifo Hemang-Lower Denkyira District, Mfantseman Municipality and Gulf of Guinea to the North, South-West, North-West, East and South respectively. Most of the people in the District are farmers who cultivate citrus and other staples like maize and cassava. The target population was all teachers in the Abura - Asebu - Kwamankese District in the Central Region of Ghana. However, some selected primary school teachers from the Abura - Asebu District formed the accessible population. According to Abura - Asebu -Kwamankese District Assembly (n.d.), the number of primary schools in the district was 77 as at December, 2015. The number of primary school teachers was 910, made up of 581 male and 329 female during the same period.

Sample and Sampling Procedure

Since the entire primary schools in the district could not be included in the study, a purposive sampling technique was used to select two areas in the district namely Abura and Asebu. These areas were selected because of their proximity to the researchers and for easy access to the schools in the areas. A random sampling procedure was then used to select schools in these areas for the study. To select schools for the study, a sampling frame for schools in each of the two areas was constructed. The sampling frame consisted of the names and locations of all the schools in the identified areas. Abura area is made up of 35 schools while Asebu had 24 schools as at December, 2015. The researchers randomly chose 12 and 8 primary schools from the Abura and Asebu areas respectively. Census technique was used to obtain the sample size of 114 respondents from the 20 schools selected. Ideally the sample size should have been 120 but because of the absence of some teachers in one of the areas, the researchers obtained a sample size of 114 out of 120.

Instrument

A questionnaire was used to collect the data. This instrument was self-designed by the researchers. The questionnaire was used in the study for its less expensive nature as compared to others (Bleicher, 2004). Also, the use of questionnaires promises a wider coverage since researchers can approach respondents more easily than they could with other methods. Further, questionnaires provide researchers a standard procedure for collecting primary data that are comparable, irrespective of who collects them.

Data Analysis

The data collected was grouped to facilitate checking of completeness. After the checking, it was coded using numerical values. The data was input into the variable view to complete the keying process. The Statistical Product for Service Solution 20 was then used to analyze the data and generate tables for presentation and discussion. Descriptive statistical tools and non-parametric inferential results were used to present information processed according to the research question. Data for the first research question was analyzed using frequencies and percentages. Data for the second research question was analyzed using frequencies and percentages and the third research question was analyzed using the chi-square test at a 0.5 significant level and the last research

RESULTS AND DISCUSSION

This section focuses on the analysis of data, results and findings of the study. The data collected from respondents were analyzed using frequencies and percentages. A sample of 114 primary school teachers from 20 primary schools in the Abura – Asebu - Kwamankese District in the Central Region of Ghana was used to examine the attitude of primary school teachers towards the teaching of science in Ghana. The results are presented in the form of tables and charts see Appendix.

Attitude of Primary School Teachers towards the Teaching of Science

This part presents the responses that the primary school teachers gave to items 7 - 38 of Section B of the questionnaire. It elicits information on their attitude towards the teaching of science. Item 7(a) asked whether the respondents taught only science. Table 1 shows the distribution of responses.

Table 1 -*Whether Teacher Teaches only Science*

Variable	No.	%
No	112	98.2
Unstated	2	1.8

Total	**114**	**100.0**

Table 1 shows that 112 (98.2%) teachers out of the total number of teachers said they taught other subjects in addition to science. This was because almost all the primary school teachers were class teachers and therefore responsible to teach almost all subjects including science. However, two teachers representing 1.8% of the total number of teachers sampled did not answer the question. Item 7(b) asked what subjects the teacher teaches apart from science. Table 2 shows the distribution of responses.

Table 2: ***Subject Teachers Teach apart from Science***

Subject	No. (N = 114)	%
Mathematics	112	98.2
English	112	98.2
Citizenship Education	112	98.2
Creative Art	112	98.2
I.C.T	112	98.2
Ghanaian Language	84	73.7
Physical Education	97	85.1
Religious and Morals	112	98.2
Unstated	2	1.8

Table 2 show that, 112 out of the total number of teachers sampled representing 98.2% taught Mathematics, English, Citizenship Education, Creative Art, I.C.T and Religious and Morals. 84 teachers representing 73.7% of the total sample taught Ghanaian Language in addition to science and 97 teachers representing 85.1% of the total sample taught Physical Education apart from science. However two teachers representing 1.8% of the total sample did not respond to the item. The results seem to indicate that almost all teachers were class teachers but did not teach all subjects. Item 7(c) asked respondents whether the teaching of other subjects has effect on their science teaching. Table 3 shows the distribution of responses**.**

Table 3:*Teaching of Other Subject Affect the Teaching of Science*

Variable	No.	%
Yes	21	18.4
No	91	79.8
Unstated	2	1.8
Total	**114**	**100.0**

Table 3 shows that 21 teachers representing 18.4% of the total sample said the teaching of other subjects had an effect on their teaching of science while 91 teachers representing 79.8% of the total sample said the teaching of other subjects had no effect on their teaching of science. However, two teachers representing 1.8% did not respond to the question. Those teachers who said the teaching of other subjects had an effect on their teaching of science gave the following reasons. Table 4 shows the distribution of responses.

Table 4: *Effect of Teaching of Other Subjects on the Teaching of Science*

Effect	No.	%
Positive	14	66.7
Negative	7	33.3
Total	**21**	**100.0**

From Table 4, the positive effect (66.7%) was the transfer of knowledge from other subject like mathematics for instance, applying mode of operations, change of subject, among others. The negative effect (33.3%) was the time allocated for science teaching was not enough to cover most of the aspect at a time, lack of teaching and learning materials, among others.Item 8(a) on the questionnaire required respondents to tick whether they liked the way the syllabus had been structured, that is, in themes. Table 5 shows the distribution of responses by respondents.

Table 5:*Structured Syllabus*

Variable	No.	%
Yes	84	73.7
No	29	25.4
Unstated	1	0.9
Total	**114**	**100.0**

From Table 5, 84 teachers representing 73.7% indicated that they liked the way the syllabus had been structured, that is, in themes while 29 teachers representing 25.4% said they did not like the way the syllabus had been structured. The results seem to indicate that the structure of the syllabus is liked by primary school teachers.Item 8(b) on the questionnaire required respondents to state their reasons why they liked the way the syllabus had been structured, that is, in themes. Table 6 shows the distribution of responses by respondents.

Table 6: *Reasons why Teachers Like the Structure of the Syllabus*

Reasons	No.	%
Known to unknown	57	68
It is simple and clear	18	21
It guides the teacher to teach effectively	7	8
Unstated	2	4
Total	**84**	**100.0**

Table 6 shows that 57 primary school teachers representing 68% of the 84 primary school teachers who ticked yes to item 8(a) said the arrangement of the syllabus has been structured from known to unknown as the reason they like the structure of the syllabus. The results indicate that pupils are taught from known to unknown. Item 8(c) on the questionnaire required respondents to state their reasons why they did not like the way the syllabus had been structured. Table 7 shows the distribution of responses by respondents.

Table 7: *Reasons Why Teacher Do Not Like the Structure of the Syllabus*

Variable	No.	%
It makes teaching difficult	5	17.2

It is not clear	19	65.5
Unstated	5	17.2
Total	**29**	**100.0**

Table 7 shows that 19 primary school teachers representing 65.5% of the primary school teachers who ticked no to item 8(a) said the arrangement of the syllabus is not clear. The results seem to show that primary school teachers are not clear about the structure of the syllabus.Item 9(a) on the questionnaire required respondents to state if they have the desire to teach the themes equally. Table 8 shows the distribution of responses by respondents.

Table 8:*Themes are Taught Equally*

Variable	No.	%
Yes	59	51.8
No	48	42.1
Unstated	7	6.1
Total	**114**	**100.0**

From Table 8, 59 primary school teachers representing 51.8% of the total sample desired to teach the themes equally while 48 teachers representing 42.1% did not. However, 7 teachers representing 42.1% of the total sample did not respond to the question. Item 9(b) on the questionnaire required respondents why they desired to teach the themes equally. Table 9 shows the distribution of responses by respondents.

Table 9: *Why Teachers Desired to Teach Themes Equally*

Reasons	No.	%
Good and should be taught	11	18.7
From known to unknown	48	81.4
Total	**59**	**100.0**

From Table 9, 11(18.7%) teachers desired to teach the themes equally on grounds that all of them are equally good while (81.4%) of them desired to teach the themes equally on the basis that they are built on each other, thus they are arranged from known to unknown.Item 9(b) on the questionnaire required respondents why they did not desire to teach the themes equally. Table 10 shows the distribution of responses by respondents.

Table 10: *Why Teachers desired not to Teach Themes Equally*

Reasons	No.	%
None availability of teaching and learning materials	32	66.7
Some of the themes were not familiar	16	33.3
Total	**48**	**100.0**

From Table 10, those teachers who desired not to teach the themes in the syllabus equally said none availability of teaching and learning materials is the main reason forming 66.7% of the sample and some of them were not familiar with the themes in the syllabus as the reasons why they desired not to teach the themes equally forming 33.3% of the total sample.Item 9(c) on the questionnaire required respondents to state their most favourable theme. Table 11 shows the distribution of responses by respondents.

Table 11: *Most Favourable Theme*

Theme	No.	%
Diversity Of Matter	35	30.7
Cycles	10	8.8
Systems	28	24.6
Energy	26	22.8
Interactions of Matter	12	10.5
Unstated	3	2.6
Total	**114**	**100.0**

Table 11 shows that most favourable theme in science at the primary school is diversity of matter (30.7%). The topics taught under diversity of matter in class four include, groups of plants, groups of animals, metals and non- metals and measurement of temperature. Item 9(d) on the questionnaire requires respondents to state their least favourable theme. Table 12 shows the distribution of responses by respondents.

Table 12: *Least Favourable Theme*

Theme	No.	%
Diversity Of Matter	14	12.3
Cycles	34	29.8
Systems	20	17.5
Energy	30	26.3
Interactions Of Matter	13	11.4
Unstated	3	2.6
Total	**114**	**100.0**

Table 12 shows that the least favourable theme in science at the primary school is cycles (29.8%). Water cycle is taught in class under the theme cycles. Items 10 - 38 on the questionnaire required respondents to indicate whether they agreed, disagreed or were undecided to statements designed to find out their attitudes towards science teaching in primary schools. Table 13 shows the distribution of responses by respondents.

Table 13:*Teachers' Attitude to the Teaching of Science*

Item	**Agree**		**Disagree**		**Undecided**		**Total**	
	No.	%	No.	%	No.	%	No.	%
10. Science teaching is very interesting.	102	91.07	4	3.57	6	5.36	112	100
11. Teaching science is very involving.	12	10.7	95	84.82	5	4.46	112	100
12. Teaching science makes one creative.	100	90.91	2	1.81	8	7.27	110	100
13. A teacher should love science because it is real and interesting.	98	88.28	8	7.21	5	4.50	111	100

14. I don’t have much confidence in teaching science.	17	15.18	69	61.61	26	23.21	112	100
15. Teaching science makes one curious.	89	81.65	13	11.93	7	6.42	109	100
16. I like teaching science because it makes my thoughts logical.	96	87.27	4	3.64	10	9.09	110	100
17. Science teaching is no problem for me because it is practical - oriented.	72	66.67	15	13.89	21	19.44	108	100
18. Rehearsing science activities before teaching is not necessary.	14	13.08	75	70.09	18	16.82	107	100
19. Science teaching has broadened my knowledge about the environment.	96	88.07	11	10.09	2	1.83	109	100
20. Practical work is time wasting, hence should not be encouraged in the basic schools.	16	14.68	80	73.93	13	11.93	109	100
21. Science involves too many terminologies, which call for more and broad knowledge.	86	78.90	15	13.76	8	7.34	109	100
22. Without science laboratories practical activities can go on.	52	48.15	49	45.37	7	6.48	108	100
23. I teach science even if my pupils do not have textbooks.	80	72.73	23	20.91	7	6.36	110	100
24. The teacher needs adequate preparation before presenting his or her lessons in science.	104	95.41	2	1.83	3	2.75	109	100
25. The teacher should create avenues for pupils to develop questioning skills, critical thinking and enquiring mind during science lessons	105	96.33	2	1.83	2	1.83	109	100
26. Engaging pupils in practical work bridges the gap between the child’s home and school activities.	96	87.27	3	2.72	11	10.00	110	100
27. Science lessons equip pupils with useful skills.	98	90.74	5	4.63	5	4.63	108	100
28. A teacher should teach science well to develop good citizens for the nation.	92	83.64	10	9.09	8	7.27	110	100
29. Teaching children science gives them a bright future.	87	80.56	8	7.41	13	12.03	108	100
30. Science helps broaden the minds of pupils	100	93.46	4	3.74	3	2.80	107	100
31. Lack of materials such as beaker, cylinder, Bunsen burner etc. hinder the teaching of science.	76	69.09	24	21.82	10	9.09	110	100
32. Teaching science using textbooks only is boring.	22	20.00	81	73.64	7	6.36	110	100
33. It is fun to teach science to pupils.	70	65.42	24	22.43	13	12.15	107	100

34. I like engaging pupils in activities during science lessons.	92	83.64	13	11.82	5	4.55	110	100
35. I teach more of other subjects than science.	18	16.98	63	59.43	25	23.58	106	100
36. Scientific skills and attitudes can be acquired by the pupils through reading the subject.	38	34.55	57	51.82	15	13.64	110	100
37. It is only an inexperienced teacher who rehearses his or her activities before science lessons.	26	22.81	75	65.79	13	11.40	114	100
38. Pupils acquire skills when they are involved in practical activities.	105	97.22	3	2.78	0	0.00	108	100

Item 10 in Table 13 shows that, 91.07% of the primary school science teachers agreed that science teaching was interesting, 3.57 % of them disagreed to the statement while 5.36% were neutral. This seems to indicate that most primary school teachers had interest in teaching of science. Responses to item 11 shows that 10.7% of the teachers agreed to the statement "teaching science is involving", 84.82% of teachers disagreed to the statement while 4.46% of the teachers were undecided on the statement "teaching science is involving". This seems to suggest that most primary school teachers find science teaching involving. In addition, item 12 indicated that 90.91% of the teachers agreed to the statement "teaching science makes one creative", 1.81% of them disagreed to the statement while 7.27% of the teachers were undecided on the statement. Thus, to the majority of the primary school teachers think teaching science makes one creative.

Also, item 13 in Table 13 indicated that 88.28% of the teachers agreed to the statement “A teacher should love science because it is real and interesting", 7.21% of them disagreed to the statement while 4.50% were undecided on the statement. This is seems to indicate that most primary school love to teach because it is real and interesting. Furthermore, item 14 indicated that 61.61% of the teachers disagreed to the statement "I don’t have much confidence in teaching science", 15.18% of them agreed to the statement while 23.21% were undecided on the statement. This seems to indicate that the primary school teachers have confidence in teaching science as majority disagreed to the statement. This is consistent with the study done by Kucukyilmaz and Duban's (2006) which saw majority of teachers to be more confident and not afraid or anxious in teaching science. More so, item 15 indicated that 81.65% of the teachers agreed to the statement "teaching science makes one curious", 11.93% disagreed to the statement while 6.42% of the teachers were undecided on the statement. Thus to the majority teaching science makes one curious. This goes to confirm one of the views of Carr, Stefanich, and Kelsey (1994), who argued that many teachers hold the view that science, provides rights answers.Item 16 on Table 13 indicated that 87.27% of the teachers agreed to the statement "I like teaching science because it makes my thoughts logical", 3.64% of the teachers disagreed to the statement, while 9.09% of the teachers were undecided on the statement. This seems to indicate science teaching makes ones thoughts logical as majority of the teachers agreed to the statement. In addition, 66.67% of the teachers agreed to the statement "science teaching is no problem for me because it is practical - oriented", 13.89% of the teachers disagreed to the statement while 19.44% of the teachers were undecided on the statement. This seems to indicate that science teaching is practical - oriented as most teachers agreed to the statement. This goes to confirm one of the views of Carr et al (1994), who argued that many teachers hold the view that science knowledge is unproblematic.

Again, item 18 in Table 13 shows that 70.09% of the teachers disagreed to the statement "rehearsing science activities before teaching is not necessary", 13.08% of the teachers agreed to the statement while 16.82% of the teachers were undecided on the statement. This seems to indicate that rehearsing science activities before teaching is necessary as it equips teachers with the needed skills. Also, 88.07% of the teachers agreed to the statement "science teaching has broadened my knowledge about the environment", 10.09% of them disagreed to the statement,while 1.83% of teachers were undecided on the statement. This seems to indicate that science teaching broadens ones knowledge about the environment. More so, 14.68% of the teachers agreed to the statement "practical work is time wasting, hence should not be encouraged in the basic schools", 73.93% of them disagreed to the item while 11.93% of the teachers were undecided on the statement 20 in Table 4. This seems to indicate that practical work is not time wasting, hence should be encouraged in the basic schools.Furthermore, 78.90% of the teachers agreed to the statement "science involves too many terminologies, which call for more and broad knowledge", 13.76% of them disagreed to the statement while 7.34% of them were undecided on the statement. This seems to mean that science teaching involves more and broad knowledge. Again, item 22 in Table 13 indicated that 48.15% of the teachers agreed to the statement "without science laboratories practical activities can go on", 45.37% of the teachers disagreed to the statement while 6.48% of the teachers were undecided on the statement. These responses seems to indicate that with or without science laboratories practical activities can still go on. But for suitability, Ertepinar and Geban (2006) found that laboratory activities seemed to be more suitable for teaching of science subjects.

Also, item 23 in Table 13 shows that 95.41% of the teachers agreed to the statement "the teacher needs adequate preparation before presenting his or her lessons in science", 1.83% of the teachers disagreed to the statement while 2.75% of the teachers were undecided on the statement. This seems to indicate that the science teacher needs adequate preparation before presenting his or her lessons in science. Again, 96.33% of the teachers agreed to the statement "the teacher should create avenues for pupils to develop questioning skills, critical thinking and enquiring mind during science lessons", 1.83% of the teachers disagreed to the statement while 1.83% of the teachers were undecided on the statement. Thus the majority of the primary school teachers feel science teachers should create avenues for pupils to develop questioning skills, critical thinking and enquiring mind during science lessons. Furthermore, item 26 in Table 13 indicated that 87.27% of the teachers agreed to the statement "engaging pupils in practical work bridges the gap between the child’s home and school activities", 2.72% of them disagree to the statement while 10.00% of the teachers were undecided on the statement. This seems to indicate that engaging pupils in practical work bridges the gap between the child’s home and school activities. This goes to confirm one of the views of Carr et al (1994), who argued that many teachers hold the view truths in science are discovered by observing and experimenting. More so, 90.74% of the teachers agreed to the statement "science lessons equip pupils with the useful skills", 4.63% of them disagreed to the statement "science lessons equip pupils with the useful skills", whiles 4.63% of the teachers were undecided on the statement. This seems to mean that science lessons equip pupils with the useful skills which prepare them for the future as majority of the primary school teachers were in agreement to this. Also, item 28 in Table 13 indicated that 83.64% of the teachers agreed to the statement "a teacher should teach science well to develop good citizens for the nation", 9.09% of the teachers disagreed to the statement while 7.27% of the teachers were undecided on the statement. This seems to indicate that a teacher should teach science well to develop good citizens for the nation.

In addition, item 29 in Table 13 indicated that 80.46% of the teachers agreed to the statement "teaching children science gives them a bright future", 3.74% of the teachers disagreed to the statement while 12.03% of the teachers were undecided on statement. This seems to mean that teaching children science gives them a bright future as majority of the primary school teachers agreed. Moreover, 93.46% of the teachers agreed to the statement "science helps broaden the minds of pupils", 3.74% of the teachers disagreed to the statement while 2.80% of the teachers were undecided on the statement. Thus to the majority of primary school teachers, science helps broaden the minds of pupils.In addition, 69.09 % of the teachers agreed to the statement "lack of materials such as beaker, cylinder, bunsen burner etc. hinder the teaching of science", 9.09 % of the teachers disagreed to the statementwhile 21.82% of the teachers were undecided on the statement. This seems to indicate that non availability of teaching and learning materials hinder the teaching of science. Also, 20.00% of the teachers agreed to the statement "teaching science using textbooks only is boring", 73.64% of the teachers disagreed to the statementwhile 6.36% of the teachers were undecided on the statement. This seems to mean that teaching science using textbooks only is not boring as majority of the teachers disagreed. Item 33 in Table 13 showed that 65.42% of the teachers agreed to the statement "it is fun to teach science to pupils", 22.43% of them disagreed to the statementwhile 12.15% were undecided on the statement. This seems to indicate that teachers have much fun teaching pupils' science. Furthermore, 83.64% of the teachers agreed to the statement "I like engaging pupils in activities during science lessons", 11.82% of the teachers disagreed to the statementwhile 4.55% of the teachers were undecided on the statement. This seems to mean that most teachers like engaging pupils in activities during science lessons. Also, 16.98% of the teachers agreed to the statement "I teach more of other subjects than science", 59.43% of the teachers disagreed to the statementwhile 23.58% were undecided on the. This seem to indicate that primary school teachers do not teach more of science than other subjects thus teaching all subjects equally.

Furthermore, 34.55% of the teachers agreed to the statement "scientific skills and attitudes can be acquired by the pupils through reading the subject", 51.82% of them disagreed to the statementwhile 13.64% of the teachers were undecided to the statement. This seems to mean that scientific skills and attitudes cannot be acquired by the pupils through reading the subject but doing some practical activities. Also, item 37 in Table 13 showed that 22.81% of the teachers agreed to the statement 'it is only an inexperienced teacher who rehearses his or her activities before science lessons", 65.79% of the teachers disagreed to the statement while 11.40% of the teachers were undecided on the statement. This seems to indicate that it is necessary to rehearse your activity as a teacher before your lessons whether you are experienced or not.Finally, 97.22% of the teachers agreed to the statement "pupils acquire skills when they are involved in practical activities", 1.85% of the teachers disagreed to the statementwhile 0.93% of the teachers were undecided on the statement.This seems to indicate that pupils acquire skills when they are involved in practical activities. This goes to confirm one of the views of Carr, Stefanich, & Kelsey (1994), who argued that many teachers hold the view truths in science are discovered by observing and experimenting.

Difficulty of Topics Taught

Items 39 - 47 of Section C of the questionnaire asked of the difficulty of topic taught in class 1. Table 14 shows the distribution of responses**.** Strongly agree and agree combined as difficult to teach whiles disagree and strongly disagree combined as easy to teach with undecided remaining neutral.

Table 14: *Difficult of Class One Topics*

Topics	Easy Topic		Difficult Topic		Neutral		Total	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)
39. Living and Non Living Things	15	93.75	-	-	1	6.25	16	100.0
40.Measurement (Length, Mass,	9	52.94	5	29.41	3	17.65	17	100.0
Volume and Time)	12	75.00	2	12.50	2	12.50	16	100.0
41. Sun and Earth	9	52.94	6	35.29	2	11.76	17	100.0
42. Day and Night	9	52.94	6	35.29	2	11.76	17	100.0
43.Simple Electric Components	15	93.75	-	-	1	6.25	16	100.0
44. Sunlight	15	93.75	-	-	1	6.25	16	100.0
45. Food	15	93.75	-	-	1	6.25	16	100.0
46. Personal Hygiene	9	52.94	4	23.53	2	11.76	17	100.0

Table 14 shows that the primary school science teachers agreed all the topics are easy to teach. This seems to indicate that all the topics in class one are not difficult to teach as the majority agreed.Items 48 - 61 asked of the difficulty of topic taught in class 2. Strongly agree and agree combined as difficult to teach whiles disagree and strongly disagree combined as easy to teach with undecided remaining neutral. Table 15 shows the distribution of responses.

Table 15: *Difficult Class Two Topics*

Topics	Easy Topic		Difficult Topic		Neutral		Total	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)
48. Living Things (Plants & Animals)	11	57.89	6	31.57	2	10.53	19	100.0
49. Water	11	57.89	6	31.57	2	10.53	19	100.0
50. Air	11	57.89	6	31.57	2	10.53	19	100.0
51. Rocks	6	33.33	8	44.44	4	22.22	18	100.0
52.Measurement	8	42.11	9	47.37	2	10.53	19	100.0
53. Weather Conditions	10	58.82	4	23.53	3	17.65	17	100.0
54. The Human Body	10	52.63	8	42.11	1	5.26	19	100.0
55. Parts of a Plant	12	63.16	5	26.32	2	10.53	19	100.0
56. Hot and Cold	11	57.89	6	31.58	2	10.53	19	100.0
57. Sound	7	36.84	5	26.32	7	36.84	19	100.0
58.Personal Hygiene	11	57.89	6	31.58	2	10.53	19	100.0
59. Sanitation	12	63.16	5	26.32	2	10.53	19	100.0
60.Simple Machines (Pulleys & Inclined Planes)	5	26.32	7	36.84	7	36.84	19	100.0
61. Simple Electronic Circuit	8	42.11	8	42.11	3	15.79	19	100.0

Table 15 shows that, the primary school science teachers agreed that almost all the topics are easy to teach with the exception of "Rocks", “Simple Machines” and "Measurement" which respondent disagreed. The results seems to indicate that in class two majority of the topics are not difficult whiles topics such as Rocks, Measurement, Simple Machines (Pulleys & Inclined Planes) and Simple Electronic Circuit could not be conclude as difficult or not. Items 62 - 73 asked of the difficulty of topic taught in class 3. Strongly agree and agree combined as difficult to teach whiles disagree and strongly disagree combined as easy to teach with undecided remaining neutral. Table 16 shows the distribution of responses.

Table 16: *Difficult Class Three Topics*

Topics	Easy Topic		Difficult Topic		Neutral			Total
	No.	(%)	No.	(%)	No.	(%)	No.	(%)
62. Soil	11	61.11	4	22.22	3	16.67	18	100.0
63. Feeding in Plants	9	50.00	7	38.89	2	11.11	18	100.0
64. Feeding in Animals	9	50.00	7	38.89	2	11.11	18	100.0
65. States of Matter	10	55.56	7	38.89	1	5.56	18	100.0
66.Measurement of Time	10	55.56	7	38.89	1	5.56	18	100.0
67. Seasons	9	50.00	6	33.33	3	16.67	18	100.0
68. Sense Organs	10	55.56	4	27.78	3	16.67	18	100.0
69. Waves	2	11.11	15	88.89	-	-	18	100.0
70. Building Simple Electronic Circuit	4	22.22	13	72.22	1	5.56	18	100.0
71. Personal Hygiene	12	66.67	3	16.67	3	16.67	18	100.0
72. Water Pollution	12	66.67	4	22.22	2	11.11	18	100.0
73. Water Purification	10	55.56	6	33.33	2	11.11	18	100.0

Table 16 shows that, the primary school science teachers agreed that almost all the topics are easy to teach with the exception of Waves and Building Simple Electronic Circuit which respondent. The results clearly indicates that the topics "Waves and Building Simple Electronic Circuit" is a very difficult topic to be taught in primary three by primary three science teachers. Items 74 - 81 asked of the difficulty of topic taught in class 4. Strongly agree and agree combined as difficult to teach whiles disagree and strongly disagree combined as easy to teach with undecided remaining neutral.Table 17 shows the distribution of responses.

Table 17: *Difficult Class Four Topics*

Topics	**Easy Topics**		**Difficult Topic**		**Neutral**			**Total**
	No.	(%)	No.	(%)	No.	(%)	No.	(%)
76. Metals and Non-metals	12	75.00	2	12.50	2	12.50	16	100.0
77. Rusting	8	53.33	4	26.67	3	20.00	15	100.0
78.Measurement of Temperature	7	43.75	5	31.25	4	25.00	16	100.0
79. Ventilation	9	56.25	5	31.25	2	12.50	16	100.0
80. The Solar System	9	56.25	5	31.25	2	12.50	16	100.0

81. Sources of Energy	12	75.00	2	12.50	2	12.50	16	100.0

Table 17 shows that primary school science teachers agreed that all the topics are easy to teach. This seems to indicate all the class four science topics are easy to teach. Items 82 - 89 asked of the difficulty of topic taught in class 5. Table 18 shows the distribution of responses.

Table 18: *Difficult Class Five Topics*

Topics	Easy Topic		Difficult Topic		Neutral		Total	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)
83. Measurement	12	70.59	3	17.64	2	11.76	17	100.0
84.Water Cycle	10	62.50	4	25.00	2	12.50	16	100.0
85. The Human Body Systems	15	88.24	1	5.88	1	5.88	17	100.0
86. Forms of Energy	12	70.59	2	11.76	3	17.65	17	100.0
87. Conversion of Energy	11	64.71	6	35.29	-	-	17	100.0
88. Changes of State of Matter	13	81.25	2	12.50	1	6.25	16	100.0
89. Basic Electronics	1	5.56		88.89	1	5.56	18	100.0

Table 18 shows that, the primary school science teachers agreed that almost all the topics are easy to teach with the exception of the topic "Basic Electronics" which respondent disagreed. This seems to mean that almost all the science topics in primary five are easy to teach with the exception of the topic "Basic Electronics" which most primary four teachers find it difficult to teach.Item 90 - 101 asked of the difficulty of topic taught in class 6. Table 19 shows the distribution of responses.

Table 19: *Difficult Class Six Topics*

Topics	Easy Topic		Difficult Topic		Neutral		Total	
	No.	**(%)**	**No.**	**(%)**	**No.**	**(%)**	**No.**	**(%)**
91. Air	13	68.42	3	15.79	3	15.79	19	100.0
92. States of Matter	13	68.42	3	15.79	3	15.79	19	100.0
93.Measurement of Time	10	52.63	5	26.32	4	21.05	19	100.0
94. Life cycles of Okro and Maize Plant	8	42.11	7	36.84	4	21.05	19	100.0
95. Life Cycles of the Mosquito	9	50.00	4	22.22	5	27.78	18	100.0
96. The Digestive System of Humans	11	57.89	5	26.32	3	15.79	19	100.0
97. Simple Electrical Circuit	9	45.00	10	50.00	1	5.00	20	100.0
98. Respiration	9	47.37	6	31.58	4	21.05	19	100.0
99. Heat	9	47.37	7	36.84	3	15.79	19	100.0
100. Electrical Circuit	5	25.00	12	60.00	3	15.00	20	100.0
101. Basic Electronic Circuit	4	20.00	14	70.00	2	10.00	20	100.0

Table 19 shows that the primary school teachers' science agreed that almost all the topics with the exception of "Electrical Circuit and Basic Electronic Circuit" which respondent disagreed. This seems to indicate that almost all the topics in class one are not difficult with exception of "Electrical Circuit and Basic Electronic Circuit" which most primary six science teachers find it difficult to teach.

Gender Differences in Primary School Teachers' Attitude towards Science Teaching

The positive statement were coded as follows: Strongly Agree (SA) = 5, Agree (A) = 4, Undecided (U) = 3, Disagree (D) = 2 and Strongly Disagree (SD) = 1. The negative statements were coded as follows: Strongly Agree (SA) = 1, Agree (A) = 2, Undecided (U) = 3, Disagree (D) = 4 and Strongly Disagree (SD) = 5.The distribution of respondents according to their gender and attitude towards teaching of science in the primary school is presented in Table 17.The figures were derived from Table 10 for the items on attitude where Strongly Agree (SA) and Agree (A) were combined as Agree, Disagree (D) and Strongly Disagree (SD) were combined as Disagree and Undecided remained neutral. The frequencies in the Table 20 is represented by $(\boldsymbol{f})$.

Table 20: Primary School Teachers Attitude towards Science Teaching

Weight ($\boldsymbol{x}$)		No. ($\boldsymbol{f}$)	$\boldsymbol{f}(\boldsymbol{x})$
Agree	1	2315	2315
Undecided	0	260	0
Disagree	-1	570	-570
Total		**3145**	**1745**

$\overline{x} = \frac{\sum fx}{\sum f}$, where $\overline{x}$ is mean, $\sum fx$ is sum of the product of the frequency and weight, $\sum f$ is sum of the frequency. the

$$\overline{x} = \frac{1745}{3145}$$

$$\overline{x} = 0.6$$

The calculated mean value which is 0.6 indicates that primary school teachers have a positive attitude towards teaching of science. This confirm the work of Okpala (1995) who found that the effect of teachers' attitude towards assessment practices on students' achievement and their attitude towards science was positive. Male and female primary school teachers' responses on their attitude was grouped into positive, negative and neutral and presented in Table 21.

Table 21: *Gender Differences in Primary School Teachers' Attitude towards Science Teaching*

	Attitude			
Gender	Positive	Negative	Neutral	Total
Male	1428	359	160	1947
Female	887	211	100	1198
Total	**2315**	**570**	**260**	**3145**

The values from Table 21 were obtained by adding the responses of strongly agree and agree to constitute the positive, the undecided to be neutral and strongly disagree and disagree to constitute negative. In order to accept or reject the null hypothesis, the chi - square test was used.

$x^2 = \frac{\sum(O-E)^2}{E}$, where O is the observed value, E the expected value and x^2 is the chi – square stattistic.

$E = \frac{r_i \times c_i}{T}$, where r_i is the row value and c_i is the column value.

$$E_1 = \frac{1947 \times 2315}{3145} = 1433.17$$
$$E_2 = \frac{1947 \times 570}{3145} = 352.87$$
$$E_3 = \frac{1947 \times 260}{3145} = 160.96$$
$$E_4 = \frac{1198 \times 2315}{3145} = 881.83$$
$$E_5 = \frac{1198 \times 570}{3145} = 217.13$$
$$E_6 = \frac{1198 \times 260}{3145} = 99.04$$
$$x^2 = \frac{(1428 - 1433.17)^2}{1433.17} + \frac{(359 - 352.87)^2}{352.87} + \frac{(160 - 160.96)^2}{160.96} + \frac{(887 - 881.83)^2}{881.83} + \frac{(211 - 217.13)^2}{217.13} + \frac{(100 - 99.04)^2}{99.04}$$

$x^2 = 0.3435 df = (r-1)(c-1)$, where df is the number of degrees of freedom, r is the number of rows and c is the number of columns.

$$= (2-1)(3-1)$$
$$df = 2$$

Tabulated chi - square value (5.991) is greater than the calculated value (0.3435) at a 0.5 significant level. There is no significant gender difference at a 0.5 significant level. The inference is that there is no significant difference in the attitude of male and female primary school teachers towards the teaching of science is inconsistent with the study done by Talukdar (1996) which found a significant association between teacher's attitude and gender difference in the teaching of science at the elementary school level. Again, the result from the study is inconsistent with that of Simpson & Oliver (1985) who reported that male teachers demonstrated significantly more positive attitudes towards science than females. However, Barrington & Hendricks (1988) found no gender differences with respect to teacher's attitudes towards science at a 0.5 significant level which conforms to the result of this study. The disparity in the results of work done in this area may be as a result of gender inequality in our part of the world.

Conclusions

From this study it was realized that teachers have positive attitude towards the teaching of science. This means that with a little motivation and encouragement they could overcome their difficulty in the teaching of the topics they perceive to be difficult. Secondly, from the findings of the study it can be concluded that teachers had difficulties in teaching topics such as basic circuits, waves and building simple circuits. This is an indication that teachers are not well grounded in these areas. This is as a result of the way they might have been taught or the rampant changing nature of our syllabus. Finally, it was realized in the study that there is no difference in attitude with regards to gender. This suggests that both males and females can teach science well.

Recommendations

From the findings and conclusions drawn from the study, the following recommendations can be made for stakeholders:

1. There should be collaboration between the Ghana Education Service, schools and scientists. From the result of the study it was found out that teachers find it difficult to teach electrical topics and hence with that collaboration between Ghana Education Service, schools and scientists this problem can be resolved by organizing in service training for teachers.
2. Primary school teachers should be encouraged by education units to attend science subject association conferences and workshops. The association should concentrate on the teaching of the themes namely “Cycle, Energy and Systems" as it is a major problem for most primaryschool teachers.
3. There should be guidance and counseling for science teachers in the primary schools by the various education units to motivate teachers to develop positive attitude towards the teaching of science in primary schools.

Suggestions for Further Studies

The findings of this research cannot be taken to be conclusive without studies or analysis of some other variables that could influence teacher attitude. There should be research on pupils’ difficulties and confidence in learning science, pupils’ participation in science, enjoyment and motivation as these also exert some amount of influence on teachers’ attitude towards the teaching of science. Furthermore, since the research covered only a limited number of schools in the Abura - Asebu -Kwamankese District in the Central Region of Ghana, it is recommended that it is extended to cover more schools in the country to find out the attitude of primary school teachers towards the teaching of science in Ghana.

APPENDIX A

Table A:*Age of Respondent*

Age (years)	No.	%
18 – 22	6	5.3
23 – 27	44	38.6
28 – 32	19	16.7
33 – 37	21	18.4
38 – 42	7	6.1
43 and above	16	14.0
Unstated	1	0.9
Total	**114**	**100.0**

APPENDIX B

Table B:*Educational Level*

Level	No.	%
MSLC	2	1.8
BECE	1	0.9
SSSCE	35	30.7
GCE 'O' Level	6	5.3
GCE 'A' Level	6	5.3
Diploma in Basic Education	33	28.9
HND	12	10.5
B.Ed (Science)	3	2.6
B.Ed (Non - Science)	11	9.6

BSc/BA	2	1.8
MSc/MPhil	1	0.9
Unstated	2	1.8
Total	**114**	**100.0**

APPENDIX C

Table C: ***Rank of Respondents***

Rank of Respondent	No.	%
Pupil Teacher	6	5.3
National Service Person	2	1.8
Snr. Technical Officer	2	1.8
Superintendent	21	18.4
Snr. Superintendent	53	46.5
Principal Superintendent	13	11.4
Director	1	0.9
Unstated	16	14.0
Total	**114**	**100.0**

APPENDIX D

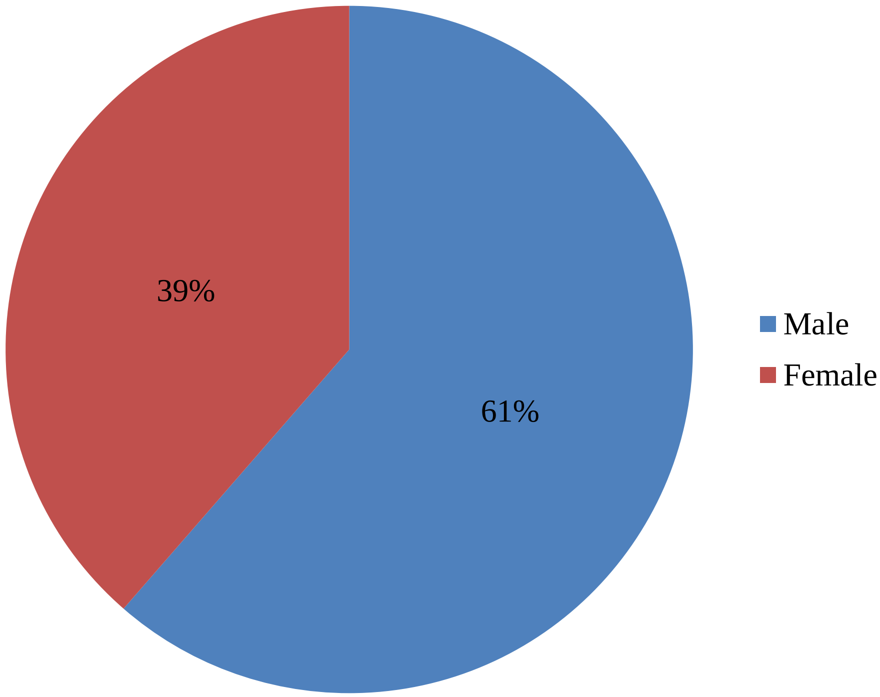
Table D: *Areas of Study in Tertiary*

Area Studied	No.	%
Agriculture	1	0.9
Education	47	41.2
Social Science	3	2.6
Biological Science	2	1.8
Business	8	7.0
Physical Science	1	0.9
N/A	52	45.6
Total	**114**	**100.0**

Source:Field data, 2012

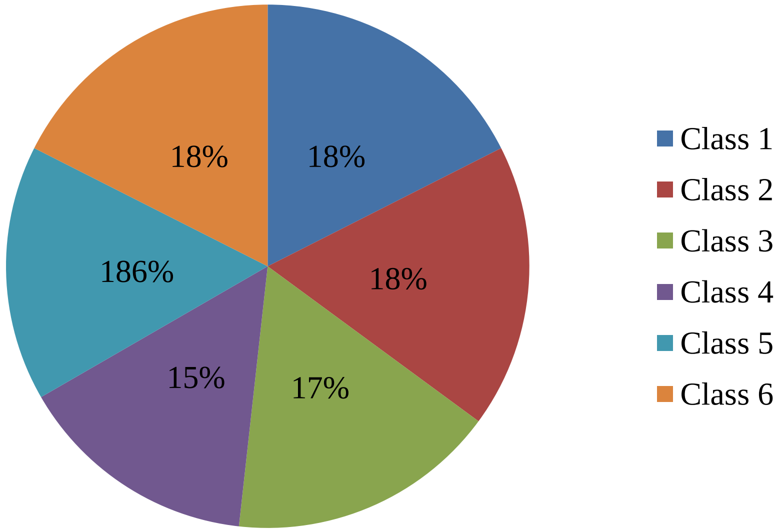
APPENDIX E

Figure 1: Sex of Respondent



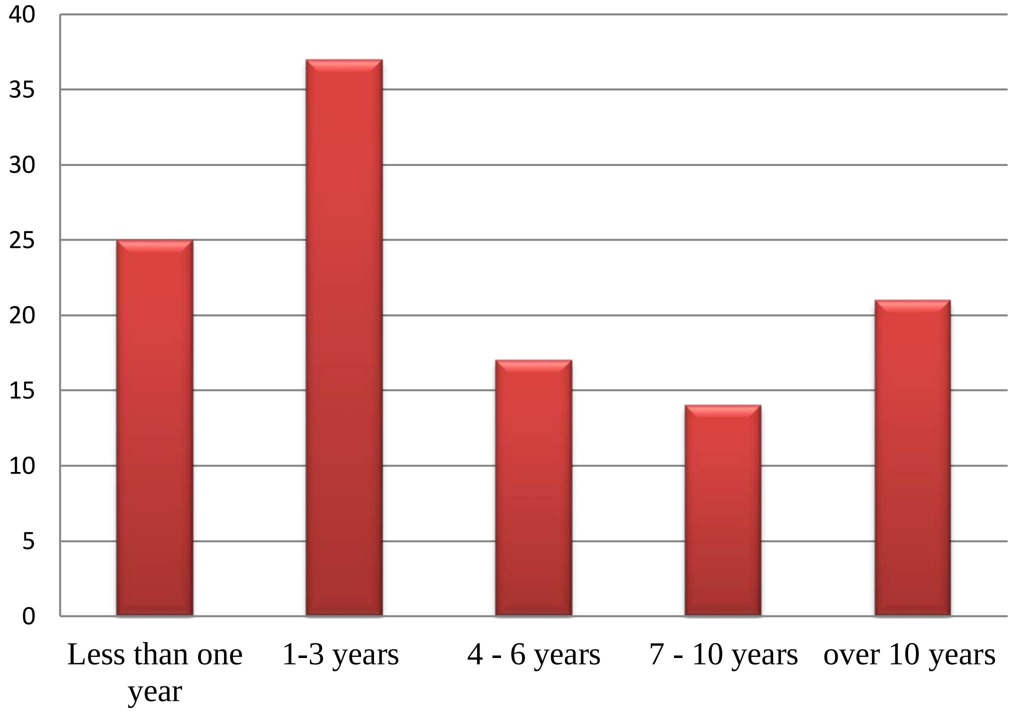
APPENDIX F

Figure 2: Level at which Teaching Science



APPENDIX G

Figure 3: Number of Years of Teaching



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