UNIVERSITY OF EDUCATION, WINNEBA

FACULTY OF SCIENCE EDUCATION

INFLUENCE OF TEACHER CHARACTERISTICS AND PARENTAL FACTORS ON STUDENTS' ACADEMIC ACHIEVEMENTS IN INTEGRATED SCIENCE IN KETA SENIOR HIGH TECHNICAL SCHOOL

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DECLARATION

Candidate's Declaration

I hereby declare that this thesis work, with the exception of quotations and references contained in published works which have all been identified and acknowledged is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Name: Sampson Kwaku Asare

Candidate's Signature ……..… Date……..

Supervisors' Declaration

I hereby declare that the preparation and presentation of this thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Education Winneba.

Name: Dr Charles Koomson

Supervisor's Signature…… Date……..

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DEDICATION

This work is dedicated to my lovely family and friends who are very instrumental in my life.

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ABSTRACT

This research work was carried out to investigate influence of teacher characteristics and parental factors on students' academic achievements in integrated science in Keta Senior High Technical School. Two different sets of questionnaires were drafted, together with document analysis conducted to elicit response from participants based on two concepts; (a) concept of teacher characteristics, with twenty (20) form-2 integrated science teachers, and (b) concept of parental factors, consisting two hundred (200) second year day students. The study adopted a descriptive survey research design using mixed method approach. The data collected were analyzed using mean, standard deviation, variance and independent sample t-test at P-value of 0.05 level of significance. The results of the questionnaire, and document analysis were transcribed and analyzed thematically. Descriptive statistics and independent sample t-test were used in analysing the data collected. A total of four (4) null hypotheses were tested with two (2) hypotheses from each concept. The results showed that majority of the student-respondents have A1 and B2, which is above average, in the end of term 2 examination results reviewed. The results revealed that majority of the integrated science teachers in Keta Senior High Technical School have both bachelor's degree and professional's qualification, and so can demystify the concepts in integrated science by applying the various pedagogical methods of teaching and learning activities. It was seen that there is no significance difference between teacher academic qualification and students' academic achievements in integrated science. The results showed that most of the integrated science teachers are experienced, exhibited attributes of a quality teacher in their area of study, thereby making them to apply a lot of effective teaching strategies to improve the students' academic performances. It was seen that there is no significance difference between teacher experience and student's academic performance in integrated science. The results revealed that most parents of the student-respondents do not have access to higher level of education, therefore, they may not be able to influence their wards academic performance by monitoring, supervising and facilitating their learning process both at home and in school. It was seen that there is no significance difference between parents' educational level and students' academic performances. The results showed that most parents were involved in the academic affairs of their wards; as they attend PTA meetings regularly, visit the class teachers regularly, and asked respondents about happenings in school. It was seen that there is no significance difference between parental involvement (guidance) and students' academic performances.

CHAPTER ONE

INTRODUCTION

1.0 Overview

This chapter include the background to the study, statement of the problem, purpose of the study, objectives of the study, research questions, research hypothesis, significance of the study, delimitation of the study, limitation of the study, expected outcomes, definition of terms and the organization of the study

1.1 Background to the Study

Teacher characteristics and parental factors play crucial roles in academic achievement of learners, as the teacher is ultimately responsible for translating policy into action and principles based on practice during interaction with the students (Afe, 2001). Teachers stand in the interface of the transmission of knowledge, values and skills in the learning process. If the teacher is ineffective, students under the teacher's tutelage will achieve inadequate progress academically (Kimani, Kara & Njagi, 2013), and this is regardless of how similar or different the students are in terms of individual potential in academic achievement. Teacher's administration of students' assignments is a very important source of influence of teachers on their students. The teacher must score classroom exercises (test, quizzes, questioning), and take-home assignments which are forms of assessment for learning and assessment as learning (formative assessment) and final examinations which serve as assessment of learning (summative assessment) to evaluate the progress of students in achieving specified instructional objectives and provide them with appropriate feedback for effective teaching and learning.

Wirth and Perkins (2013), indicates that a teacher's attitude contributes significantly to student attention in classrooms whereas Adesoji and Olatunbosun (2008), illustrated

that student attitude was related to teacher characteristics. This therefore meant that a teacher's attitude directly affects students' attitudes. On teacher personality, Adu and Olatundun (2007), contended that teachers' characteristics are strong determinants of students' performances in Senior High Schools.

A good teacher should understand the central concepts and have an understanding of the subject that he teaches and be able to demonstrate vast knowledge of the subject matter. Knowledge enables teachers to approach head-on the topics at hand and bring their talents to bear.

However, Etsy (2005), study in Ghana found that the teacher factors that significantly contributed to low academic achievement were incidences of lateness to school, incidences of absenteeism, and inability to complete the syllabi. Oredein and Oloyede (2007), concluded that teacher management of homework and assignments given to students have an impact on student achievement especially when it is well explained, motivational, corrected and reviewed during class time and used as an occasion for feedback to students.

Few relationships in life are as significant and enduring as the relationship between children and their parents or the adults who raised them. Since families are the first social unit in which children learn and develop, good parenting can take different forms and be shaped by various social and cultural forces, but it invariably involves providing children with the support, care, love, guidance and protection that set the conditions for healthy physical, mental and social development. It is not surprising, then, that interactions with parents have consistently been shown to influence students' achievements, expectations, attitudes and psychological health (Kaplan, 2013). The activities parents and children do together, parents' expectations for their children's

future, and the behaviours and attitudes parents' model for their children are all associated with children's psychological well-being (Shumow & Lomax, 2002).

In other families, the socialization of achievement operates in such a way that children have difficulty realizing their full potential, so they fall behind in their school work and develop poor attitudes, low expectancies, and maladaptive achievement behaviours.

Researchers have shown that there are many factors that affect academic achievement of students. According to the Wisconsin Education Association Council (WEAC, 2005), high-achieving students are likely to have the following characteristics: positive feelings about their school experiences; attribute their success in high school to such things as hard work, self-discipline, organization, ability, and high motivation; tend to watch relatively little television during the school week; tend to associate with students who also were successful in school; and avid readers.

According to Daniyal, Nawaz, Aleem and Hassan (2011), factors such as income, mother's and father's education, family size, regularity of teachers, interest created by the teachers in the subject and interest of the students in the co-curricular activities were found to play a major role in determining academic attainment of students. In addition, Adeyemi and Adeyemi (2014), stressed the importance of students' interest, study habits, students' perceptions of course, and peer influence as predictors of students' academic achievement.

Also, in reviewing the relationship between parental involvement and secondary school students' academic achievements; Shute, Hansen, Underwood, and Razzouk (2011), revealed correlation amidst communication between children and parents about school activities and plans, high expectations and inspirations from parents, methods of

parenting and academic achievements. Hence, this study seeks to explore the influence of teacher characteristics and parental factors on students' academic achievements in integrated science in Keta Senior High Technical School.

1.2 Statement of the Problem

As an integrated science teacher for the past 12 years in Keta Senior High Technical School, the researcher monitored the academic performance of most students so as to ascertain the impact both teachers and parents have on their academic achievements. Despite the significant role of teachers and parents; in shaping the academic outcomes of students, inspire dreams of students, push the limits of human potential, there is a lack of comprehensive understanding regarding the specific teacher characteristics and parental factors that significantly influence students' academic achievements. In terms of their combined effects on students' academic achievements, the interaction of teacher characteristics including experience, qualification, and teaching methods, as well as parental engagement, socioeconomic position, and support, hasn't been thoroughly studied in the past.

Also, the persistent decline in academic performance and prevalent rise in examination mal-practices especially in integrated science among the students caused by absenteeism and inability to complete the syllabus on time on the part of the teachers, have become a great concern to the relevant stakeholders. The economic hardships and economic activities of most parents have prevented them from providing their children's basic and social/emotional needs, whiles others too have ignored their role in the education of their children, which create problems for day students arising from a lot of work at home. The above-mentioned factors have influence on students' academic achievements, as indicated by Reeves (2009).

There is a research gap in determining the most important teacher and parental factors that influence students' educational results in a favourable or negative way, which makes it difficult to establish focused interventions and policies aimed at raising students' success levels. In order to develop evidence-based methods and tactics that can improve the overall learning experience and academic performance of students, the researcher deemed it necessary to examine the influence teacher characteristics and parental factors have on the academic achievement of day students in Keta Senior High Technical School, since the day students have direct contact with teachers and parents in their academic lives.

1.3 Purpose of the Study

The purpose of the study is to investigate the influence of teacher characteristics and parental factors on students' academic achievements in integrated science in Keta Senior High Technical School and to make necessary recommendations to the relevant educational stakeholders.

1.4 Objectives of the Study

The objectives are:

1. To investigate how teacher academic qualification affect the academic achievements of students in integrated science.
2. To find out the relationship between teacher experience and the academic performances of students in integrated science.
3. To determine the extent at which parents' educational level affect students' academic performances in Keta Senior High Technical School.
4. To find out the extent at which parental involvement (guidance) affect the academic performances of students in Keta Senior High Technical School.

1.5 Research Questions

This study will be guided by the following research questions:

1. To what extent do teacher academic qualification affect the academic achievements of students in integrated science?
2. What is the relationship between teacher experience and the academic performances of students in integrated science?
3. To what extent do parents' educational level affect students' academic performances in Keta Senior High Technical School?
4. To what extent do parental involvement (guidance) affect the academic performances of students in Keta Senior High Technical School?

1.6 Research Hypothesis

The study would be guided by the following null hypotheses:

- $H_0$1. There is no significant difference between teacher academic qualification and the academic achievements of students in integrated science.
- $H_0$2. There is no significant difference between teacher experience and the academic performances of students in integrated science.
- $H_0$3. There is no significant difference between parents' educational level and students' academic performances in Keta Senior High Technical School.
- $H_0$4. There is no significant difference between parental involvement (guidance) and the academic performances of students in Keta Senior High Technical School.

1.7 Significance of the Study

This study seeks to look intensively on the effect of teacher characteristics and parental factors on academic achievements of students in integrated science, which will serve as a guideline to stakeholders of Keta Senior High Technical School.

1.8 Delimitation of the Study

The study was delimited to only integrated science teachers and selected second year day students of Keta Senior High Technical School.

Keta Senior High Technical School was chosen for the study due to the proximity of the researcher, convenience, resource and the researcher's interest.

1.9 Limitation of the Study

This research was conducted in Keta Senior High Technical School. Some teachers and students were reluctant to take part in the filling of the questionnaire. The results of this study cannot be generalised to all second cycle schools in Ghana. However, the results of the study can be generalised to students that have similar characteristics in the same settings.

1.10 Expected Outcome

It is expected that at the end of the results analysis, it would be found that teacher characteristics such as teacher academic qualification and teacher experience have influence on students' academic achievements, since these characteristics are the traditional determinant of teacher recruitment and compensation.

It will also be found that parental factors such as parents' educational level and parental involvement (guidance) have positive influence on students' academic achievement.

1.11 Definition of Terms

- **Teacher academic qualification**: The minimum academic qualifications necessary to teach at a specific level of education in a given country. It relates to the acquisition of relevant knowledge, skills and competence, and creativity needed for quality productive engagement.
- **Teacher experience:** It is a practical knowledge which combines developed skills, exposure, and training that helps an individual to do his/her current work more effectively and prepares him/her for a teaching position.
- **Perceived teacher mastery goal orientation:** Ability to focus students' attention on achievement based on intrapersonal standards of learning.
- **Parents' educational level**: It reflects the highest level of education attained by any parent residing in the same household as the child.
- **Family size**: It is the number of persons or individuals in the family.
- **Socio-economic status of parents**: The level of access to and control over economic and social resources relative to that of other families, such as parents' income, employment status, and level of education.
- **Parental involvement (guidance)**: Providing basic necessities that will enhance the learning process of a child by the parent, and showing the child how to plan, monitor, and be aware of the learning process.
- **Independent variables**: The variable that can be manipulated to cause a change or effect on another variable (dependent).
- **Dependent variables**: the variable that may change due to the manipulation caused by the independent variables.

1.12 Organization of the study

This research study was organised into five chapters. The beginning chapter contains the background to the study, statement of the problem, purpose of the study, objectives of the study, research questions, research hypothesis, significance of the study, delimitation of the study, limitation of the study, expected outcomes, definition of terms and the organization of the study conclude this chapter. Chapter two looks at literature review which focuses on concept of teacher characteristics, teacher academic qualification, teacher experience, perceived teacher mastery goal orientation, concept of parental factors, parents' educational level, family size and socio-economic status of parents, parental involvement (guidance) and conceptual framework. Chapter three looks at Research Methodology which covers research design, population, sample and sampling procedure, research instrument, data collection procedure, validity of the research instrument, reliability of the research instrument, ethical issues, types of data and data analysis. Chapter four involves results and description of findings which was based on questionnaire return rate, demographic characteristics analysis and discussion. Chapter five provides a summary of findings, conclusions and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.0 Overview

This chapter focuses on the available literature on this study. It is grouped under the following headings:

a. Concept of teacher characteristics
    i. Teacher academic qualification
    ii. Teacher experience
    iii. Perceived teacher mastery goal orientation
b. Concept of parental factors
    i. Parents' educational level
    ii. Family size and socio-economic status of parents
    iii. Parental involvement (guidance)

2.1 Concept of Teacher Characteristics

Teachers have responsibility for transmitting knowledge, skills and values to students. It is therefore hardly surprising that teachers are regarded as being particularly important to the quality and equity of an education system (Rivkin, Hanushek & Kain, 2005; Hattie, 2009). Teacher characteristics can be referred to as qualities that can be measured with tests or derived from their academic or professional records e.g., mental ability, age, gender, certification status, educational background, teaching experience etc.

According to Lezotte (2001), a safe and orderly school is defined as a school climate and culture characterized by reasonable expectations for behaviour, consistent and fair application of rules and regulations, caring, responsive relationships among adults and

students. Personalized learning environments are created to increase positive relationships among students and between students and their teachers. Students feel that they belong in the school community, and children are valued and honoured; their heritage and background are viewed as "assets," not deficiencies.

2.1.1 Teacher Academic Qualification

According to Goldhaber and Brewer (2007), having qualified teachers can be one of the factors that can enhance students' achievements. They added that teaching is a profession that requires specialized skills and certification as well as degrees that standardize the specialization of teachers.

Akinsolu (2010), asserts that availability of qualified teachers determined the performance of students in schools. Teacher qualification and preparation concerns the inputs that teachers bring to the school, including postsecondary education, certification, prior professional work experiences, subject major, professional development, demographics and aptitude. Teaching practices involve in the actual quality of teaching that teachers exhibit in their classroom. Some researchers classified teaching practice as teaching quality, teacher preparation and qualification as teacher quality (Kaplan & Owings, 2001). Teaching practices or teaching quality refer to what teachers do to promote student learning, including creating a positive climate, selecting appropriate instructional goals and assessments, using the curriculum effectively and know how to use various instructional methods to teach to high standards. While teacher preparedness and qualifications may not directly address the actual quality of teaching and student learning, they are necessary prerequisites of effective teaching (Strong, 2002). According to Strong (2002), a growing body of research concerning teacher quality has reinforced the notion that both teacher preparation and qualification,

and teaching practice matter in teaching, in terms of student achievement. Fajonyomi (2007), emphasized that the success or failure of any educational programme rests majorly on the availability of qualified (professional) teachers.

Goldhaber and Brewer (2000), conducted the study which examined the correlation between teacher's certification and student's outcomes where they made a focus on the relationship between certification content area and students' test scores, which they found that lesson delivery done by a teacher having any certification in education, scored significantly higher than the students who were taught by teacher with no certification or in another area of specialization.

It has been evident that in many countries, teacher qualifications that are considered to be related to student learning have become desirable targets of teacher education reform. Some of these reforms call for the professionalization of teacher education by making it longer, upgrading it to graduate programs, and regulating it through mechanisms of licensure, certification, and promotion aligned with standards (Darling-Hammond, Berry & Thorenson, 2001; Darling-Hammond, Chung & Freelow, 2002). Darling – Hammond (2000), defines well qualified teacher as one who was fully certified and held the equivalent of a major in the field being taught. Although the formal qualification of teachers is an important indicator for their knowledge and competence in teaching, it has only limited utility in analyzing how well-prepared teachers are for what they have to teach in schools. More detailed knowledge of the courses they have taken during their training needs to be compared to the actual content and skills required to teach the high school's curriculum. Ruthland and Bremer (2002), refer to teacher certification in two ways; traditional and alternative qualification routes. Traditional certification is when an individual completes an undergraduate degree or

post graduate program in education. Alternative routes of certification are based on coursework in pedagogy and subject area without a degree in education. Hardy and Smith (2006), cite short term activities such as mentoring, peer evaluations and workshops as ways other than formal qualifications for improving teaching.

Huang and Moon (2009), documented that teacher qualification accounted for approximately 40 to 60 percent of the variance in average of students' achievements in assessment. This characteristic is related to the subject-matter knowledge teachers acquire during their formal studies and preservice teacher education courses.

2.1.2 Teacher experience

Experienced teachers have a richer background of experience to draw from and can contribute insight and ideas to the course of teaching and learning, they are open to corrections and are less dictatorial in classroom. A study conducted by Provasnik and Young (2003), found a positive relationship between teacher experience and student outcomes. Teachers' attendance of in-service training is one of the indicators of experience, and teachers' motives to attend in-service training can be in manifold.

According to Ogundare (2002), experienced and qualified teachers have great importance to a school. He argues that experience and higher qualification improves teaching skills while students learn better at the hands of teachers who have taught them continuously over a period of years. Research conducted by Jacob (2012), suggested that teachers' years of experience influence both teachers' effectiveness and students' achievements. He contended that the average teacher is at his or her worst during the first year in the classroom, gets better in the second year, a little better in the third year, and then never gets any better after that. Effective teachers expertly manage and organize the classroom and expect their students to contribute in a positive and

productive manner. Hattie (2003), labelled effective teachers as expert teachers. He contended that expert teachers have significant impacts on students, and identified five dimensions that set apart expert teachers, they can:

- Identify essential representations of their subject
- Guide learning through classroom interactions
- Monitor learning and provide feedback
- Attend to student affective attributes
- Influence students' outcomes

Ajayi (2009), proposed that the professional qualities of a teacher are linked to the following:

- Mastery of the subject matter
- Sense of organisation
- Ability to clarify ideas
- Ability to motivate students
- Good imagination
- Ability to involve the students in meaningful activities throughout the period of teaching
- Management of the details of learning
- Frequent monitoring of students' progress through tests, formal and informal, written and oral quizzes

Daso (2013) said that, quality teachers have greater influence on student's achievement than any other school-based factor and further suggested that how every nation educates

its teachers will largely determine the degree to which it succeeds in the 21st century knowledge driven economy.

According to Juchniewicz (2008), teaching is considered demanding and challenging social activity in our society with the ultimate goal of training students to acquire the ability, knowledge, social values and skills in order to apply and integrate them in the community. It is generally agreed that good teaching involves good communication between the teacher and students and also among students. The best productivity in a classroom comes from effective co-operation between the teacher and the students, and communication competencies such as voice, body language and words such as speaking, singing and sometimes tone of voice, sign language, paralanguage, touch, eye contact. They include communication skills in intrapersonal and interpersonal processing, listening, observing, speaking, questioning, analysing, and evaluating.

Darling-Hammond (2000), reports that, measures of teacher preparation and certification are by far the strongest correlation of student achievement in reading and mathematics, both before and after controlling for student poverty and language status. She contended that attributes of quality teacher are more strongly related to student achievement than other kinds of educational investments.

Slavin (2003), emphasized that a good quality teacher must know his/her subject matter very well and how to motivate children. He stressed that a good quality teacher must be well versed in pedagogical skills, content knowledge, use class time effectively, and respond to individual differences.

Rivers and Sanders (2002), suggested that teacher's effectiveness increases dramatically each year during the first ten years of teaching. In the extreme case, Clotfelter, Ladd

and Vigdor (2007), found evidence of growing teacher effectiveness out of 20 or more years in their analyses of North Carolina teacher data, although more than half of the gains in teacher effectiveness occurred during the first few years of teaching.

2.1.3 Perceived Teacher Mastery Goal Orientation

Mastery goal oriented teachers believed that success is the result of effort and use of appropriate strategies. Such teachers impart in their students how to strive to develop their understanding and competence at a task by exerting a high level of effort.

In mastery oriented classrooms, students focus more on learning, development, improvement, and understanding; they use more effective learning strategies and prefer more challenging tasks, demonstrate less disruptive behaviours while in performance oriented classrooms, students focus more on doing better than others, demonstrate behaviours leading to recognition, praise, and higher confidence; they use less effective learning strategies, less effort, and prefer easy tasks and demonstrate more disruptive behaviours (Ramnarain, 2013; Skaalvik & Skaalvik, 2013).

Making the classroom a safe place helped students perceive others in the class as resources and supporters rather than competitors, and also helped perceive the instructor as their partner in learning, and not just their evaluator. Therefore, teachers' mastery-oriented behaviours such as encouraging academic interest in classroom materials, being flexible for failures and mistakes, and guiding students for focusing more on their own performance instead of others' performances improve students' learning (Fryer & Elliot, 2008). When we examine the characteristics of mastery-oriented learners, one quality that seems to stand out is their willingness to take risks and learn from their mistakes. They appear to be confident that nothing bad will happen to them when they fail. They feel that their classroom is a safe place, where they are

supported when they stumble and assisted when they try. So, when students adopt mastery-oriented goals, they engage in more effective learning strategies, such as learning from their mistakes, changing strategies that don't work, and seeking help when necessary. They are more intrinsically motivated; the gold standard of motivation.

Performance goals lead to a focus on the outcome rather than the process of learning, such as achieving success by any means, avoiding the appearance of incompetence, and being more susceptible to extrinsic sources of motivation (Elliott & Dweck, 2005; Harackiewicz, Barron, Pintrich, Elliott, & Thrash, 2002).

The findings of a study conducted in Taiwanese junior high school classrooms showed that mastery oriented students participate and resist more in learning activities, demonstrate more curiosity, and exhibit less anxiety and boredom in class activities (Shih, 2008), whiles previous research conducted in the United States and Norway also revealed that middle school students reporting mastery goal orientation and teacher support demonstrated less self-handicapping disruptive behaviours and anxiety, greater self-concept, seek more help and avoid cheating behaviours in tests (Patrick, Tunner, Meyer & Midgley, 2003; Skaalvik & Skaalvik, 2013). A research conducted by Moreira, Diaz, Vaz and Vaz (2013), on perceived teacher support and perceived teacher mastery goal orientation were reported to be significantly positively related to students' academic performances in Portuguese secondary school classrooms.

In creating quality teaching and learning results which serves as successful factors that are essential consequences on students learning, Maina (2010), suggested that school resources should be maintained and used so as to promote the academic performance in such a way that school textbooks should be always updated, learning materials, hand-outs and technology should be available in the school setting and used by qualified

teachers effectively and efficiently in order to develop the school outcome, known as students' academic performances.

2.2 Concept of Parental Factors

According to Okantey (2008), the family is the main factor influencing the lives and outcomes of students. A successful education of a child during the schooling periods depends greatly on the kind of environment the child is exposed to, the experiences the child had and most of all, the kind of assistance the child gets from his/her parents. What an individual becomes later in life depends largely on the acceptance or welcoming, as well as the attention that the child or the individual receives from the parents, and the environment in which the child grows. This could make or mar the academic performance or achievement of such an individual throughout the stages/levels of education.

Osayin (2005), stated that a child's intellectual or academic achievement is dependent on the active engagement the child is involved in the environment. As the child grows, his parents, siblings, peers, and other members of his immediate environment have a great influence on him. They help the child to develop or form attitude, beliefs and habits. An individual is expected to make his or her contributions towards the children's development in any given society, but whatever societal expectations are, there is need for a strong and functional support as well as motivation from the home, since it seems that the role of parents in the education of their children have been ignored. The family role with particular reference to parental factors in the child's education has long been recognized in writings. The home environment constitutes the cultural matrix, being the primary platform, on which learning not only begins but nurtured, encouraged and developed, which later transforms to the academic performance of the students. Taylor,

Sherman, Kim, Jarcho, Takagi and Dunagan (2004), saw the home as an essential variable for all-round development and achievement of a student. The family i.e., the parents, normally provide a child with his first social experience. The function of the home in education is very emphatic because it lays the foundation such as moral, spiritual and intellectual sustainability upon which the child is to build later in life, and so where the family fails, it reflects on the society in general including the academic performance of the child.

According to Lezotte (2001), family and community involvement is a general term used to describe a myriad of activities, projects, and programs that bring parents, businesses, and other stakeholders together to support student learning in schools. Families and other adults can be involved in the education of young people through a variety of activities that demonstrate the importance of education and show support and encouragement of students learning. These are legitimate approaches for involvement and do not necessarily require adults spending time at the school site.

2.2.1 Parents' Educational Level

Research carried out by Becker and Park (2011), asserts that parents' academic interaction propels the ways in which parents influence secondary school students' academic achievement by shaping students' skills, behaviours and attitudes towards school. Highly educated parents tend to have a more stimulating learning environment. Karue and Amukowa (2013), affirms that a parent, being a stakeholder in education sector, influences student's performance in several ways such as financial provision, discipline, provision of learning time to their children, leisure activities, family culture, monitoring of assignments, and involvement in school's activities among others.

It is worth noting that day secondary school's students have very little time for self-study, therefore this translates to home environment study. Those parents who have an average or excellent academic know-how help their children better compared to the illiterate parents. Annette Lareau (2003), found the idea of concerted cultivation, where middle class parents take an active role in their children's education and development by using controlled organized activities and fostering a sense of entitlement through encouraged discussion. Lareau argues that families with lower income do not participate in this movement, causing their children to have a sense of constraint. A division in education attainment is thus borne out of these two differences in child rear.

Parents who are educated raise children to have healthy self-perceptions when it comes to their abilities, engage them in intellectual activities that help them develop a healthy attitude about learning and generally have children with fewer behavioural problems that may hinder their learning experiences. According to Mattingly, Prislin, McKenzie, Rodriquez and Kayzar (2002), parents with higher education levels have stronger confidence in their child's academic abilities, and they also have higher expectations of their child. They expect that their child will get good grades, behave well in school and attend college. These high expectations motivate their child to do well. The confidence they have in their child enable the child to build his own confidence in his academic abilities, hence succeed in life. A research conducted by Larzelere, Morris and Harrist (2013), suggests that parents with higher levels of education are more likely to believe strongly in their abilities to help their children learn.

Beller (2008), points out that there is a strong intergenerational correlation in education. The quantity and quality of time devoted by parents to their children is positively related to the parents' education status. Students with families where parents have less

education tend to systematically perform worse than students whose parents have more education (Mensah, 2013). According to Cooter (2006), in families where parents experience difficulties in reading and writing, there is a danger that low literacy is passed on to the next generation.

Okumu, Nakajjo and Isoke (2008), in a study of socio-economic determinants of second cycle schools, found that high academic attainment of a mother and father significantly reduces chances of second cycle school dropout for students in rural and urban areas. For a mother, this phenomenon could be attributed to the fact that educated mothers reduce the time spent doing household chores while increasing the time spent with their children than their uneducated counterparts.

The educational levels, as well as income of parents, are interconnected; this is because educated parents, by virtue of their educational background, possess the potential for increased income. Thus, educated parents have the capacity to build bridges out of poverty and benefit from better quality of life (Okantey, 2008). Parental education which leads to good income empowers parents to give their children a solid foundation for school and life success and enables them to build up strong partnerships between parents and schools in order to sustain achievement standards (Okantey, 2008). It has been put forward that those parents of high socio-economic status have more positive attitudes towards their children's schooling and have high expectations for their children since they have the economic empowerment to buy the advantages that money can buy.

2.2.2 Family Size and Socio-Economic Status of Parents

Rouse and Barrows (2006), indicated that the smaller a family structure is, the more success is recorded by the children with regards to the academic pursuit. The reason for

this is that more concentration is given by parents to fewer children than the families where the children are many. Lacovou (2001), stated that attention given to children by parents' decline as the number of siblings increases, and later born children perform less well than earlier born siblings.

According to Chenz and Liu (2014), family size has a measurable effect on academic outcomes. They further explained that a family's overall mental maturity level, undivided resources, as well as heightened parental responsiveness and care will all assist children in small-size families in their schooling. The decreasing benefits of family resources on academic performance are rather experienced by children of large family-sizes (Chenz & Liu, 2014).

Drummond and Stipek (2004), suggest that low-income parents' responsibilities were limited to meeting children's basic and social/emotional needs, such as providing clothing, emotional support and socializing manners. So, these parents' short-sightedness towards their responsibilities in the educational processes of their children and scarcity of fund to intensity, such processes could be a challenge to their children's success.

It is believed that low Social Economic Status (SES) negatively affects academic achievement because low SES prevents access to vital resources and creates additional stress at home (Eamon 2005; Jeynes 2002). The economic hardships that are caused by low SES led to disruptions in parenting, an increasing amount of family conflicts, and an increased likelihood of depression in parents and single-parent households (Eamon, 2005). For these reasons SES is closely tied to home environment, and one could argue that SES dictates the quality of home life for children.

It is believed that children from high and middle economic status parents are better exposed to a learning environment at home because of provision and availability of extra learning facilities. According to Thompson and Fleming (2003), students who use computer both at home and at school achieved a significantly higher science score than those who only used computer at school. Children from low socio-economic status parents do not have access to extra learning facilities; hence, the opportunity to get to the top of their educational ladder may not be easy.

According to a study conducted by Okwan (2014), children of parents who belong to the "skilled" type of occupation such as teaching, nursing, banking and the likes proved to perform better academically than their peers whose parents' occupations were "unskilled" such as petty trading, subsistent farming and day-labourers at building sites, wood and cocoa loading sites. Thus, students whose parents are in good formal employment exhibit higher academic attainments than those whose parents practice nomadic, peasantry or are unemployed. Graetz (2006), opined that those parents in unskilled occupations earn lower incomes and often have to work longer hours to earn more for their families, therefore, Reeves (2009), asserts that, the economic activities of parents may create problems for day students arising from a lot of work at home.

2.2.3 Parental Involvement (Guidance)

Supportive parents keep check and balance on their children and provide a guiding mechanism for their academic matters. It is closely associated with financial, emotional and educational support provided by parents and other family members at home.

Parental involvement could be in two forms, that is home based and school based. Home-based involvement is the role parents play in creating a home environment that supports education (Hill, 2009). Yang and Zhou (2008), reported that student

achievement is greatly influenced by the home environment. Having a space to work and all the materials needed for working at home is beneficial for student achievement (Hill, 2009). Having a well-lit space to work with minimal distractions helps children concentrate on the task at hand. In addition to materials and workspace, parents of high-achieving students stayed involved in their student's education by providing homework assistance (Cho & Campbell, 2011; Echaune, Ndiku, & Sang, 2015).

School-based involvement according to Hill (2009), is the role the parent takes in working at the school and with school officials on behalf of the child. School-based parental involvement can be less student-centered depending on the needs of the school and teacher, which often include making copies, running parties, managing Parent Teacher Organization (PTO) events, or helping students in need (Hill, 2009). Furthermore, parents can also be involved at the school by attending parent teacher conferences. When parents attend meetings with the teacher or school administration regarding the child's behaviour or academic achievement, student performance is improved (Chaudhry, Khaliq, Agha & Hassan, 2015).

Juma (2016), reported a very strong positive correlation between parental involvement in education and students' academic performances. Epstein, Sanders, Simon and Salinas (2002), discussed parental involvement as an educational tool needed to achieve academic success. Oslen and Fuller (2010), stated that children consistently completing their homework is a benefit children gain from parental involvement in their education. However, not all parental involvement avenues are the same and therefore could potentially affect achievement differently. Since the success of students in school and in life is important, an understanding of what parental involvement aspects play and to what degree, if any, play an important role in the academic achievement of learners.

2.2.4 Conceptual Framework

This section, discusses the relationship between the variables in the conceptual framework. The research aimed at determining the influence of teacher characteristics and parental factors on academic achievements in integrated science. The role of teachers and parents have significant impact on students' academic achievements, therefore, both Simkins model cited in Adeyomi (2008) and Epstein model (2011) were merged. Adeyemi (2008), argued that the education system is a productive system that has outputs. The outputs are generally defined in terms of students' test scores which denote academic achievement (Worthington, 2001). Adeyomi (2008), expressed that the components of an education system could be represented in:

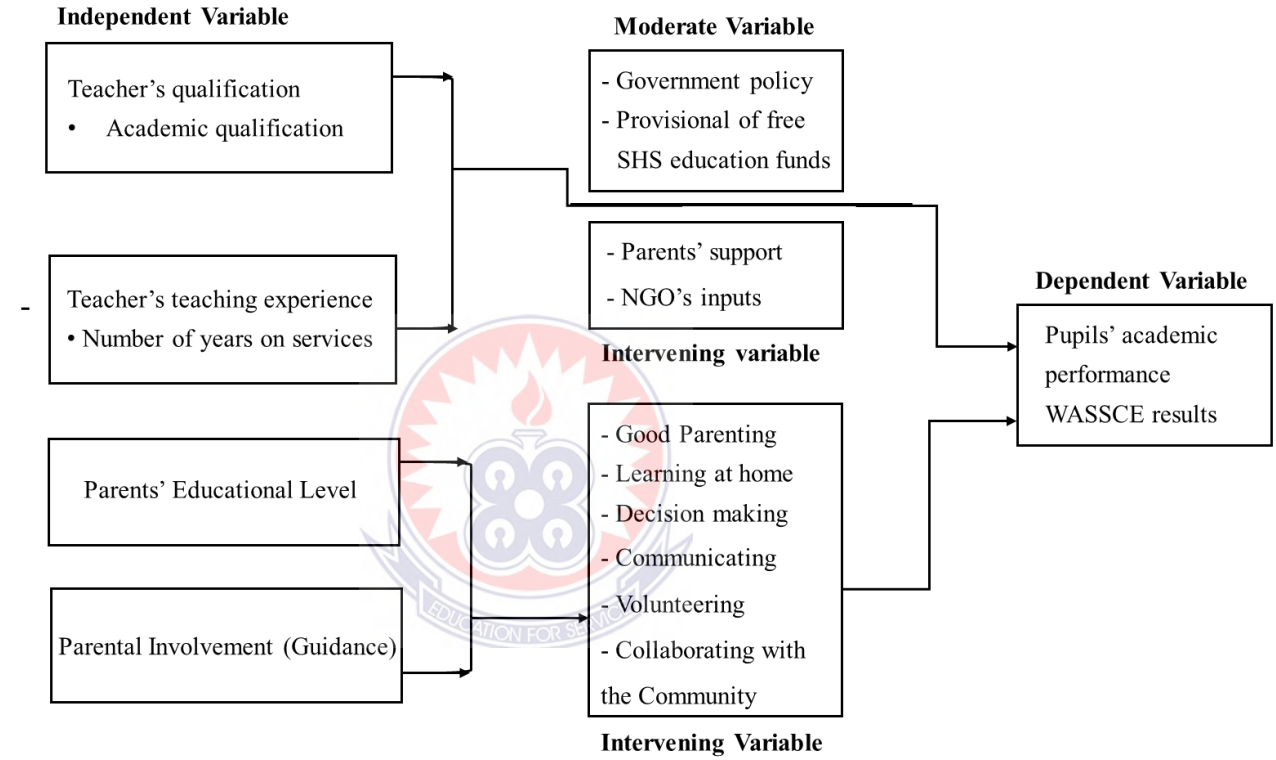
Input – Process – Output Model.

The teacher as an input is the principal factor in education provision and thus affects the quality of education in a significant way. Teacher factors that have an effect on academic achievement include academic qualifications, pedagogical training, content training, aptitude, and years of service/experience. A teacher brings these characteristics to class to facilitate the learning process. The extent to which other inputs can improve the quality of education is directly related to the extent to which teachers effectively use the inputs to improve the teaching and learning process.

Parental factors as suggested by Epstein Model, outlines six concrete types of family involvement behaviours as important factors for students' academic performance; positive home conditions, communication, involvement at school, home learning activities, shared decision making within the school, and community partnerships (Epstein, 2011). Epstein, Sanders, Simon and Salinas (2002), discussed parental involvement as an educational tool needed to achieve academic success.

Government policies and the provision of free senior high education funds were the moderating variables. The study had the intervening variables that include the school environment and the parents' support among others.

Figure 1, shows the conceptual framework that guides the relationship between teacher characteristics, parental factors, and academic achievements of students in Keta Senior High Technical School.



Source: Simkins model cited in Adeyemi (2008).
Epstein model (2011)

Figure 1: Conceptual framework on teacher characteristics, parental factors and academic achievements of students

CHAPTER THREE

METHODOLOGY

3.0 Overview

This chapter highlights the methodology used to conduct the research. The chapter presents the research design, target population and sample size, sample technique, research instrument, data collection method, validity and reliability of the research instrument, ethical issues, types of data, and data analysis.

3.1 Research Design

This study adopted a descriptive survey research design, utilising both qualitative research methods and quantitative approach (mixed methods). A descriptive survey is a method of collecting information by interviewing or administering a questionnaire to sample of individuals (Orodho, 2009). Descriptive research design aims to systematically obtain information to describe a phenomenon, situation or population, and identify characteristics in their target or particular population. The characteristics in the population sample are identified, observed and measured to guide decisions. The descriptive research design is employed because it interprets events and ideas the way they are without any external manipulation. This research design was seen to be the most appropriate because the study sought to describe how the influence of teacher characteristics and parental factors affect students' academic achievements in integrated science and described the relationship between effective teacher and students, parent and the wards, and how that translated into students' academic achievements. Essentially the design allowed the researcher to place some relevant teacher characteristics and parental factors in the academic affairs of the students.

3.2 Population

The study targeted 1400 second year students and 50 classroom teachers in Keta Senior High Technical School of the Keta municipality.

The accessible population constitute 200 second year day students and 20 classroom integrated science teachers. Teachers and day students were involved because teachers transmit knowledge, values and skills in the learning process whiles the day students are directly affected by the teacher characteristics and parental factors.

3.3 Sample and Sampling Procedure

A sample of 200 second year day students and 20 form-2 integrated science teachers were used for the study.

The sampling technique used for this study is purposive sampling method because the researcher intentionally selected participants based on their characteristics, knowledge, experience, or certain criteria.

3.4 Research Instrument

The research instruments used for the study were questionnaire, and document analysis (teacher's compiled list on end of term 2, 2022 examination).

The questionnaire was developed for this research to get responses and views from teachers and students, and employed both opened and closed ended questions. This made it possible to collect adequate information and opinion from the respondents within a period of time. The questionnaire for the day students was to establish their demographic profile and their parents' involvement in their school work both at home and school set-up, as well as the science teachers. A document analysis was used to

determine the students' academic performance based on end of term 2, 2022 examination which was obtained from the class teachers' compiled list.

3.5 Data Collection Procedure

The items were designed on the questionnaire in sections in the pattern of a modified 5-point Likert-type scale of Strongly Agree (SA), Agree (A), Not Certain (NC), Disagree (D) and Strongly Disagree (SD). The respondents were asked to indicate their responses to any of the items by making a tick in the appropriate space.

The document analysis (end of term 2, 2022 examination) obtained from the teachers' compiled list were matched to the questionnaires filled by the 200 form-2 day students to determine their academic performance.

3.6 Validity of the Research Instrument

The validity of research can be explained as an extent at which requirements of the scientific research method have been followed during the process of generating research findings. There are different forms of research validity and the main ones are specified by Cohen, Manion, Morrison & Morrison (2007), as content validity, criterion-related validity, construct validity, internal validity, external validity, concurrent validity and face validity. The questionnaire and documents for the analysis were given to the supervisor and other experts in the science department of the University of Education, Winneba. These individuals have considerable knowledge in the concept area. Their comments were used to redefine the test items before they were administered.

3.7 Reliability of the Research Instrument

According to Brown (2006), reliability issues are most of the time closely associated with subjectivity and once a researcher adopts a subjective approach towards the study,

then the level of reliability of the work is going to be compromised. When the questionnaire was constructed, it was given to the supervisor to read through to discover whether there were any ambiguities present and the necessary corrections were made. Also, both students and teachers' questionnaires were pilot tested using 20 second year day students, who were studying integrated science and 5 integrated science teachers. This was done in order to reduce ambiguity of the items and therefore enhances their reliability according to Meriwether (2001).

3.8 Ethical Issues

Participants were duly informed about the purpose of the research and that they availed themselves to answer the questionnaire at their own will.

Respondents were assured of their privacy and confidentiality which the researcher firmly observed.

3.9 Types of Data

The primary and secondary sources were used to gather information on the study. The primary data are the data collected directly from the field of study. The primary information was the first-hand information such as face to face meeting of respondents. In gathering the primary data, the researcher used questionnaire and document analysis.

The secondary data was information which had already been organised by somebody. The researcher used secondary information collected from sources such as books, journals, thesis, and internets.

3.10 Data Analysis

Data gathered were coded, edited and analysed using the Statistical Package for the Social Sciences version 26 (SPSS 26) and Microsoft Excel. Descriptive statistics such

as frequencies, percentages, means and standard deviations as well as independent T-test (inferential statistics) were used to analyse the data.

The interpretation of the descriptive statistics made it possible to make appropriate inferences in testing the null hypothesis. Also, a grading system was adopted from the West African Senior School Certificate Examination (WASSCE) for Integrated Science as used by Keta Senior High Technical School (KSHTS). Based on the scores and the grades obtained from end of term 2, 2022 examination, the overall academic performance of student-respondents were analyzed.

Table 1 shows the grading system used in Keta Senior High Technical School which was used in this study.

Table 1: WASSCE grading system used by Keta Senior High Technical School

SCORE	**GRADES**	**INTERPRETATION**
80-100	A1	EXCELLENT
70-79	B2	VERY GOOD
60-69	B3	GOOD
55-59	C4	CREDIT
50-54	C5	CREDIT
45-49	C6	CREDIT
40-44	D7	PASS
35-39	E8	PASS
0-34	F9	FAIL

CHAPTER FOUR

RESULTS, ANALYSIS AND DISCUSSION

4.0 Overview

The results from the responses given by the respondents to the questions in the questionnaire, and document analysis were used for the analyses. The analyses consisted of simple descriptive statistics, and independent (unpaired) T-test.

Two different sets of questionnaires consisting twenty (20) form-2 integrated science teachers and two hundred (200) second year day students were drafted, together with document analysis were conducted to elicit response from participants based on two concepts, namely; concept of teacher characteristics, and concept of parental factors.

Two sets of questionnaires were drafted and used to analysed the concept of teacher characteristics and concept of parental factors respectively.

The results have been presented in two main categories, such as;

- Concept of teacher characteristics
- Concept of parental factors

The analyses were presented in tables, charts and independent T-test, with interpretations pivoted on the objectives of the study.

Table 2 summarises the academic performance of 200 form-2-day student-respondents and interpretations of end of term-2, 2022 examination.

Table 2: Academic performance of 200 form-2-day student-respondents and interpretations of end of term-2, 2022 examination.

No. of students	Grade/ Marks	Interpretation
73 (36.5%)	A1	Excellent
36 (18%)	B2	Very Good
21 (10.5%)	B3	Good
7 (3.5%)	C4	Credit
14 (7%)	C5	Credit
0 (0%)	C6	Credit
28 (14%)	D7	Pass
7 (3.5%)	E8	Pass
14 (7%)	F9	Fail
Total=200		

Source: Field Survey, 2023.

The results from Table 2, indicated that the academic performance of the 200 form-2-day student-respondents were; 36.5% have Excellent, 28.5% have Good, 10.5% have Credit, 17.5% have Pass, and 7% have Fail. The academic performance of about 75.5% of the student-respondents were above average whiles about 24.5% of the respondents performed below average during the end of term 2, 2022 examination.

It was revealed that majority of the student-respondents have A1 and B2, which is above average, in the end of term-2, 2022 examination results reviewed.

4.1A: CONCEPT OF TEACHER CHARACTERISTICS

Table 3 displays age distribution of the 20 teacher-respondents for the study.

Table 3: Age distribution of teacher-respondents

S/N	AGE (YEARS)	NUMBER OF RESPONDENTS
1	20-29	0 (0%)
2	30-39	12 (60%)
3	40-50	8 (40%)

Source: Field Survey, 2023.

From Table 3, it can be deduced that 60% of teacher-respondents were between the age group of 30-39, and 40% of teachers were at the age group between 40-50. All the twenty teacher-respondents were males.

Table 4 displays the academic qualification of teacher-respondents.

Table 4: Academic qualification of teacher-respondents

DIPLOMA	BACHELOR	MASTERS	PHD
2	18	0	0
(10%)	(90%)	(0%)	(0%)

Source: Field Survey, 2023.

The results from Table 4, showed that 90% of teacher-respondents have academic qualification in bachelor's degree, and 10% of teacher-respondents have academic qualification as diploma holders, with none having academic qualification in master's degree or PhD.

Table 5 shows the professional qualification of teacher-respondents.

Table 5: Professional qualification of teacher-respondents

DIPLOMA	BACHELOR	MASTERS	PHD
4	10	6	0
(20%)	(50%)	(30%)	(0%)

Source: Field Survey, 2023.

From Table 5, it can be deduced that on professional qualification; 50% of teacher-respondents have bachelor's degree, 30% have master's degree, and 20% have diploma, with none having a PhD.

From both Table 4 and Table 5, about 85% of teacher-respondents averagely possessed a bachelor's degree and a professional qualification.

This implies that majority of the teachers are professionals hence can demystify the concepts in integrated science by applying the various pedagogical methods of teaching and learning activities which in turn have positive impact on students' academic performance.

The Summary of descriptive statistics results of major field of study of teacher-respondents is shown in Figure 2.

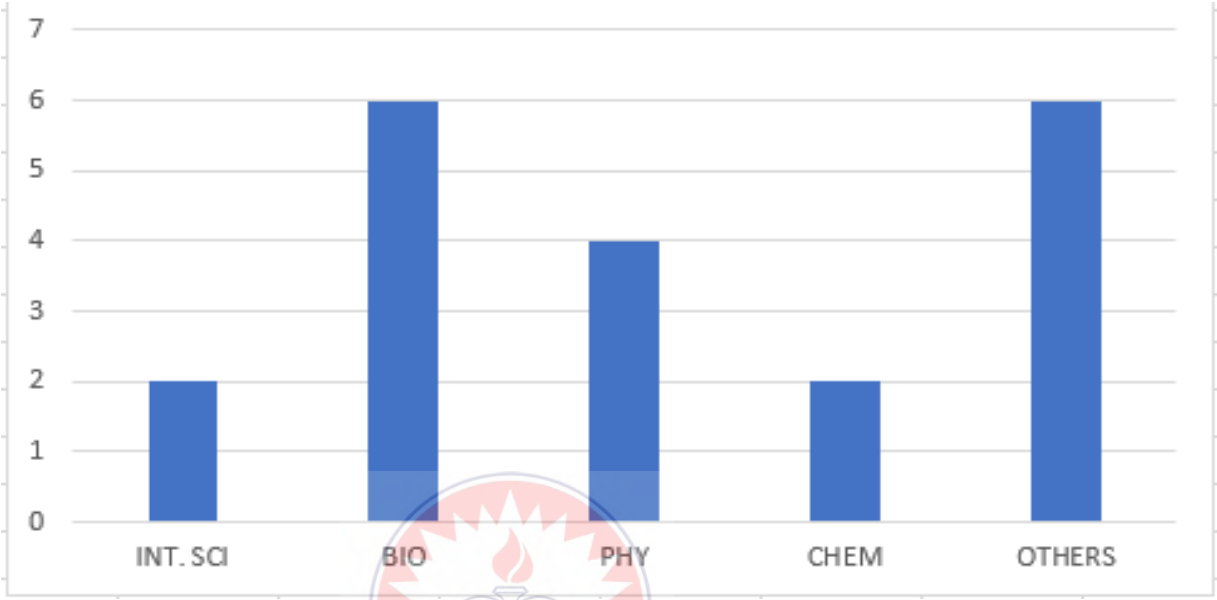


Figure 2: A bar chart showing the major field of study of teacher-respondents

From Figure 2, the results indicated that the major field of study of teacher-respondents were; two majored in integrated science, six teacher-respondents majored in biology, four majored in physics, two majored in chemistry and six majored in other fields.

The results show that most teachers teaching integrated science in Keta Senior High Technical School did not specialise in integrated science but rather the different sections of integrated science.

The Summary of descriptive statistics results of number of years taught by teacher-respondents is shown in Figure 3.

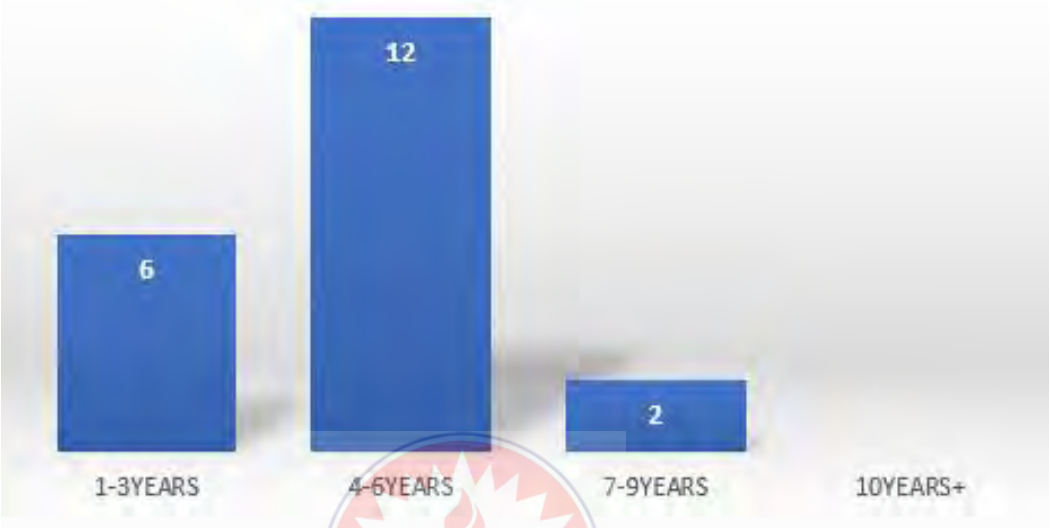


Figure 3: A bar chart showing the number of years taught by teacher-respondents

The results from Figure 3, showed that twelve teacher-respondents have taught for 4-6years, six teacher-respondents have taught for 1-3years, and two teacher-respondents have taught for 7-9years.

Majority of the teachers have taught for a period of time now, and so they are very experienced in their area of study, thereby making them to apply a lot of effective teaching strategies to improve the students' academic performances.

Table 6 summarises the descriptive statistics results of teacher-respondents' participation in professional development programs in the past 12 months.

Table 6: Participation in professional development programs by teacher-respondents for the past 12 months

		RESPONSES			
		VERY USEFUL	USEFUL	SOMEWHAT USEFUL	NOT USEFUL
S/N	STATEMENT				
1	In the last 12 months have you participated in any professional development program? If yes how useful is it to you?	10 (50 %)	6 (30 %)	2 (10 %)	2 (10%)

Source: Field Survey, 2023.

The results from Table 6, indicated that 50% of teacher-respondents who participated in professional development programs in the past 12 months believed the program was very useful; 30% believed the program was useful; 10% believed it was somewhat useful; and 10% believed it was not useful.

Since higher number of teachers partake in professional development programs, and admitted by majority to be very useful, they are able to acquire different knowledge and ideas in their areas of study which helped to improve students' academic performances.

Table 7 summarises the descriptive statistics results of teacher-respondents' engagement in any research topic in relation to professional development.

Table 7: Teacher-respondents' engagement in any research topic in relation to professional development

		Percentages of responses	
s/n	Statement	yes	No
1	Collaborated with other teachers in issues of instruction?	20 (100 %)	0 (0 %)
2	Act as a mentor to a teacher or mentee?	20 (100 %)	0 (0 %)
3	Discussions about how to teach a particular concept	20 (100 %)	0 (0 %)
4	Working on preparation of instructional materials?	20 (100 %)	0 (0 %)
5	Observed any teacher in the classroom?	18 (90 %)	2 (10 %)
6	Informal observations of your classroom by another teacher?	14 (70 %)	6 (30 %)

Source: Field Survey, 2023.

The results from Table 7, indicated that teacher-respondents engagement in any research topic in relation to professional development have; 100% admitted to have collaborated with other teachers on issues of instruction, 100% have acted as a mentor to a teacher or mentee, 100% have discussed about how to teach a particular concept, 100% have worked on preparation of instructional materials, 90% have observed other teachers in the classroom whiles 10% of the respondents have not, and 70% have

informal observation of their classroom by another teacher whiles 30% of the respondents have not.

Majority of the teacher-respondents in Keta Senior High Technical School constantly and continuously engaged in research work and professional development programs by collaborating with other colleagues on issues of instruction, discussed how to teach a particular concept, and acted as a mentor to teacher mentee. These program activities helped to improve the teaching and learning skills of the integrated science teachers.

Table 8 summarises the descriptive statistics results of extent to which teacher-respondents are limited to teach in a class.

Table 8: Extent to which a teacher is limited to teach in a class

		Responses		
s/n	Statement	A lot	A little	Not at all
A	Students with different academic abilities	8 (40 %)	12 (60 %)	0 (0 %)
B	Students who come from a wide range of backgrounds (e.g., economic, language)	10 (50 %)	6 (30 %)	4 (20 %)
C	Students with special needs, (e.g., hearing, vision, speech impairment, physical disabilities, mental or emotional/psychological impairment)	4 (20 %)	6 (30 %)	10(50 %)
D	Uninterested students	6 (30 %)	14(70 %)	0(0 %)
E	Disruptive students	20(100 %)	0(0 %)	0(0 %)

Source: Field Survey, 2023.

The results from Table 8, indicated that teacher-respondents who responded to the extent to which they are limited to teach in a class have the following; on students with different academic abilities have 40% responded to a lot, 60% responded to a little, and none responded to not at all. Teacher-respondents on students who come from a wide range of background (e.g., economic, language) have 50% responded to a lot, 30% responded to a little, and 20% responded to not at all. Teacher-respondents on students with special needs (e.g., hearing, vision and speech impairments, physical disability and mental or emotional impairment) have 20% responded to a lot, 30% responded to a little, and 50% responded to not at all. Teacher-respondents on uninterested students have 30% responded to a lot, 70% responded to a little, and none responded to not at all. Teacher-respondents on disruptive students have 100% responded to a lot, and none responded to both a little and not at all.

Teacher-respondents who responded to the extent to which he/she is limited to teach in a class showed that 100% of the teachers were not able to tolerate disruptive students whiles 70% were unable to accommodate uninterested students. These revelations show that most integrated science teachers in Keta Senior High Technical School are less tolerance, and needed to be improved.

Table 9 summarises the descriptive statistics results of provision of quality attributes of teacher-respondents to students.

Table 9: Provision of quality attributes of teachers to students

		responses		
s/n	STATEMENT	A lot	A little	Frequent
1	Advice your student on their academic performance	16(80 %)	0(0 %)	4(20 %)
2	Encourage your student to learn	16(80 %)	0(0 %)	4(20 %)
3	Guide your student in certain choices of academic life	12(60 %)	6(30 %)	2(10 %)
4	Make follow ups on student's complaints from their studies e.g (inadequate learning materials)	8(40 %)	10(50%)	2(10 %)

Source: Field Survey, 2023.

The results from Table 9, show that the teacher-respondents who responded to provision of quality attributes of teachers to students have the following; on advice to students' academic performance have 80% responded to a lot, 20% responded to frequent, and none responded to a little. Teacher-respondents on how they encourage their students to learn have 80% responded to a lot, 20% responded to frequent, and none responded to a little. Teacher-respondents on how they guide their students in certain choices of academic life have 60% responded to a lot, 30% responded to a little, and 10% responded to frequent. Teacher-respondents on whether they make follow ups on student's complaints from their studies (e.g., inadequate learning materials) have 50% responded to a little, 40% responded to a lot, and 10% responded to frequent.

It can be deduced that the teacher quality attributes exhibited by the integrated science teachers of Keta Senior High Technical School was relatively moderate, hence, needed to be improved.

Table 10 summarises the descriptive statistics results of teacher-parent interactions.

Table 10: Teacher-Parent interactions

		Responses		
s/n	STATEMENT	A lot	A little	Frequent
1	Discuss student's performance with parent	10(50 %)	10(50 %	0(0 %)
2	Advice parents on academic activities of their ward	4(20 %)	16(80%)	0(0 %)
3	Discuss with parents of student on important issues that affects their wards academic performance	6(30 %)	12(60%)	2(10 %)

Source: Field Survey, 2023.

The results from Table 10, indicated that teacher-respondents who responded to teacher-parent interactions have the following; on discussion of student's performance with parent have 50% responded to a lot, 50% responded to a little, and none responded to frequent. Teacher-respondents on whether they advise parents on academic activities of their ward have 80% responded to a little, 20% responded to a lot, and none responded to frequent. Teacher-respondents on whether they discuss with parents of students on important issues that affects their wards academic performances have 60% responded to a little, 30% responded to a lot, and 10% responded to frequent.

Teacher-parent interactions at Keta Senior High Technical School is not effective and encouraging, as seen in Table 10. There is the need to foster and maintain cordial relationship between teachers and parents of Keta Senior High Technical School to enhance effective and continuous communication, so that teachers can report to parents of any inconsistent behaviours they may see on their wards.

4.2B: CONCEPT OF PARENTAL FACTORS

The Summary of results of age of student-respondents is shown in Figure 4.

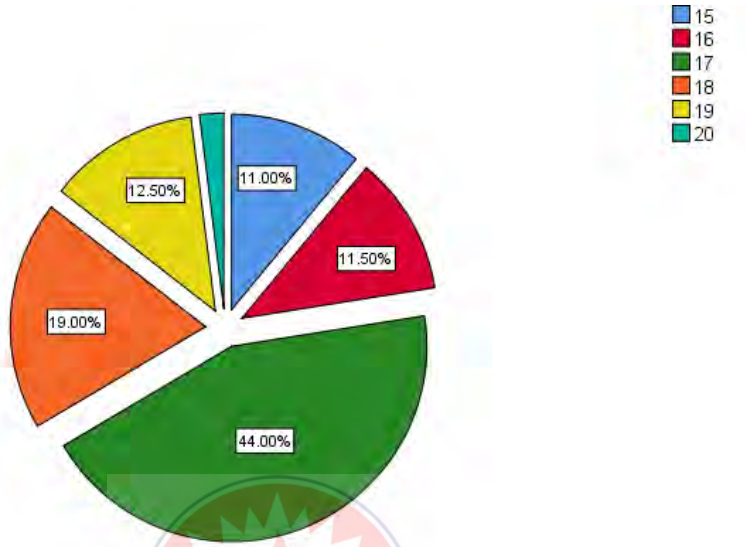


Figure 4: A pie chart showing percentage age of student-respondents

The results from Figure 4, showed that 11.0% of student-respondents were 15years old; 11.5% of respondents were 16 years; 44.0% of respondents were 17years; 19.0% of respondents were 18years; 12.5% of respondents were 19years; and 2.0% of respondents were 20 years old. The results indicated that the student-respondents are progressing from childhood into adulthood.

The Summary of results of gender of student-respondents is shown in Figure 5.

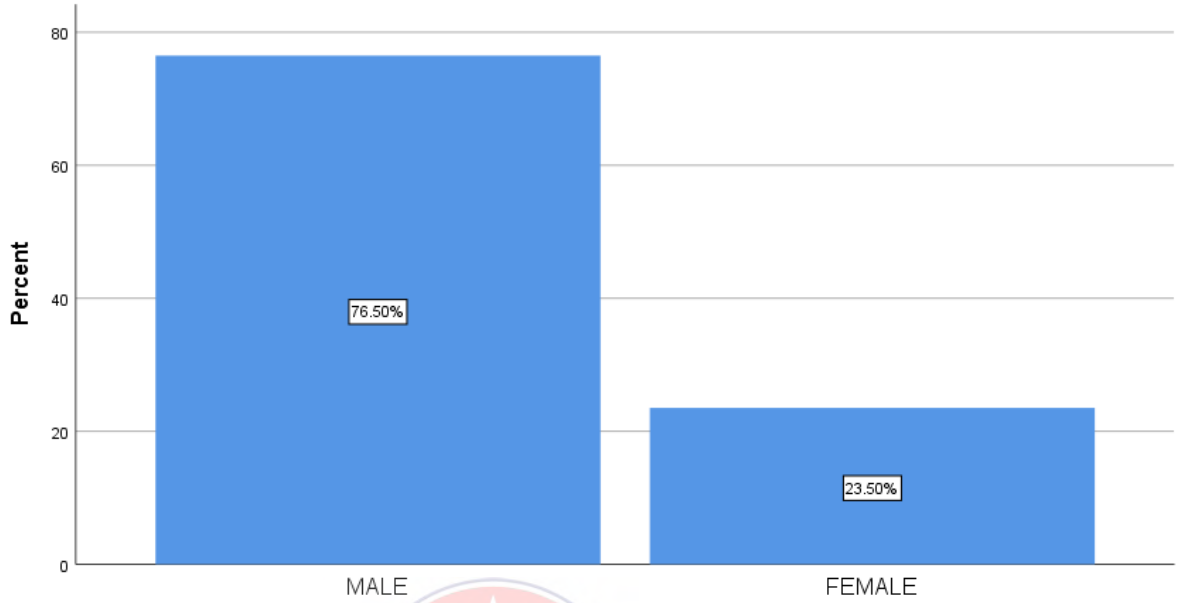


Figure 5: A bar chart showing percentage gender of student-respondents

The results from Figure 5, showed that 76.5% of the student-respondents were males whiles 23.5% of respondents were females. The results are reflection in Keta Senior High Technical School as majority of students are males.

The Summary of descriptive statistics results of student-respondents' preparedness towards integrated science examination is shown in Table 11.

Table 11: Summarises student-respondents' preparedness towards integrated science examination.

S/N	Statement	Strongly agree	Agree	Not certain	Disagree	Strongly disagree
1	I passed my integrated science subject:	47 (23.5%)	127 (63.5%)	18 (9%)	8 (4%)	0 (0%)
2	I am always prepared for exams	96 (48%)	85 (42.5%)	7 (3.5%	12 (6%)	0 (0%)
3	I understand what is taught in class	74 (37%)	74 (37%)	45 (22.5%)	7 (3.5%)	0 (0%)
4	I do well in homework	112 (56%)	75 (37.5%)	13 (6.5%)	0 (0%)	0 (0%)
5	I do well in class exercise	88 (44%)	90 (45%)	22 (11%)	0 (0%)	0 (0%)

Source: Field Survey, 2023.

Table 11 results showed how the preparedness of the student-respondents affected their academic performance in integrated science; 87.0% of the respondents agreed that their preparation enable them to pass the subject, 9.0% of the respondents were not certain, and 4.0% of the respondents disagreed that they passed their integrated science subject

based on their preparedness. Student-respondents on how they prepared for integrated science exams; 90.5% of the respondents agreed that they always prepared for exams, 3.5% of the respondents were not certain, and 6.0% of the respondents disagreed that they always prepare for their exams. Students-respondents were asked if they understand what is taught in class; 74% of the respondent agreed that they understood what is being taught in the class, 22.5% of the respondents were not certain, and 3.5% disagreed that they understood what is being taught in the class.

Student-respondents were asked whether they do well in their homework; 93.5% of the respondents agreed that they do well in their homework, 6.5% were not certain, and none of the respondents disagreed that they do well in their homework. Student-respondents were asked whether they do well in class exercise; 89.0% of the respondents agreed that they do well in class exercise, 11.0% were not certain, and none of the respondents disagree that they do well in class exercise.

Majority of the student-respondents in Keta Senior High Technical School prepared very well towards their integrated science classroom learning, as shown in Table 11, which enhanced the results of good academic performance in their end of term 2, 2022 examination as shown in Table 2.

The Summary of results of parents' occupation of student-respondents is shown in Table 12.

Table 12: Summarises parents' occupation of student-respondents

		TYPE OF OCCUPATION				
S/N		Private (Own business)	Private (employee)	Government (employee)	Non-Governmental Organization	Unemployed
6	Father's Occupation	41 (20.5%)	22 (11%)	70 (35%)	37 (18.5%)	30 (15%)
7	Mother's Occupation	126 (63%)	19 (9.5%)	8 (4%)	19 (9.5%)	28 (14%)

Source: Field Survey, 2023.

From Table 12, the results about father's occupation affecting the academic performance of students indicated that; 20.5% of fathers have their own private business, 11.0% were privately employed, 35.0% were employed by the government, 18.5% were employed by non-governmental organization, and 15.0% were unemployed. Student-respondents on mother's occupation indicated that; 63.0% have their own private business, 9.5% were private employee, 4.0% were government employee, 9.5% were non-governmental organization employee, and 14.0% were unemployed

Since majority of the parents of the student-respondents have their own private businesses, as shown in Table 12, the students are more engaged to perform services at the workplace or at home, as 80.5% of the respondents claimed that they helped their parents at home whiles 48.5% said their parents let them work before going to school, as shown in Table 13, and these confirmed why students usually sleep in class during classes hours.

The Summary of results of parents' occupation and homework of student-respondents is shown in Table 13

Table 13: Summarises parents' occupation and homework of student-respondents

S/N	Statement	Strongly agree	Agree	Not certain	Disagree	Strongly disagree
8	My father's occupation allows him to help me in my home work	40 (20%)	16 (8%)	48 (24%)	63 (31.5%)	33 (16.5%)
9	My mother's occupation allows her to help me in my home work	22 (11%)	21 (10.5%)	48 (24%)	67 (33.5.%)	42 (21%)
10	My parents work allows them to get time for me	76 (38%)	51 (25.5%)	24 (12%)	20 (10%)	29 (14.5%)
11	I help my parents to work at home	102 (51%)	61 (30.5%)	22 (11%)	12 (6%)	3 (1.5%0)
12	My parents let me work before I go to school	39 (19.5%)	58 (29%)	39 (19.5%)	13 (6.5%)	51 (25.5%)
13	My parents go to work every day	45 (22.5%)	65 (32.5%)	56 (28%)	34 (17%)	0 (0%)

Source: Field Survey, 2023.

The results from Table 13, showed that student-respondents were asked if their father's occupation allows him to help them (students) do their homework; 28.0% of the respondents agreed, 24.0% of the respondents were not certain, and 48.0% disagreed that their father's occupation allows him to help them do their homework. Student-respondents were asked whether their mother's occupation allows her to help them (students) do their homework; 21.5% of the respondents agreed, 24.0% of the respondents were not certain, and 54.5% of the respondents disagreed that their mother's occupation allows her to help them do their homework. Students respond on whether their parents work allows them to get time for their wards'; 63.0% of respondents agreed, 12.0% were not certain, and 24.5% of the respondents disagreed that their parents' work allows them to get time for their wards. Students respond on whether they helped their parents to work at home; 81.5% of the respondents agreed, 11.0% of the respondents were not certain, and 7.5% of the respondents disagreed that they help their parents to work at home. Students respond on whether their parents let them work before they go to school; 48.5% of the respondents agreed, 19.5% of the respondents were not certain, and 32.0% of the respondents disagreed that their parents let them work before they go to school. Students respond on whether their parents go to work every day; 55.0% of the respondents agreed that their parents go to work every day, 28.0% of the respondents were not certain, and 17.0% of the respondents disagreed that their parents go to work every day.

The high percentage (48% of father's occupation, and 54.5% of mother's occupation) of the respondents disagreed that their parents' occupation allowed them to help do their homework, implies that the occupations of the parents have negative impact on the academic performance of the respondent. This is evident from the fact that most parents either own their private business or are employed by government, so they turned

to shift most of their attention to their work without thinking of the impact their occupation will have on the academic performance of their wards in schools. The high percentage of 81.5% and 48.5% of the respondents who agreed to help their parents to work at home, and those whose parents let them work before they go to school alludes to the fact that helping their parents work at home, and working at home before going to school have negative impact on the academic achievement of the respondents. This is evident from the fact that most students report to school late and also sleep during class hours, which affects their academic performance.

The Summary of results of number of siblings of student-respondents is shown in Figure 6.

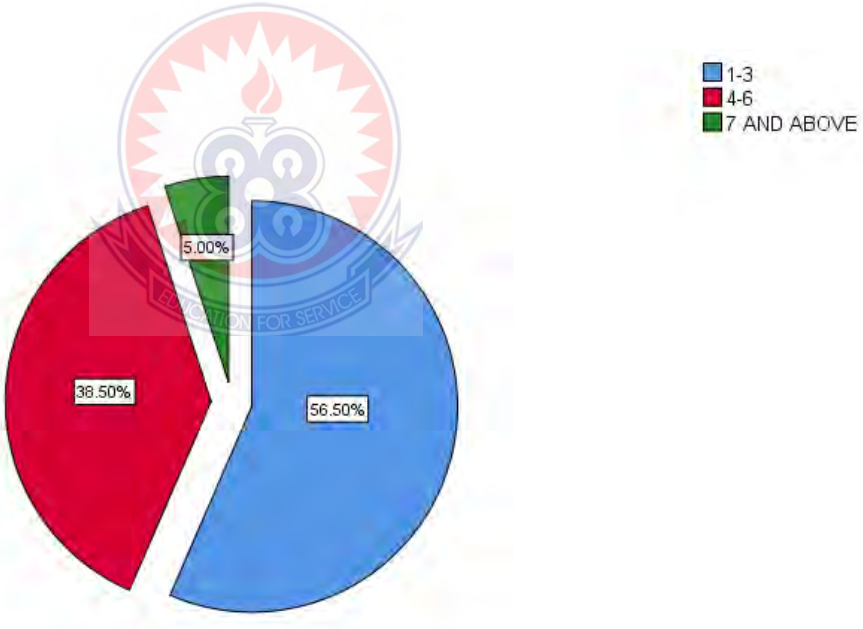


Figure 6: A pie chart showing number of siblings of student-respondents

The results from Figure 6, showed that 56.5% of the student-respondents have between 1-3 siblings, 38.5% of the respondents have between 4-6 siblings, and 5.0% have 7 or more siblings.

It is evident that student-respondents have fewer siblings as indicated in Figure 6, so 79% of the respondents believed that their parents are able to provide all the things they need for school, and 74.5% believed that their parents are able to provide all the things their siblings need for school as shown in Figure 14. Since the parents provide all the basic needs for school to their wards, it helps the students to concentrate on their books, which in turn enhanced good academic performance.

The summary of results on responsibilities of parents of student-respondents is shown in Table 14.

Table 14: Summarises results on responsibilities of parents of student-respondents

S/N	Statement	Strongly agree	Agree	Not certain	Disagree	Strongly disagree
14	My parents are able to provide all the things I need for school	98 (49%)	60 (30%)	30 (15%)	12 (6%)	0 (0%)
15	My parents are able to provide all the things my siblings need for school	106 (53%)	43 (21.5%)	43 (21.5%)	0 (0%)	8 (4%)
16	My parents give me attention because I don't have a lot of siblings	46 (23%)	59 (29.5%)	49 (24.5%)	43 (21.5)	3 (1.5%)
17	I am not able to get what I need for school because I have a lot of siblings:	30 (15%)	34 (17%)	27 (13.5%)	53 (26.5%)	56 (28%)
18	I am worse off in class because I have a larger family Size:	8 (4%)	3 (1.5%)	20 (10%)	67 (33.5%)	102 (51%)

Source: Field Survey, 2023.

The results from Table 14, show that student-respondents were asked if their parents were able to provide all the things they need for school; 79.0% of the respondents agreed, 15.0% of the respondents were not certain, and 6.0% of the respondents

disagreed that their parents were able to provide all the things they need for school. Student-respondents were asked if their parents were able to provide all the things that their siblings need for school; 74.5% of the respondents agreed, 21.5% of the respondents were not certain, and 4.0% of the respondents disagreed that their parents were able to provide all the things that their siblings need for school. Students respond on whether their parents give them attention because they don't have a lot of siblings; 52.5% of the respondents agreed, 24.5% were not certain, and 23.0% of the respondents disagreed that their parents give them attention because they don't have a lot of siblings. Students respond on whether they were not able to get what they need for school because they have a lot of siblings; 32.0% of the respondents agreed, 13.5% were not certain, and 54.5% disagreed that they were not able to get what they need for school because they have a lot of siblings. Students respond on whether they were worse off in class because they have a larger family size; 5.5% of the respondents agreed, 10% were not certain, and 84.5% of the respondents disagreed that they were worse off in class because they have a larger family size.

It was observed that parents were able to provide for the needs of the respondents and their siblings for them to achieve their academic goals. This is due to the fact that most of the respondents have smaller family size proven by 56.5% of respondents having 1-3 siblings and 52.5% of respondent agreeing that their parents give them more attention because they do not have a lot of siblings. However, 54.5% of the respondents disagree that their parents were not able to provide their needs for school because of large family size. Furthermore, 84.5% of the respondents disagree with the statement, "I am worse off in class because I have a larger family size" which also implies that the size of family does not affect the academic performance of respondents, since parents are ready to provide for everybody in the family to improve their academic performance.

The summary of results of parental involvement (guidance) and academic performance of student-respondents is shown in Table 15.

Table 15: Summarises results of parental involvement (guidance) and academic performance of student-respondents

S/N	Statement	Strongly agree	agree	Not certain	Disagree	Strongly disagree
19	My parents come for PTA meetings	101 (50.5%)	66 (33%)	13 (6.5%)	0 (0%)	20 (10%)
20	My parents visit the school to do follow ups on my academic performance within the term	21 (10.5%)	61 (30.5%)	39 (19.5%)	40 (20%)	39 (19.5%)
21	My parents make best decisions for me	109 (54.5%)	74 (37%)	4 (2%)	3 (1.5%)	10 (5%)
22	My parents ask me about things that happen in school	118 (59%)	46 (23%)	16 (8%)	9 (4.5%)	11 (5.5%)
23	My parents visit my class teacher constantly	11 (5.5%)	17 (8.5%)	52 (26%)	79 (39.5%)	41 (20.5%)
24	My parents encourage me to learn	185 (92.5%)	15 (7.5%)	0 (0%)	0 (0%)	0 (0%)

Source: Field Survey, 2023.

The results from Table 15, showed that student-respondents were asked whether their parents come for PTA meetings; 83.5% of the respondents agreed, 6.5% of the respondents were not certain, and 10.0% of the respondents disagreed that their parents come for PTA meetings. Student-respondents were asked whether their parents visit the school to do follow ups on their academic performance within the term; 41.0% of the respondents agreed, 19.5% of the respondents were not certain, and 39.5% of the respondents disagreed that their parents visit the school to do follow ups on their academic performance within the term. Students respond on whether their parents make

best decisions for them; 91.5% of the respondents agreed, 2.0% of the respondents were not certain, and 6.5% of the respondents disagreed that their parents make best decisions for them. Students respond on whether their parents asked them about things that happen in school; 82.0% of the respondents agreed, 8.0% were not certain, and 10.0% of the respondents disagreed that their parents asked them about things that happen in school. Student-respondents were asked whether their parents visit their class teacher constantly; 14.0% of respondents agreed, 26.0% of the respondents were not certain, and 60.0% of the respondents disagreed that their parents visit their class teacher constantly. Students respond on whether their parents encourage them to learn; 100.0% of the respondents agreed that their parents encourage them to learn.

Parents involvement or guidance in the academic affairs of their wards is very important in improving their academic performances. This can be lured to the fact that most parents of the respondents were able to attend PTA meetings, asked respondents about happenings in school and visited the class teachers regularly. Also, parents were able to encourage their wards to learn both at home and in school, hence, the parents highly involved themselves by guiding their wards' academic affairs effectively as shown in Table 15, which has resulted in most of the student-respondents gotten A1 and B2 in the end of term-2, 2022 examination, as shown in Table 2.

The summary of results of parents' level of education of student-respondents is shown in Table 16.

Table 16: Summarises results of parents' level of education of student-respondents

		LEVEL OF EDUCATION				
S/N	Parent	Basic (Lower primary)	Basic (Upper primary)	JHS	SHS	Tertiary
25	Father's level of education	8 (4%)	0 (0%)	21 (10.5%)	95 (47.5%)	76 (38%)
26	Mother's level of education	17 (8.5%)	7 (3.5%)	125 (62.5%)	39 (19.5%)	12 (6%)

Source: Field Survey, 2023.

The results from Table 16, indicated that on father's level of education of student-respondents; 4.0% have Basic (lower primary) education, 10.5% have JHS education, 47.5% have SHS education, and 38.0% have Tertiary education. The mother's level of education of student-respondents show that; 8.5% have Basic (lower primary) education, 3.5% have Basic (upper primary) education, 62.5% have JHS education, 19.5% have SHS education, and 6.0% have Tertiary education.

It was observed that most parents whose children (student-respondents) are in Keta Senior High Technical School have limited access to higher education as shown in Table 16. The level of education of parents however have higher impact on academic performance of their wards, as parents' guide and protect their children's academic activities both at home and in school. Since most of the parents do not have higher level of education, they may not be able to influence their wards academic performance by

monitoring, supervising and facilitating their learning process both at home and in school.

4.3: T-TEST ANALYSIS ON BOTH (A) CONCEPT OF TEACHER CHARACTERISTICS AND (B) CONCEPT OF PARENTAL FACTORS

Based on the four (4) null hypotheses tested, a sample of twenty (20) integrated science teachers and two hundred (200) second year day students were used for both concept of teacher characteristics and concept of parental factors. The set alpha value for the test was set at $P \leq 0.05$.

The following were the results and analysis:

The summary of results on T-Test analysis of teacher academic qualification and students' academic achievements is shown in Table 17.

Table 17: Summarises T-Test analysis of teacher academic qualification and students' academic achievements

	TEACHER ACADEMIC QUALIFICATION	STUDENTS MARKS
Mean	8.8	65.9275
Variance	0.378947378	366.0311495
Observations	20	200
Hypothesized Mean Difference	0	
df	203	
t Stat	-42.01115811	
P(T<=t) one-tail	2.1814E-102	
t Critical one-tail	1.65239446	
P(T<=t) two-tail	4.3627E-102	
t Critical two-tail	1.971718848	

At 203 degree of freedom, the mean score of teacher academic qualification was 8.8 and students' marks was 65.92. The P-value for t-critical one-tail was 1.652. Since the P-value of 1.652 is greater than the set alpha value of 0.05, the null hypothesis was valid and was concluded that there is no statistical significance difference between teacher academic qualification and student's academic achievement in integrated science.

The summary of results on T-Test analysis of teacher experience and students' academic performances is shown in Table 18.

Table 18: Summarises T-Test analysis of teacher experience and students' academic performances

	TEACHER EXPERIENCE	**STUDENTS MARKS**
Mean	2.5	65.9275
Variance	0.556962025	366.0311495
Observations	20	200
Hypothesized Mean Difference	0	
Df	201	
t Stat	-46.79603904	
P(T<=t) one-tail	2.4774E-110	
t Critical one-tail	1.652469842	
P(T<=t) two=tail	4.9547E-110	
t Critical two-tail	1.971836507	

The mean score of teacher experience was 2.5 and students' marks was 65.92. At degree of freedom of 201 gave a P-value for t-critical one-tail as 1.652. Since the P-value of 1.652 is greater than the set alpha value of 0.05, the null hypothesis was valid and was concluded that there is no statistical significance difference between teacher experience and students' academic performances in integrated science.

The summary of results on T-Test analysis of parent's educational level and students' academic performances is shown in Table 19.

Table 19: Summarises T-Test analysis of parent's educational level and students' academic performances

	PARENT'S EDUCATIONAL LEVEL	**STUDENTS MARKS**
Mean	3.6325	65.9275
Variance	0.599189698	366.5021106
Observations	200	200
Hypothesized Mean Difference	0	
df	200	
t Stat	-46.0194136	
P(T<=t) one-tail	1.1612E-108	
t Critical one-tail	1.652508101	
P(T<=t) two-tail	2.3224E-108	
t Critical two-tail	1.971896224	

The mean score of parent's educational level was 3.63 and students' marks was 65.92. At degree of freedom of 200 gave a P-value for t-critical one-tail as 1.652. Since the obtained P-value of 1.652 is higher than the set alpha value of 0.05, the null hypothesis was valid and was concluded that there is no statistical significance difference between parent's educational level and students' academic performances.

Table 20 summarises the descriptive statistics on the results of respondents' T-Test analysis of parental involvement (guidance) and students' academic performances.

Table 20: T-Test analysis of parental involvement (guidance) and students' academic performances

	PARENTAL INVOLVEMENT (GUIDANCE)	**STUDENTS MARKS**
Mean	2.16985	65.9275
Variance	0.430780379	366.5021106
Observations	200	200
Hypothesized Mean Difference	0	
df	199	
t Stat	-47.1098197	
P(T<=t) one-tail	3.5106E-110	
t Critical one-tail	1.652546746	
P(T<=t) two-tail	7.0212E-110	
t Critical two tail	1.971956544	

The mean score of parental involvement (guidance) was 2.16 whiles students' marks was 65.92. At 199 degrees of freedom gave a P-value for t-critical one-tail as 1.652. Since the P-value of 1.652 is greater than the set alpha value of 0.05, the null hypothesis was valid and was concluded that there is no statistical significance difference between parental involvement (guidance) and students' academic performances.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

5.0 Overview

This chapter summarizes and provides evidence-based recommendations based on the researcher's findings of the study. This section presents the findings and conclusions, and recommendations of the study for further research.

5.1: Summary

This thesis essentially delved into influence of teacher characteristics and parental factors on students' academic achievements in integrated science in Keta Senior High Technical School (KSHTS). The research objectives were set to guide the collection of the needed information. The first objective of this study was to investigate how teacher academic qualification affect the academic achievements of students in integrated science. The second objective of the study was to find out the relationship between teacher experience and the academic performances of students in integrated science. The third objective of the study was to determine the extent at which parents educational level affect students' academic performances. The fourth objective was to find out the extent at which parental involvement affect the academic performances of students.

The study was conducted in Keta Senior High Technical School in the Volta region of Ghana. The study involved 200 students and 20 integrated science teachers. The research instruments used during the study were questionnaire and document analysis. The data from the questionnaire were displayed using descriptive statistics and analysed using SPSS version 26 and Microsoft excel 2019. Independent T-test were used for further test on the hypotheses.

5.2: Findings

From the results of the study, majority of the integrated science teachers in Keta Senior High Technical School averagely possessed a bachelor's degree and a professional qualification. This indicates that they have the basic requirements pointed out by the Ghana Education Service in teaching in the senior high school. The results from the study also revealed that most teachers teaching integrated science in Keta Senior High Technical School did not specialise in integrated science but rather the different sections of integrated science. The research found out that the teachers who specialised in a section of integrated science are able to demystified that aspect of integrated science effectively, hence the school adopting a specialised teacher teaching only one aspect in a class. This in a way helps to improve students' achievements in integrated science. The research study revealed that there is no significance difference between teacher academic qualification and students' academic achievements in integrated science.

Another finding from the study was that majority of the integrated science teachers in Keta Senior High Technical School have adequate teaching experience, and so were able to encourage their students to learn, guide the students in the choice of academic life and make follow ups on students' complaints, so as to better their academic performances. These attributes were found to be qualities of good teachers teaching integrated science in Keta Senior High Technical School. This can be ascertained by higher number of students getting A1 and B2 in integrated science on the semester grades reviewed. The study showed that there is no significance difference between teacher experience and students' academic performances in integrated science.

The results show that there was lack of cordial relationship between teachers and parents of Keta Senior High Technical School. This cordial relationship gap needs to be bridged to enhance effective and continuous communication, so that teachers can report to parents of any inconsistent behaviours they may see on their wards.

Further findings showed that majority of the parents whose children are in Keta Senior High Technical School did not have access to higher level of education, therefore, they may not be able to influence their wards academic performance by monitoring, supervising and facilitating their learning process both at home and in school. It was seen from the study that there is no significance difference between parents' educational level and students' academic performances.

The results from the study showed that high percentage of the students in Keta Senior High Technical School helped their parents to work at home, and also parents let them work before they go to school in the morning, which have negative impact on the academic achievements of the students. This is evident from the fact that most students report to school late and also sleep during class hours, which affects their academic performances.

Another finding was majority of the students in Keta Senior High Technical School agreed that their parents were involved in their academic achievements; they do so by attending PTA meetings, asking them about the happenings in school and visiting the class teachers regularly. They encouraged them to learn hard so as to improve on their academic achievements. It was seen that there is no significance difference between parental involvement (guidance) and students' academic performances.

5.3: Conclusion

In finding out the influence of teacher characteristics and parental factors on students' academic achievements in Keta Senior High Technical School, the study has shown that:

- Majority of the integrated science teachers in Keta Senior High Technical School have both bachelor's degree and professional's qualification, and so can demystify the concepts in integrated science by applying the various pedagogical methods of teaching and learning activities which in turn have positive impact on students' academic performances. The academic and professional qualification of the teachers have a greater positive influence on the academic achievements of students in integrated science at Keta Senior High Technical School, hence higher number of day students having A1 and B2 in the end of term 2, 2022 examination results reviewed.
- Most of the integrated science teachers in Keta Senior High Technical School are experienced, exhibited attributes of a quality teacher in their area of study, thereby making them to apply a lot of effective teaching strategies to improve the students' academic performances, as most students have above average in the end of term-2 examination reviewed.
- There is lack of cordial relationship between teachers and parents of Keta Senior High Technical School. This cordial relationship gap between teachers and parents of Keta Senior High Technical School needs to be bridged to enhance effective and continuous communication so that teachers can report to parents of any inconsistent behaviours they may see on their wards.

- Most parents whose children are in Keta Senior High Technical School do not have access to higher level of education, therefore, they may not be able to influence their wards academic performances by monitoring, supervising and facilitating their learning process both at home and in school.
- Majority of the day students in Keta Senior High Technical School helped their parents to work at home, others too work at home before they go to school in the morning, and so these activities have negative impact on the academic achievements of the students. This is evident from the fact that most students report to school late and also sleep during class hours, which affects their academic performances.
- Most parents were involved in the academic affairs of their wards in Keta Senior High Technical School as they attend PTA meetings regularly, visit the class teachers regularly, and asked respondents about happenings in school. Also, parents were able to encourage their wards to learn both at home and in school. Hence, the parents highly involved themselves by guiding their wards' academic affairs effectively so as to improve their academic performances positively.

5.4: Recommendations

From the findings and conclusions, it is recommended:

- Teachers in Keta Senior High Technical School should have the requisite academic and professional qualifications, and possess adequate pedagogical skills and content knowledge in integrated science, in order to teach the subject effectively.

- Teachers in Keta Senior High Technical School should possess both experience and attributes of quality teaching in their area of study to enhance effective teaching strategies to improve students' academic performances.
- Teachers and parents of Keta Senior High Technical School should foster and maintain cordial relationship among them so that teachers can report to parents of any inconsistent behaviours they may see on their wards.
- Parents of students in Keta Senior High Technical School with high educational levels should monitor, supervised, and facilitate their ward's learning process whiles parents with low educational levels can solicit for help from their community to assist in their wards learning.
- Parents of day students in Keta Senior High Technical School should make sure their children do not overwork when at home so that the students can learn at home and have enough sleep, to prevent them from reporting to school late and sleeping during class hours, which affects their academic performances.
- Parents of students in Keta Senior High Technical School should constantly provide support and guidance (parental involvement) to their wards in order to keep them on track to enhance better academic performance.

5.5: Recommendation for Future Research

Further research should be done on assessing the impact of family size on the academic performance of students. Also, more works should be done on the influence of teacher characteristics and parental factors on students' academic achievements in integrated science taking into consideration the boarding house students.

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APPENDICES

QUESTIONNAIRE-1: TEACHER CHARACTERISTICS

This questionnaire forms part of the study. There is no right or wrong response. Your opinion about each item is very important. Tick (√) the appropriate column corresponding to your opinion about the item. Please be sure to respond to all items. If you change your mind about your response to an item, just cross it out and tick (√) another. You are assured of the confidentiality of your opinion. Thank you.

SECTION A: BIO-DATA OF RESPONDENT

Age (Years) ☐ Gender: Male ☐ Female ☐

SECTION B: EDUCATIONAL BACKGROUND

1.What is your highest academic qualification? Diploma ☐ Bachelor ☐ Master ☐ Ph.D. ☐

2. What is your highest professional qualification? Diploma in Education ☐ Bachelor of Education ☐ Master of Education ☐

3.What was your major field of study? Integrated science ☐ Biology ☐ Physics ☐

Chemistry ☐ Other ☐ Specify ☐

4.Do you have any second major field of study? Yes ☐ No ☐

5.If your answer is yes in question 4, in which field?

Integrated science ☐ Biology ☐

Physics ☐ Chemistry ☐

Other ☐ Specify ☐

SECTION B: PROFESSIONAL DEVELOPMENT

6.How long have you taught with your current degree?

1-3 years ☐ 4-6 years ☐ 7-9 years ☐ 10 years and above ☐

7.In the past 18 months, have you participated in any of the following professional development programs?

University course related to teaching Yes ☐ No ☐

Workshop or conferences related to teaching Yes ☐ No ☐

8.In the past 12 months, have you participated in any professional developmental program?

Yes ☐ No ☐

If yes, how useful is it to you? Very useful ☐ useful ☐ somewhat useful ☐ not useful ☐

9.In the past 12 months, have you participated in any of the following

Engage in any research on a topic of interest in relation to your professional development?

Yes ☐ No ☐

Collaborated with other teachers in issues of instruction? Yes ☐ No ☐

Act as a mentor to a teacher or mentee? Yes ☐ No ☐

Observed any teacher in the classroom? Yes ☐ No ☐

Discussions about how to teach a particular concept? Yes ☐ No ☐

Working on preparation of instructional materials? Yes ☐ No ☐

Informal observations of your classroom by another teacher? Yes ☐ No ☐

TEACHER-STUDENT INTERACTION

10.In your view, to what extent do the following

limit how you teach science in your class?

Tick where applicable

S/N	STATEMENT	A lot	A little	Not at all
1	Students with different academic abilities			
2	Students who come from a wide range of backgrounds (e.g.,economic, language)			
3	Students with special needs, (e.g., hearing, vision, speech impairment, physical disabilities, mental or emotional/psychological impairment)			
4	Uninterested students			
5	Disruptive students			

11.In your view, do you provide the following quality attributes to your student?

Tick where applicable

S/N	STATEMENT	A lot	A little	Frequent
1	Advice your student on their academic performance			
2	Encourage your student to learn			
3	Guide your student in certain choices of academic life			
4	Make follow ups on student's complaints from their studies e.g (inadequate learning materials)			

TEACHER-PARENTS INTERACTIONS

12.In your view, do you perform the following with Parents of your students?

Tick where applicable

S/N	STATEMENT	A lot	A little	Frequent
1	Discuss student's performance with parent			
2	Advice parents on academic activities of their ward			
3	Discuss with parents of student on important issues that affects their wards academic performance			

QUESTIONNAIRE-2: PARENTAL FACTORS

This questionnaire forms part of the study. There is no right or wrong response. Your opinion

about each item is very important. Tick (√) the appropriate column corresponding to your

opinion about the item. Please be sure to respond to all items. If you change your mind about

your response to an item, just cross it out and tick (√) another. You are assured of the confidentiality of your opinion. Thank you.

SECTION A: Bio-data of respondent

Age (Years) ☐ Gender: Male ☐ Female ☐

SECTION B: ACADEMIC PERFORMANCE OF STUDENT

S/N	Statement	Strongly agree	Agree	Not certain	Disagree	Strongly disagree
1	I pass my integrated science subject:					
2	I am always prepared for exams					
3	I understand what is taught in class					
4	I do well in homework					
5	I do well in class exercise					

SECTION C: PARENTAL OCCUPATION

S/N		TYPE OF OCCUPATION				
		Private (Own business)	Private (employee)	Government (employee)	Non-Governmental Organization	Unemployed
6	Father's Occupation					
7	Mother's Occupation					

SECTION D: PARENT OCCUPATION AND HOMEWORK OF STUDENT

S/N	Statement	Strongly agree	Agree	Not certain	Disagree	Strongly disagree
8	My father's occupation allows him to help me in my home work					
9	My mother's occupation allows her to help me in my home work					

10	My parents work allows them to get time for me					
11	I help my parents to work at home					
12	My parents let me work before I go to school					
13	My parents go to work every day					

SECTION E: FAMILY SIZE AND ACADEMIC PERFORMANCE

Number of siblings 1-3 ☐ 4 -6 ☐ 7 and above ☐

S/N	Statement	Strongly agree	Agree	Not certain	Disagree	Strongly disagree
14	My parents are able to provide all the things I need for school					
15	My parents are able to provide all the things my siblings need for school					

16	My parents give me attention because I don't have a lot of siblings					
17	I am not able to get what I need for school because I have a lot of siblings					
18	I am worse off in class because I have a larger family Size:					

SECTION F: PARENTAL INVOLVEMENT (GUIDANCE) AND ACADEMIC PERFORMANCE

S/N	Statement	Strongly agree	agree	Not certain	Disagree	Strongly disagree
19	My parents come for PTA meetings					
20	My parents visit the school to do follow ups on my academic performance within the term					
21	My parents make best decisions for me					

22	My parents ask me about things that happen in school					
23	My parents visit my class teacher constantly					
24	My parents encourage me to learn					

SECTION G: PARENTS LEVEL OF EDUCATION

S/N	Parent	LEVEL OF EDUCATION				
		Basic (Lower primary)	Basic (Upper primary)	JHS	SHS	Tertiary
25	Father's level of education					
26	Mother's level of education					