
PARENTS AND TEACHERS VARIABLES AS CORRELATES OF STUDENTS ACHIEVEMENT IN CHEMISTRY IN DELTA NORTH SENATORIAL DISTRICT

BY

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Abstract

This study examined parents and teachers' variables as correlates of students' achievement in Chemistry in Delta North Senatorial District. Four research questions and four hypotheses were raised and formulated for the study. The design of the study was a combination of correlational survey and ex-post facto design. The population of the study comprised 24,227 SSII chemistry students in all the public secondary schools in Delta North Senatorial District. The sample size of the study consisted of three hundred and sixty-four (364) SS2 chemistry students selected and 24 chemistry teachers from eight (8) public secondary schools in Delta North Senatorial District. The instruments used for data collection were teacher variables questionnaire (TVQ), parent variables questionnaire (PVQ) and students' chemistry second term results in the 2021/2022 session. The data were analyzed using Pearson Product Moment Correlation. The major findings of the study are that: there was a significant relationship between teacher variables and students' academic achievement in chemistry; there was a significant relationship between parental variables and students' academic achievement in chemistry. The study thus recommends that government should employ teachers with high and standard level of academic qualifications.

Keywords; Teacher and Parent Variables, Chemistry, Achievement

Introduction

Chemistry is the scientific study of the properties and behavior of matter. Natural science's branch of physical science known as chemistry studies the components that make up matter as well as the compounds made up of atoms, molecules, and ions. It also examines their composition, structure, qualities, behavior, and the changes they go through when they interact with other things. Chemistry is the study of chemicals and the elements and their effects and attributes. According to Odesina (2017), chemistry may be defined as a science that is concerned with the structure of matter and with the forces that hold the structures together. He further noted that chemistry as a science has as its primary objectives as; the determination of nature and properties of non-living matter, which surround us and the preparation of new substances that are scientifically interesting, or generally useful. Chemistry is commonly viewed as the "Central Science" as a mastery of its concepts regarding the structure of matter is prerequisite to the study in all sciences. In essence, chemistry performs the function of gate keeper for the future study of both pure and applied sciences like; medicine, agriculture, pharmacy, engineering and all other fields. Chemistry is one of the science subjects upon which technology break-through is built and is the pivot on which the wheel of science rotates. The position of chemistry in a nation play core role in achieving sustainable development chemical knowledge is necessary to understand issues that threaten the sustainability of our planets (global warming, ozone depletion acid rain formation, among others). Chemistry is also the basis of modern energy supply, agriculture, innovative materials, communication, biotechnology and pharmaceutical.

According to the National Policy on Education in Nigeria, the objectives of teaching chemistry in the secondary school are;

1. To facilitate the transition in the use of scientific concepts and techniques acquired through integrated science and chemistry;
2. Provide fundamental chemistry concepts and principles through effective content selection and sequencing;
3. To demonstrate chemistry's interdependence with other science subjects;
4. To demonstrate chemistry and its relevance to industry, everyday life, hazards and benefits; and
5. To provide students who do not pursue higher education with a solid foundation for other future careers (NPE, 2013)

To achieve these objectives, parents and teacher's variables play a very important role as correlates of student's achievement in Chemistry. The teacher's variables that would be discussed are teacher academic qualification and years of teaching experience while the parent's variable that would be discussed is Parental occupation

Teacher academic qualification is a pre-requisite requirement for meeting the objectives of the chemistry curriculum. It is the most important factor in improving students' achievement in chemistry. Teacher academic qualification refers to academic and professional qualifications that enable a person to become a registered teacher at all levels of education Oyovwi & Ekuevugbe (2022). It also relates to the acquisition of relevant knowledge, skills and competence and creativity needed for quality productive engagement in the teaching profession. According to the Dovrat Committee (2005), teachers' certification status and degree in their field of expertise have a substantial impact on how well their students learn science and mathematics. A fully credentialed instructor with a major-equivalent degree in the subject matter is considered to be well-qualified (Darling-Hammond, 2007). At present, teacher education programme in Nigeria is categorized into three levels on the basis of their training and certificates; Nigeria Certificate in Education

(NCE) which is run for a minimum of three years and maximum of five years; Bachelor Degree in Education (B.Ed, B.Sc. Ed, & B.A. Ed) programme that is run for a minimum of three years and maximum of five years; Post-Graduate Diploma in Education (PGDE) which provides professional training for pre-service and in-service auxiliary teacher; M.Ed., and Ph.D. Certain basic requirements are needed for teacher training before one can gainfully be certified as a qualified teacher. According to Udofot (2010), the country places value on the qualifications of its teachers, and the education they acquire is based on the significant social demands society has on education. prerequisite education requirement for teachers Therefore, it needs to receive top priority. If great chemistry education is to be achieved, teachers must have the necessary training and expertise to educate students how to engage in productive and enjoyable hands-on experiences.

Teachers' years of teaching experience on the other hand simply means the number of years a teacher has been teaching (Zhang, 2008). He further added that it is the duration of time a teacher has been in the teaching profession. According to Zhang (2008), teachers experience has been viewed as one characteristic that is related to teacher quality. The author also viewed teacher experience as an important criterion in selecting teachers, serving as proxy variables for skill level or expertise.

Parental occupation: This refers to a job or a profession that supports the parents to provide for the needs of the home. Parents' occupation affects their income and plays an important role in the standard of living of the family. Parents with low occupational status face more financial pressure and emotional exhaustion, which are associated with low income and self-efficacy (Odoh, 2017). This could lead to parents using unfavourable tactics to get along with their kids, create an unfavourable parent-child relationship, and rob kids of favourable psychological environments that are good for their cognitive growth and reading comprehension skills. The sort of settlement for each person is also influenced by their parents' career. The language, vocabulary, and reading abilities of children who live in failing neighbourhoods are lower. Occupational related income may determine access to learning opportunities and resources which plays a role in learning outcomes. High skilled occupation increases financial resources, reduces poverty and economic hardship (Odoh, 2017). Bellibaş (2016) opined that the occupation of parents also determines the type of school their children attend. Children who are exposed to frequent, in-depth speech have a significant advantage in terms of vocabulary growth and linguistic structure understanding. Low occupational standing or prestige typically denotes hard physical labour, lengthy hours, low pay, and insecure employment chances (with a high likelihood of getting laid off). This may require parents to invest time and effort that might otherwise be used to support their children's academic endeavours.

Akinyele (2011) opine that academic achievement of students in secondary schools has been a subject of concern to many people including parents, administrators, educators, psychologists and counsellors. All people, especially those involved in the main stream of science education, are quite concerned about the poor achievement of students in science, particularly chemistry (Ariyo, 2006). Since all instructional activities carried out at schools are aimed at enhancing students' academic achievement, it seems necessary to conduct research on parents and teacher's variables as correlates of student's achievement in chemistry in Delta North Senatorial District.

Statement of the Problem

Research has showed that the teaching and learning of chemistry has been plagued with by poor academic achievement in External Examinations and it has become a serious

concern to stake holders in the education sector. Various researches had been carried out to investigate the trend on poor performances but none to the best of our knowledge has been done to investigate teachers and parents variables on poor performance. It is not out of place that teachers and parent play vital roles in academic achievement of students. It is against this background therefore, that the statement of problem of this study is what will be the relationship between parents and teacher's variables as correlates of student's achievement in chemistry in Delta North Senatorial District?

Research Questions

The following research questions guided the study:

1. Is there any relationship between teacher's academic qualification and students' achievement in chemistry in Delta North Senatorial District?
2. Is there any relationship between teacher's years of experience and students' achievement in chemistry in Delta North Senatorial District?
3. Is there any relationship between parent's occupation and student achievement in chemistry in Delta North Senatorial District?

Hypothesis

- Ho1 there is no significant relationship between teacher's academic qualification and students' achievement in chemistry in Delta North Senatorial District.
- Ho2 there is no significant relationship between teachers' years of experience and students' achievement in chemistry in Delta North Senatorial District.
- Ho3 there is no significant relationship between parent's occupation and student's achievement in chemistry in Delta North Senatorial District.

Purpose of the Study

The study is on parents and teacher's variables as correlates of student's achievement in chemistry in Delta North Senatorial District. The study seeks specifically to determine;

- If there is a relationship between teacher's academic qualification and students' achievement in chemistry in Delta North Senatorial District.
- If there is a relationship between teachers' years of experience and students' achievement in chemistry in Delta North Senatorial District.
- If there is a relationship between parent's occupation and students achievement in chemistry in Delta North Senatorial District.

Theoretical Framework of the Study

The theory on which this study is anchored is the Banduras Social Learning Theory. Bandura's social learning theory (1977) posits that people learn from one another via observation, imitation and modelling. Social learning theory combines cognitive learning theory (which posits that learning is influenced by psychological factors) and behavioral learning theory (which assumes that learning is based on responses to environmental stimuli. In Bandura's social cognitive theory, environment and cognition are important factors in development. Bandura (1977) explained how parents, peer and teachers influence children by serving as model for behavior. Children watch the diverse behaviors of those around them. The term "models" refers to people who have been observed. Children are surrounded by numerous powerful role models in society, including their parents, the people they see on TV, their friends from their peer group, and their teachers at school. Children observe some of these people and memorize their behaviour, maybe imitating them later. As a child grows, he learns, internalizes, and concretizes the behavioral patterns to which he is exposed. A child is

raised in line with the values of the family. Academic success is frequently impacted by all these behavioral tendencies and training that children pick up from their families.

Methodology

The design of the study was a combination of correlational survey and ex-post facto design. Four research questions and four null hypotheses were raised and formulated to guide the study. The population of the study comprised 24,227 SSII chemistry students in all the public secondary schools in Delta North Senatorial District. The sample size of the study consisted of three hundred and sixty four (364) SS2 chemistry students selected and 24 chemistry teachers from eight (8) public secondary schools in Delta North Senatorial District. The instruments used for data collection were teacher variables questionnaire (TVQ), parent variables questionnaire (PVQ) and students' chemistry second term results in the 2021/2022 session. The data were analyzed using Pearson Product Moment Correlation.

Presentation and Analysis of Results

Research Question One

Is there any relationship between teacher's academic qualification and students' academic achievement in chemistry in Delta North Senatorial District?

Table 1:

Showing the Descriptive Statistics of Relationship between the Teacher's Academic Qualification and Students' Academic Achievement in Chemistry in Delta North Senatorial District

Source of Variation	Mean	SD	N
Students' Achievement	48.939	17.303	342
Teacher Qualification	2.080	0.640	24

Table1 shows the mean achievement of students (\bar{x}) is 48.939, with standard deviation of 17.303, while teachers qualification had mean (\bar{x}) achievement score of 2.080 with standard deviation score of 0.640, where N is for number of respondents. Since, the mean achievement of students is higher than the mean of teacher qualification. Hence, the study shows that a relationship exist between teacher's academic qualification and students' academic achievement in chemistry in delta north senatorial district.

Hypothesis One

There is no significant relationship between teacher's academic qualification and students' academic achievement in chemistry in Delta North Senatorial District.

Table 2:

Correlation of significant relationship between the Teacher’s Academic Qualification and Students’ Academic Achievement in Chemistry in Delta North Senatorial District

Source of Variation	Mean	SD	N	R	P-Value	Decision
Students’ Achievement	48.939	17.303	342	0.180	0.04	Ho1 Rejected
Teacher Qualification	2.080	0.640	24			

Table 2 shows the result of the correlation between student’s achievement in chemistry and teachers qualification. The results showed that there is a significant relationship between the teachers qualification and students’ achievement in chemistry with a p-value $(0.04) < (0.05)$. Hence, the null hypothesis is rejected. Therefore, there is a significant difference between the teacher’s academic qualification and students’ academic achievement in chemistry in Delta North Senatorial District.

Research Question Two

Is there any relationship between teachers’ years of experience and students’ academic achievement in chemistry in Delta North Senatorial District?

Table 3:

Showing the Descriptive Statistics of Relationship between the Teacher’s Years of Experience and Students’ Academic Achievement in Chemistry in Delta North Senatorial District

Source of Variation	Mean	SD	N
Students’ Academic Achievement	48.938	17.3027	342
Teachers’ Years of Experience	2.4800	0.65320	24

Table 3 shows the mean achievement of student’s academic achievement (\bar{x}) is 48.938, with standard deviation of 17.3027, while teachers years of experience had mean (\bar{x}) achievement score of 2.48 with standard deviation score of 0.653, where N is for number of respondent. Since, the mean achievement of student’s academic achievement is higher than the mean of teacher’s years of experience. The study shows that there’s a relationship between teachers years of teaching experience and student’s achievement in chemistry in delta north senatorial district.

Hypothesis Two

There is no significant relationship between teachers’ years of experience and students’ academic achievement in chemistry in delta north senatorial district.

Table 4:

Correlation of Significant Relationship between the Teacher’s Years of Experience and Students’ Academic Achievement in Chemistry in Delta North Senatorial District

Source of Variation	Mean	SD	N	R	P-Value	Decision
Students’ Academic Achievement	48.938	17.3027	342	0.277	0.180	Ho3 Accepted
Teachers’ Years of Experience	2.4800	0.65320	24			

Table 4 showed the result of the correlation between student’s achievement in chemistry and teachers year of experience. The results showed a significant relationship between the teachers years of experience and students’ achievement in chemistry with a p-value $(0.18) > (0.05)$. Hence, the null hypothesis is accepted. Therefore, there is no significant relationship between teachers’ years of experience and students’ achievement in chemistry in delta north senatorial district.

Research Question Three

Is there any relationship between parent’s occupation and student achievement in chemistry in delta north senatorial district?

Table 5:

Showing the Descriptive Statistics of Relationship between Parent’s Occupation and Student Achievement in Chemistry in Delta North Senatorial District

Source of Variation	Mean	SD	N
Students’ Achievement	48.938	17.3027	342
Parent’s Occupation	1.9123	0.86876	342

Table 5 shows the mean achievement of student’s academic achievement (\bar{x}) is 48.938, with standard deviation of 17.3027, while parent’s occupation had mean (\bar{x}) achievement score of 1.9123 with standard deviation score of 0.86876, where N is for number of respondents. Since, the mean achievement of student’s academic achievement is higher than the mean of parent’s occupation. The study shows that a relationship exist between parent’s occupation and students’ achievement in chemistry in delta north senatorial district

Hypothesis Three

There is no significant relationship between parent’s occupation and student achievement in chemistry in Delta North Senatorial District.

Table 6:

Correlation of Significant Relationship between the Parent’s Occupation and Students’ Achievement in Chemistry in Delta North Senatorial District

Source of Variation	Mean	SD	N	R	P-Value	Decision
Students’ Achievement	48.938	17.3027	342	0.034	0.5	Ho5 Accepted
Parent’s Occupation	1.9123	0.86876	342			

Table 6 shows the result of the correlation between parent’s occupation and student’s achievement in chemistry. The study result shows a significant relationship between parent’s occupation and student’s achievement in chemistry with a p-value (0.5) >(0.05). Hence, the null hypothesis of no significant relationship is accepted. Therefore, there is no significant relationship between parent’s occupation and student achievement in chemistry in Delta North Senatorial District.

Discussion of Findings

From the data collected, presented and analyzed, the following findings emerged.

There is a significant relationship between the teacher’s academic qualification and students’ academic achievement in chemistry in Delta North Senatorial District. It is a clear fact that students' that are been taught by teacher with high academic qualification tend to have higher academic achievement. Hence, teachers’ academic qualification has positive effect on chemistry students' achievement. This finding is in agreement with Oyovwi & Ekuevugbe (2022) and Gold Haber and Brewer (2000) which reported a positive relationship between teachers’ academic qualification and student’s achievement. Teachers who don’t have both the academic and professional teaching would undoubtedly have a negative influence on the teaching and learning of his or her subject. Adeniji (2004) supported these findings to a great extent that teachers’ qualification has potent relationship with students’ achievements.

There is a significant relationship between teacher’s years of experiences and students’ achievement in chemistry in Delta North Senatorial District. It is a clear fact that students' that are been taught by teacher with years of experience tend to have higher academic achievement since experienced teachers have in-depth knowledge of subject matters. This study is in agreement with Steve (2021) who ascertain in a study carried out that students’ academic achievement increases when taught by teachers with experiences. The finding is against Bolarinwa and Kolawole (2020) also ascertain that there was significant relationship between teachers’ teaching experience and students’ achievement. Hence, teachers’ years of experience has positive effect on chemistry students' achievement

There is a significant relationship between parents’ occupation and students’ achievement in chemistry in Delta North Senatorial District. Occupational related income may determine access to learning opportunities and resources which plays a role in learning outcomes. High skilled occupation increases financial resources, reduces poverty and economic hardship, parents with high income can send their children to good school, buy textbooks for their children and other educational related materials that will help enhance their children learning or academic achievement. Saifullahi, (2011) and Memo (2010) pointed out that parents’ occupation significantly influences students’ achievement.

Conclusion

Based on the findings of this study, it is concluded that, there was a significant relationship between teacher and parent variables on students' academic achievement in chemistry.

Recommendations

Based on the research findings and conclusions, it is recommended as follows;

1. Government should employ teachers with high academic qualification and good years of experience to teach chemistry in public secondary schools.
2. In-service training should be organized by government for teachers to keep them abreast of current innovations in education, through this means teachers can get professional certificates and get higher qualification.
3. Government should improve the socio-economy situation in the country to boost the financial status of parents.

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