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Private School Teachers' and Students' Perceptions of Factors Influencing Teaching and Learning of Chemistry in Senior Schools in Minna, Nigeria

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ABSTRACT

The present study sought to investigate the perceptions of teachers and students on the factors influencing teaching and learning of chemistry in senior secondary schools in Minna, Niger State, Nigeria. The perceptions of private school students and teachers on these factors was critically examined. The study adapted mixed research (a structured questionnaire for the students and interview items for the teachers). A total of one hundred and fifty six (156) respondents, one hundred and forty four (144) students randomly selected from each of the twelve (12) private schools. Twelve (12) teachers were purposively selected for this study, one from each of the twelve private schools. The quantitative data collected was analyzed using descriptive and inferential statistics. Specifically, frequency and percentages were used to answer research question 1 and 2. The hypothesis was tested using Chi-Square at 0.05 significant levels. Tables were used to answer research question 3 for qualitative data collected. The result showed that there was a significant difference in the perceptions of male and female students on factors influencing chemistry learning in secondary schools as the chi-square calculated value (28.04) greater than chi-square table value (7.81), There was no difference in private school teachers' perceptions on the factor influencing the teaching of chemistry in secondary schools as interview responses revealed. However, some suggestions were offered on how to improve on the factors highlighted to make the teaching and learning of chemistry more effective and interesting.

KEYWORDS: *Perception, Teaching, Learning, Private School, Public School*

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INTRODUCTION

Science is a systematic and logical approach to discovering how things in the universe work. It is also the body of knowledge accumulated through discoveries about living and non-living things in the universe (Bradford, 2015. The importance of the knowledge of science in the development of any nation cannot be overemphasized and as such science education should be given maximum attention especially in developing country like Nigeria.

Science education is the teaching and learning of science to non-scientists, such as school children, college students, or adults within the general public (Science Education Wikipedia, 2013). It is a veritable tool for social change to bring about socio economic development in any nation. The application of the knowledge of science is a tool to solving real life problems and providing enabling environment to face global challenges.

Despite the importance of science education, the teaching and learning of science have been confronted with various challenges (Omorogbe & Ewansiha, 2013). One of these challenges is the teacher related factors in terms of presenting science instructions to learners. Science lessons are presented in dogmatic style and thus inhibit meaningful verbal learning which makes students resort to rote memorization of scientific facts and concepts. Students therefore, perceive science as a series of

tediously accumulated facts about the world (Sciencelearn.org, 2017).

Chemistry is a branch of physical science which deals with the study of composition, structure, properties, and change of matter. Chemistry has become one of the most important disciplines in the school curriculum; its importance in the general education has gained world-wide recognition. Chemistry subject in secondary school is pivotal to the development of science and technology. In a complex and dynamic society as ours today, chemistry and chemical sciences are very essential. They are pivotal in our day to day lives and are helping the world in order to respond promptly to some of the great challenges faced today. Such challenges include global warming, environmental pollution and degradation, earthquake, energy problems, flooding and chemical weapon devastated areas across the globe (American Chemical Society, 2015).

The perception of teachers to the challenges facing the learning of chemistry by students determines their conduct in the classroom. Nwachukwu (2009) stated that the teachers' way of thinking and beliefs that guide his or her behavior and decisions inside and outside the classroom. Adeyemo (2011) opined that the perception of teachers to a large extent determines the level of understanding attained by their student(s) and is also a tool in predicting students' achievement. Perhaps, teachers' perception of concepts of knowledge and learning are the foundations upon which teaching patterns are built.

Private and public schools are different in many ways. Apart from being different in the issue of ownership, they tend to differ on administrative style and sometimes on what Mkpa (2002) called 'school productivity' i.e., students' academic performance. What need to be verified however is whether is influenced by teachers' or students' variable or not. More specifically, the woeful academic performance of students in public and private schools in Minna, Niger State, Nigeria has been source of worries to parents, teachers and students.

Research Objective

The purpose of the present study was to determine the extent to which some factors have influenced the effective teaching and learning of chemistry which is a foundation of science and technology. The study therefore investigates the private schools teachers and students perceptions of the factors influencing teaching and learning of chemistry in Minna, Niger State, Nigeria.

Research Questions

1. What are the perceptions of private school students on the factors influencing the learning of chemistry in senior secondary schools?
2. What is the difference in the perceptions of male and female students on the factors influencing the learning of chemistry in senior secondary schools?
3. What are perceptions of private school teachers on the factor influencing the learning of chemistry in senior secondary schools?

Research Hypothesis

The following hypothesis have been formulated to guide the research study:

H_{01}: There is no significant difference in the perception of male and female students on factors influencing the learning of chemistry in senior secondary schools.

Methodology

This study adopted a mixed research, (quantitative – non experimental descriptive research of the survey type) and (qualitative – narrative research of the survey type).

Data collected from the department of planning and research statistics (2018 edition) showed that there are seventy-five secondary schools in Minna - fifty-three (53) private schools and twenty-two (22) public schools. There are two thousand three hundred and three (2,303) SS2 chemistry students in Minna – nine hundred and thirty (930) SS2 chemistry students from private secondary schools, one thousand three hundred and seventy three (1,373) SS2 chemistry students from public secondary schools. There are seventy one (71) chemistry teachers in Minna – forty (40) chemistry teachers from private secondary schools, thirty one (31) chemistry teachers from public secondary schools.

The target population for the study was SS2 chemistry students and chemistry teachers from private secondary schools in Minna, Niger State. A total of one hundred and fifty six (156) respondents, one hundred and forty four (144) students randomly selected from each of the twelve (12) private schools. Twelve (12) teachers were purposively selected for this study, one (01) teacher from each of the twelve (12) private schools.

Questionnaire was used for students and interview schedule for teachers. Twenty-nine (29) Questions were dignified for students making used of five Likert scale modified to four-point scale response format (SA = Strongly Agree, A = Agree, D = Disagree and

SD = Strongly Disagree). Twenty two (22) Interview questions were dignified for teachers.

The instruments for this study were validated by five (5) experts, three (3) lecturers in the Department of Science Education, Faculty of Education, University of Ilorin, and two (2) professionally qualified experienced chemistry teachers in secondary school level to ensure face and content validity of the instrument. Their corrections and suggestions were utilized in revising the instruments for data collection. In establishing the reliability of the research instruments, a reliability study was conducted involving forty (40) chemistry students and four (4) chemistry teachers from private secondary school outside the study area through split half method. A reliability index of 0.77 was obtained for the student's questionnaire (SQFILC). All the teachers interviewed had the same perception of factors influencing teaching and learning of chemistry. This showed that the correlation was high enough and the instruments were reliable.

The researcher randomly selected the students and purposively selected the teachers needed for the study, gave the students questionnaire and brief explanations regarding how they were to respond to each question, then interviewed the teachers one after the other.

The quantitative data collected was analyzed using descriptive and inferential statistics. Specifically, frequency and percentages were used to answer research question 1 and 2. The hypothesis was tested using Chi-Square at 0.05 significant levels. Results above the bench mark of 2.5 are judged accepted and below 2.5 are judged rejected. Tables were used to answer research question 3 and 4 for qualitative data collected.

Result

Research Question 1: What are the perceptions of private school students on the factors influencing the learning of chemistry in senior secondary schools?

Table 1: Perceptions of Private School Students on the Factors Influencing the Learning of Chemistry

S/N	Subject Related Factors	SA	A	D	SD	Mean	SD	Remark
1.	The syllabus is too wide.	112	23	4	4	3.76	1.02	Accepted
2.	The curriculum is unstable.	91	12	17	24	3.18	1.18	Accepted
3.	Chemistry topics are abstract in nature.	97	19	17	11	3.40	0.97	Accepted
4.	Inadequate chemistry textbooks.	29	69	33	13	2.79	0.87	Accepted
5.	Chemistry does not inspire students.	26	40	53	25	2.47	0.98	Rejected
6.	Textbooks do not sufficiently simplify topics.	70	53	12	8	3.29	0.85	Accepted
	Total	425	216	136	85	3.15	0.98	Accepted

	Students Related Factors	SA	A	D	SD	Mean	SD	
7.	Students' poor background in science.	85	34	11	14	3.32	0.98	Accepted
8.	The students' future career has no link with the study of chemistry.	12	15	70	47	1.94	0.88	Rejected
9.	Inadequate interest on the part of learners.	37	61	21	25	2.76	1.02	Accepted
10.	Students' poor study habit result to difficulty in understanding chemistry.	76	45	18	5	3.33	0.83	Accepted
11.	Educated parents do not help their children to understand chemistry.	19	23	74	26	2.25	0.91	Rejected
12.	Students' psychological fear of the chemistry as difficult subject poses a problem in learning chemistry.	86	49	6	3	3.51	0.68	Accepted
	Total	315	227	200	120	2.85	0.88	Accepted

	Teachers Related Factors	SA	A	D	SD	Mean	SD	
13.	Inability to relate concepts in chemistry to real life situations.	63	61	11	9	3.24	0.84	Accepted
14.	Inability to entertain questions during lesson.	36	46	38	24	2.65	1.03	Accepted
15.	Poor teaching methods adopted by teachers.	47	38	34	23	2.77	1.08	Accepted
16.	Inadequate chemistry teachers in terms of number and quality.	73	45	21	5	3.29	0.84	Accepted

17.	Inadequate assessment on practical lessons.	52	43	34	13	2.94	0.99	Accepted
18.	Inadequate lesson preparation by teachers.	36	37	47	24	2.59	1.04	
	Total	307	270	185	98	2.91	0.97	Accepted

	School Related Factors	SA	A	D	SD	Mean	SD	
19.	Noisy environment.	79	22	24	17	3.15	1.09	Accepted
20.	Insufficient instructional materials to teach chemistry.	104	14	12	13	3.46	0.98	Accepted
21.	Inadequate time for chemistry lesson in the timetable.	82	37	11	13	3.31	0.96	Accepted
22.	Absence of equipped library.	84	34	12	11	3.35	0.93	Accepted
23.	Large class size.	67	39	28	8	3.16	0.94	Accepted
24.	Inadequate exposure to practical chemistry.	52	73	12	6	3.20	0.76	Accepted
25.	Ill-equipped chemistry laboratory.	73	49	8	13	3.27	0.93	Accepted
26.	Poor classroom learning environment.	58	40	26	15	3.01	1.02	Accepted
27.	Inadequate incentives for chemistry teachers.	83	41	9	9	3.39	0.87	Accepted
28.	Inadequate laboratory supporting staff.	89	31	11	10	3.41	0.91	Accepted
29.	Inadequate support from school administrators and community.	60	39	25	18	2.99	1.06	Accepted
	Total	415	273	91	71	3.25	0.95	Accepted

Table 1 shows the perception of private school students on the factors influencing the learning of chemistry in senior secondary schools which were categorized into four sections, namely: Subject Related, Students Related, Teachers Related and School Related. The results indicated that for subject related factors, students' related factors, teachers' related factors and school related factors did exist in private schools.

Research Question 2: What are the difference in the perceptions of male and female students on the factors influencing the learning of chemistry in senior secondary schools?

Table 2 Cross-tabulation Table of Difference in the perceptions of male and female students on the factors influencing the learning of chemistry

Gender	Frequency	SA	A	D	SD	Total	Level of Agreement
Male	**Observed**	**1417**	**948**	**535**	**417**	**3317**	**High**
	Expected	1330.09	970.37	527.94	488.60	3317	
Female	**Observed**	**1896**	**1469**	**780**	**800**	**4945**	**Higher**
	Expected	1982.91	1446.63	787.06	728.40	4945	
Total	**Frequency**	**3313**	**2417**	**1315**	**1217**	**8262**	

Table 2 shows similarity in the perception of students based on gender with observed and expected frequencies of male students: 1417/1330.09 and 948/970.37 for strongly agree and agree respectively greater than their 535/527.94 and 417/488.60 for disagree and strongly disagree respectively, while observed and expected frequencies of female students are: 1896/1982.91 and 1469/1446.63 for strongly agree and agree respectively greater than their 780/787.06 and 800/728.40 for disagree and strongly disagree respectively. Although, they have same perception but females' own is more pronounced with higher total frequency.

Research Question 3: What are perceptions of private school teachers on the factor influencing the learning of chemistry in senior secondary schools?

Table 3 Perceptions of Private School Teachers on the Factor Influencing the Teaching of Chemistry

S/N	Interview Questions	Coded Transcripts	Sub Theme	Main Theme
1	For how long have you been teaching?	1-5(7), 6-10(2), 11-15(1), 16-20(5), 21-35(1)	Teaching experience	Influencing factor
2	How does teachers' qualification enhance or promote students' understanding of chemistry?	Teachers' qualification enhance effective teaching and learning of chemistry	Teachers' qualification	Influencing factor

3	State the method(s) you commonly use in the teaching of chemistry: Lecture method, drill and practices method, class demonstration method, homework assignment method, discussion groups method, practical work/class experiments methods and projects method	Discussion method, Class demonstration, Practice method, Assignment and group discussion, Drill and Practice method	Teaching methods	Influencing factor
4	How often do you use the method(s) mentioned above	Fortnight, monthly, twice a term	Teaching methods	Influencing factor
5	How many periods are allocated to chemistry in your school timetable per week?	Four periods (90%), Three periods (10%)	Lesson duration	Influencing factor
6	What are the challenges you are having with the periods and time allocated to chemistry lessons?	It is too small to allow coverage of syllabus	Effect of Lesson duration	Influencing factor
7	What do you think could be the reasons why students fail in chemistry test or exams?	Poor reading habit, subject and school related factors	Students' performance	Influencing factor
8	How does parents' educational level influence the students' performance in chemistry?	Provision of adequate learning materials, hire extra lesson teacher, close monitoring of their academic progress	Parents educational status	Influencing factor
9	How are you treating the weaker learners amongst your students?	Giving special attention during teaching, support and encouraging group work	Teaching methods	Influencing factor
10	How often do you test your students after every topic?	Once a week (88%), Once in two weeks (12%)	Teaching methods	Influencing factor
11	How often do you conduct practical for your students?	One practical for every topic	Teaching methods	Influencing factor
12	In terms of apparatus and reagents required for experiments, how equipped is your chemistry laboratory?	Moderately equipped	Learning materials	Influencing factor
13	What can you say about students' response to chemistry lessons in your school?	Satisfactory	Students' interest and attitude	Influencing factor
14	Which effort are you making as a chemistry teacher to increase your students' interest in chemistry lesson?	Use of varieties of teaching methodology and use of available instructional materials	Teaching methods	Influencing factor
15	How do you rate the attitude of your students toward Chemistry?	Very Positive	Students' interest and attitude	Influencing factor
16	Can you suggest possible measures which would be taken to improve the performance of Chemistry in your school?	Equipping the laboratory with needed equipment and materials and making it functional, organizing seminars and workshops, employing the qualified personnel, reduce class size, improving students/teachers interpersonal relationship	Suggestions for improving students' performance	Suggestions for improving students' performance

17	How many times in the last 5 years have you attended a seminar, workshop or an in-service course for teaching of Chemistry?	None (90%), Once in a year (10%)	Man power development	Influencing factor
18	What are the challenges you face as a chemistry teacher in your school?	Available materials in the laboratory only allow group work, large class size, students' poor study habit, limited allotted time to chemistry on school time table, lack of instructional materials	Teaching/learning challenges	Teaching/ learning challenges
19	Suggest some possible solutions to these challenges?	Equipped chemistry laboratory, reduced class size, enhanced students' study habit, more periods	Solutions to teaching/learning challenges	Solutions to teaching/ learning challenges
20	How available are instructional materials for teaching chemistry in your school?	Adequate (30%), Not adequate (50%), fairly adequate (20%)	Learning materials	Influencing factor
21	How many chemistry students do you have per class in your school?	15 (35%), 25 (30%), 40 (20%), Above 50 (15%)	Class size	Influencing factor
22	How does number of chemistry students per class possess challenges to effective teaching and learning in your school?	It hinders effective learning, possess challenges to effective classroom management, teacher find it difficult to attend to weaker learners	Class size	Influencing factor

Table 3 presents interview responses of private school teachers' perception on the factors influencing the teaching and learning of chemistry in senior secondary schools. From the table, even with difference in teachers' gender, qualification(s) and years of teaching experience amongst the private school teachers who participated in the study, they all pointed out to: Lack of equipped laboratory; Large class size; Students' poor study habit; Insufficient number of periods in the school timetable; Lack of instructional materials; Teachers teaching experience and qualification(s) as chemistry teaching/learning challenges in private senior secondary schools. They suggested: Equipping the chemistry laboratory with the needed equipment and materials; Frequent seminars and workshop; Employing qualify personnel; Reduced class size; Improved teacher/learner interpersonal relationship; Use of varieties of teaching methods; Enhanced students' reading habit; A minimum of 5 periods per week in school timetable; Provision of adequate instructional materials as solutions to chemistry teaching/learning challenges in private senior secondary schools.

Table 4 Coded Interview Transcripts Transformed into Sub-themes and Themes

S/N	Theme Name	Sub Theme Name	How many participants mentioned it (across all interviews)
1	MAIN THEME 1 Factors influencing teaching and learning of chemistry	SUB THEMES 1 Teaching experience Teaching qualification Teaching methods Lesson duration Students' performance Parents educational status Learning materials Students' interest and attitude Manpower development Large class size	 11 (91%) 12 (100%) 10 (83.3%) 10 (83.3%) 9 (75%) 10 (83.3%) 12 (100%) 8 (66.67%) 12 (100%) 9 (75%)

2	MAIN THEME 2 Suggestions for improving MAIN THEME 1	SUB THEMES 2 Equipping chemistry laboratory Employing qualified teachers and giving them enabling environment to attend seminars and workshop Allocation of a minimum of five periods per week Reduced class size Improving teacher/student interpersonal relationship Use of varieties of teaching methods	 11 (91.67%) 10 (83.3%) 10 (83.3%) 11 (91.67%) 10 (83.3%) 11 (91.67%)
3	MAIN THEME 3 Teaching/learning challenges in private and public schools	SUB THEMES 3 Large class size Students' poor study habit Insufficient number of periods Lack of instructional materials	 10 (83.67%) 12 (100%) 12 (100%) 9 (75%)
4	MAIN THEME 4 Solutions to teaching/learning challenges	SUB THEMES 4 Equipped chemistry laboratory Reduced class size Enhanced students' study habit A minimum of 5 periods per week Provision of adequate instructional materials	 10 (83.3%) 9 (75%) 12 (100%) 10 (83.3%) 11 (91.67%)

Table 4 above shows coded Interview Transcripts Transformed into Themes and Sub-themes. In Main Theme 1, teachers' qualifications and learning methods took the lead with 100%responses while student interest and attitude came last with response of 66.67%. The Main Theme 2 reflected above 80% responses for the sub-themes. Student poor study habits and insufficient numbers of periods took the lead responses of 100% for Main Theme 3. For Main Theme 4, the enhancement of student's study habit dominated respondents' responses with 100% responses while reduction in class sizes have a response of 75%.

H_{01}: There is no significant difference in the perception of male and female students on factors influencing the learning of chemistry in senior secondary schools.

Table 5 Chi-square Results on factors influencing students' learning of Chemistry based on Gender

Gender	SAA	DSD	Total	df	Cal Val.	Tab Val.	Remark
Male	1183	476	3317	3	28.04	7.81	Sig.
Female	1683	1580	2472				

SAA- Strongly Agree + Agree
DSD- Disagree + Strongly Disagree

Table 5 showed chi-square analysis results which indicates that there was a significant different in the perception of male and female students on factors influencing chemistry learning in senior secondary schools as the chi-square calculated value (28.04) greater than chi-square table value (7.81). This difference implies that female students held that these factors could influence the learning of chemistry while male students held contrary views.

Summary of the Findings

The following are the major summary of the findings:

1. The perceptions of private school students on the factors influencing the learning of chemistry in senior secondary schools existed in four categories, namely: Subject Related (3.15>2.5), Students Related (2.85>2.5), Teachers Related (3.16>2.5) and School Related (3.25>2.5)?
2. There was a significant different in the perception of male and female students on factors influencing chemistry learning in senior secondary schools as the chi-square calculated value (28.04) greater than chi-square table value (7.81).
3. Private school teachers' perceptions on the factor influencing the teaching of chemistry in senior secondary schools were similar as interview responses revealed.

Discussion

The findings revealed that the perceptions of private school students on the factors influencing the learning of chemistry in senior secondary schools existed in

four categories, namely: Subject Related (3.15>2.5), Students Related (2.85>2.5), Teachers Related (3.16>2.5) and School Related (3.25>2.5). This is because, lack of certain basic facilities for learning such as these (The syllabus is too wide, The curriculum is unstable, Chemistry topics are abstract in nature, Students' poor background in science, The students' future career has no link with the study of chemistry, Inadequate interest on the part of learners, Inability to relate concepts in chemistry to real life situations, Inability to entertain questions during lesson, Poor teaching methods adopted by teachers, Noisy environment, Insufficient instructional materials to teach chemistry, Inadequate time for chemistry lesson in the time table, Absence of equipped library, Large class size) will negatively impact on their understanding and performance in chemistry. The implication is that choosing career in chemistry related course may be scanty or if parents really desire it. This was supported by Adefunke (2008) and Asebiomo (2009) in their series of experimental statements said, "For effective teaching and learning of a subject, there must be adequate learning and teaching facilities such as good and well-equipped laboratory experienced and qualified teachers with good teaching methods. Adeyemi (2008) and Adesoji and Olatunbosun (2008) described practical chemistry as candidate's ability to use manipulative skills, accurate and sharp use of five senses in a well coordinate manner and ability to apply the knowledge acquired to solve other problems. To achieve this, enough materials, science and technology learning environment must be provided to promote learners' skills and knowledge through rich and various characteristics (Doppelt 2006; Helding and Fraser 2013).

From Table 3, and 4, it was observed that private school teachers have the same perceptions of factors influencing teaching and learning of chemistry in senior secondary schools in Minna, Niger State, Nigeria. Four themes and four sub-themes were generated from the interview conducted: MAIN THEME 1 (Factors Influencing Teaching and Learning of Chemistry); SUB-THEMES 1 (Teaching experience, Teaching qualification, Teaching methods, Lesson duration, Students' performance, Parents educational status, Learning materials, Students' interest and attitude, Man power development and Class size); MAIN THEME 2 (Suggestion for Improving MAIN THEME 1); SUB-THEMES 2 (Equipping the chemistry laboratory, Employing qualified teachers and creating enabling environment for them to attend seminars and workshops, Allocation of minimum of 5 periods per week, Reduced class size, Improving teacher/student interpersonal relationship and Frequent use of varieties of teaching methods); MAIN THEME 3 (Teaching/Learning Challenges); SUB-THEMES 3 (Large class size, Students' poor study habit, Insufficient number of periods and Lack of instructional materials); MAIN THEME 4 (Solutions to Teaching/Learning Challenges); SUB-THEMES 4 (Equipped chemistry laboratory, Reduced class size, Enhanced students study habit, A minimum of 5 periods per week and Provision of adequate instructional materials).

The findings revealed that majority of respondents mentioned: Teaching experience, Teaching qualification, Teaching methods, Lesson duration, Students' performance, Parents educational status, learning materials, Students' interest and attitude, Manpower development and large class size as factors influencing teaching and learning of chemistry in senior secondary schools (as shown in table 3 and 4).

Additionally, this study revealed that only 2 out of 12 chemistry teachers (10%) from private schools in Minna metropolis attended seminars and workshops for at least two times within a period of five years. This point may be a contributory factor to the poor performance of Chemistry within the metropolis. Teachers attending seminars and workshops frequently was suggested to act as catalysts or boosters for increasing teachers' proficiency. This study is consistent with the findings of Esu (1988) in which an insignificant influence of classroom management technique was recorded between in-service attendants and non-attendant based on lack of experience by one (non-attendant) group. This is also in agreement with the view of Uche (1981) who found out that in-service training, seminars, and workshops act as catalysts or boosters for the acquisition of self-mastery in the job being performed.

Furthermore, it was observed that the most common teaching learning methodology employed by the majority of teachers in private secondary schools in Minna are Lecture method, Discussion method, Class demonstration, Practice method, Assignment and group discussion, Drill and Practice method. This is in agreement with the findings of Mills (1991) who said that it is more prudent to employ varieties of teaching methods such as practical approach, class demonstration and field excursions which are more student involving for better academic results to be achieved. Majority of the respondents suggested that the pedagogical aspect of teaching and learning to be considered as the student's attitude towards the subject is influenced by the method the teacher uses

in teaching. This is in line with the study conducted by Endurance J, Tamunosis PF (2020) and Woldeamanuel MM, Atagana H, Engida T (2014) in Ethiopia that the students' positive attitude is influenced by the teachers' interest and effectiveness in teaching science.

The findings revealed that despite most of the schools in private schools in Minna being fairly equipped in terms of Chemistry laboratory, apparatus and reagents (as shown in table 3 and 4), the performance of Chemistry subject by students in private secondary schools is far below average. This may imply that the laboratory resources are not fully utilized in teaching and learning of Chemistry. The performance of Chemistry subject by students in public secondary schools in Minna is worse due to the challenges of ill-equipped laboratory. Okebukola (1987) identified that participation in laboratory activities is one of the factors affecting student performance in Chemistry. Majority of the respondents suggested equipping chemistry laboratory with the needed equipment and chemical reagents to enhance effective teaching and learning of chemistry in senior secondary schools.

Conclusion

The study researched private school teachers' and students' perceptions of factors influencing teaching and learning of chemistry in senior schools in Minna, Nigeria. The study concluded that the perceptions of private school students on the factors influencing the learning of chemistry in senior secondary schools were similar and existed in four categories, namely: Subject Related, Students Related, Teachers Related and School Related. Also, there were significant different in the perception of students on factors influencing chemistry learning in senior secondary schools based on gender. And finally, the teachers in private schools mentioned: Teaching experience, Teaching qualification, Teaching methods, Lesson duration, Students' performance, Parents educational status, Learning materials, Students' interest and attitude, Man power development and Large class size as factors influencing teaching and learning of chemistry in senior secondary schools (as shown in table 4, 5, and 6).

Recommendations

The following recommendations have been made in line with the findings of this study:

1. Government/school administrators should create an enabling environment for teachers to attend seminars/workshops on regular basis in their area of specialization so that they can have knowledge of current ideas and innovations that have taken place in the educational field.
2. As practical is an integral part of the subject. Then there should be well-equipped laboratories with essential amenities like water system, electricity and fire extinguisher, to mention but few.
3. The teachers' academic and professional qualifications should be based on the required discipline, that is, chemistry. Non-chemistry graduates with no education background should not be employed to teach chemistry as this will affect the effectiveness of such teachers as he/she can easily run away from difficult topics.

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