UNIVERSITY OF CAPE COAST

THE TRANSITIONAL EXPERIENCES OF LOWER PRIMARY PUPILS TO UPPER PRIMARY AND ITS EFFECTS ON THEIR MATHEMATICS PERFORMANCE IN THE ACCRA METROPOLIS

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BY

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Thesis submitted to the Department of Basic Education of the Faculty of Educational Foundations, College of Education Studies, University of Cape Coast, in partial fulfillment of the requirements for the reward of Master of Philosophy degree in Basic Education (Mathematics)

MARCH 2022

DECLARATION

Candidate's Declaration

I hereby declare that this thesis 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.

Candidate's Signature………………………….. Date………………………..

Name: Victoria Adwere

Supervisor's Declaration

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

Supervisor's Signature:..………….…………… Date……………….................

Name: Prof. Ernest Kofi Davis

ABSTRACT

This study sought to explore the transitional experiences of pupils when they move from the lower to upper primary and its effects on their mathematics performance in the Accra metropolis of the Greater- Accra region of Ghana. A Sequential explanatory mixed-method design was used to conduct the study. A sub-metro within the Accra metropolis was purposively sampled for the study. Stratified sampling techniques were used to sample the schools and pupils. A total of 275 primary 4 pupils were selected from 12 public primary schools. This was followed by purposive selection of 12 primary 4 teachers. A structured questionnaire survey and semi-structured interview guide were used to obtained information from pupils and teachers on transitional experiences of pupils in mathematics. Secondary data on pupils' Primary 3 third term and Primary 4 first and second terms mathematics scores were obtained. Descriptive statistics were used to analyse research question one and a follow-up thematic analysis on the qualitative data. Research question two was analysed using Point biserial correlation, Descriptive statistics, ANOVA, follow-up by a post hoc test and linear regressions model were used to analyse the extent to which transitional experiences affect pupils' mathematics performance. The findings of the study indicated that; there is significant difference between the performance of pupils in primary 3, primary 4 first term And primary 4 second term. The study revealed that the subscales do not have significant effects on performance. This account for 0.3% of the changes in performance. The study recommends that, there should be a gradual shift from the child's local language to English language in the teaching of mathematics during transition from lower primary to upper primary level as suggested by Davis, Bishop and Seah (2013).

KEY WORDS

Transition

Transitional Expereinces

Mathematics Content

Language of Instruction

Teaching Methods

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DEDICATION

To the Adwere and Aidoo families

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LIST OF ABBREVIATIONS

BECE	Basic Education Certificate Examination
CIC	Common Introductory Course
GES	Ghana Education Service
JHS	Junior High School
NCCA	National Council for Curriculum and Assessment
TIMSS	Trends in International mathematics and Science Study
WASSCE	West African Senior School Certificate Examination

CHAPTER ONE

INTRODUCTION

Background to the Study

Mathematics, one of the hoariest academic disciplines, has long been a core component of human thoughts. Mathematics has long been thought to sharpen the human intellect and increase logical thinking, as well as improve reasoning ability and spatial strength, Dehaene (2011). It also has an impact on an individual's personal growth and adds to the country's riches. This is mostly due to the fact that it is at the core of many successful professions.

According to Cockcroft (1982), there is no question that every child should learn mathematics in school because they consider mathematics, along with the study of the English language, to be vital. As a result of the amount of time spent to it in classrooms, mathematics is one of the core topics in all schools worldwide (Phillips, Norris & Macnab, 2010). It is required in many countries, including Ghana, in the elementary and secondary levels of school (Mahanta & Islam, 2012). One of the main reasons for mathematics' unique place in the school curriculum is that it has been utilized as a screening mechanism or filter for entrance into a variety of professions during the previous two centuries (Howson & Wilson, 1986). Another incentive to study mathematics is because it is fascinating and pleasant, and people appreciate its clarity, difficulties, and inherent appeal. Another justification for teaching mathematics in schools, according to Cockcroft (1982), is the natural interest in mathematics and the attraction it may have for many children and adults.

Making mathematics a compulsory subject during the formative years of school, from lower primary to upper primary and beyond, has been one of Ghana's initiatives to improve the efficacy of mathematics instruction (Oduro & Hudson, 2016). Even though mathematics is essential for daily life and plays a crucial role in the school curriculum, literature indicates that the performance of pupils decline when they transit from one level of education to the other (Asiedu-Addo, Assuah & Arthur, 2016). This sparked outrage among mathematics teachers, educators, parents, and students (Bofah & Hannula, 2015). One of the primary causes of outrage was the students' low performance in the subject.

Pupils shift from one school environment/level to another during school transitions. Pupils frequently struggle to adjust to changes in their educational environment or level (Hanewald, 2013). Most people have a difficult time adapting to change; this is true not only for adults, but also for children (Goldstein, Boxer & Rudolph, 2015). Although change is difficult at any age, it is especially difficult for students in their early years.

The transition from lower to upper primary school has long been recognised as a critical period in the education of young children (Vasquez-Salgado & Chavira, 2014; Chambers & Coffey, 2019). Young learners' transition experiences may have an impact on their academic and social development. The difficulties faced during the transition from lower to upper primary school result in eventual educational failure (West, Sweeting & Young, 2010).

The transition from primary to secondary school has sparked a lot of research around the world, with studies focusing on both students' social adjustment and changes in the educational environment (Hargreaves & Galton, 2002; Eccles et al., 1993; Gutman & Midgley, 2000). Studies on the transition experienxces of young people began to appear in Ireland (Dalaigh & Aherne, 1990; Naughton, 2000; O'Brien, 2001). The majority of published research, on the other hand, concentrates on psychological aspects of the transition from elementary to secondary school, with only a few studies systematically addressing curriculum and learning challenges (Galton et al., 1999).

The views toward mathematics and achievement in mathematics has had a significant impact on students' decision not to pursue mathematics. This has been influenced by mathematical experiences in their early stages of school (Nardi & Steward, 2003). Generally, pupils are naturally excited and interested in learning mathematics in the first three years of their primary education (lower primary). However, many educational studies carried out indicate that pupils lose interest and excitement in pursuing mathematics when they transit from one level of education to the other (Ali & Jameel, 2016).

Marshall, Staddon, Wilson and Mann (2017) studied the importance of studying mathematics in school. According to the researcher, mathematics is an essential component of human intellect and logic, as well as an essential component of our attempts to comprehend the world and ourselves.

He went on to say that it is a good technique to develop mental discipline and encourages logical reasoning and mental rigor. Furthermore, understanding the topics of other educational courses such as science, social studies, and even music and art is dependent on mathematical knowledge. Mathematics, according to Kaye (2006), introduces students to concepts, skills, and thinking techniques that are useful in everyday life and help them learn across the curriculum. As a result, knowing mathematics aids students in making sense of the numbers, patterns, and shapes they encounter in their daily lives. It also provides methods for handling data in an increasingly digital world, and it contributes significantly to their growth as successful learners.

Hence, it is important to develop pupils' mathematical skills at the early stages of their lives since this stage constitutes their formative stage (Sweeting, Young & West, 2010). Coping well at this stage of transition is significant since a positive start is associated with future growth and achievement (Gialo, Treyvaud, Mathew & Kienhuis, 2010).

This transition (lower primary to upper primary) is seen as the most challenging of all educational transitions, with adverse effects further noticeable for mathematics, because this is the stage that pupils come into contact with new and more difficult mathematics vocabulary, concepts and skills (O'Meara, Johnson & Leavy, 2020). Again, this is the stage where the subject content increases and instructional language changes for the first time (from the child's local language to the English language).

The pre-tertiary educational system in Ghana has several levels namely; kindergarten, lower primary, upper primary, junior high and senior high. Transition in the educational system is the process of moving from one level to another, say from junior high to senior high. During the transition from lower to upper primary, which is the focus of this study, many pupils experience significant changes in the physical structure, curriculum content, teaching and learning practices, and expectations of school.

In the Ghanaian setting, from lower to upper primary occurs when pupils are aged between 8 and 10, a time when, according to Piaget (1971), they are at the 'Concrete Operational Stage', which is the stage when they start to work things out in their head rather than physically in the real world.

In spite of the fact that pupils need a great deal of support to develop their mental skills at this stage, not much attention is given to their transitioning from lower to upper primary in the study of mathematics. Since difficult transitions at this stage could lead to negative attitudes towards school, reduced self-confidence, and reduced levels of motivation in learning mathematics, the present study aimed at exploring the transitional experiences of lower primary pupils to upper primary and its effects on their mathematics performance in the Accra Metropolis of the Greater- Accra region of Ghana.

Statement of the Problem

Mathematics plays significant part in accelerating the social, economic and technological growth of a nation (Evangelou et al., 2008). However, there exists a culture of blame between primary and junior high school (JHS), and between junior high school and senior high and beyond regarding pupils' poor mathematical skills. This is perhaps mainly since pupils continue to perform poorly in mathematics both in basic schools and senior high schools. Each year, over 500,000 (five hundred thousand) Ghanaian students fail mathematics in the West African Senior School Certificate Examination (WASSCE) as well as the Basic Education Certificate Examination (BECE) (Koomson, 2016)

Furthermore, Ghanaian students' achievement in mathematics is among the lowest in the world, according to the Trends in International Mathematics and Science Study (TIMSS), an international assessment program in mathematics and science. Ghana was ranked 47th out of 48 countries on the overall mathematics accomplishment table based on the TIMSS benchmark performance of Ghanaian pupils in mathematics (Mereku & Anumal, 2011).

Inadequate teacher preparation, uneven homework utilization, failure to involve students in their learning, lack of students' enthusiasm and confidence in mathematics, and students' lower educational aspirations are all factors contributing to Ghanaian students' poor arithmetic performance (Butakor, Ampadu & Cole, 2017).

During transition, many pupils confront significant changes in physical structure, teaching and learning methodologies, and school expectations. According to research, difficult transitions can lead to disengagement, a negative attitude toward schools, a lack of self-confidence, and lack of excitement, particularly in mathematics instruction (McGee, Ward, Gibbons & Harlow, 2003).

The shift between these critical academic levels (lower and upper elementary) poses a risk to pupils' academic growth. If such a transition is not properly-managed, it can result in a drop in performance, as well as apathy, indifference, and bad attitudes about mathematics.

In spite of the fact that pupils need a great deal of support to develop their mental skills at this stage, not much attention is given to their transitioning from lower to upper primary in the study of mathematics.

Against this backdrop, it is crucial to explore the transitional experiences of the lower primary pupils to upper primary and its effects on their mathematics performance by examining the factors and the extent to which transitional experiences influence pupils' mathematics performance. Hence, this study seeks to fill that gap using pupils in the Accra Metropolis.

Purpose of the Study

This research is intended to explore the transitional experiences of lower primary pupils to upper primary in mathematics and its effects on their mathematics performance in the Accra Metropolis. In particular, it sought to;

1. Explore the transitional experiences of pupils from lower primary to upper primary in mathematics.
2. Examine whether there exists an association between gender, age, tuition assistance from parents, taking extra classes in mathematics and pupils' transitional experiences.
3. Assess the extent to which transitional experiences affect pupils' mathematics performance.

Research Questions

1. What are the transitional experiences of pupils in mathematics when they move to the upper primary?
2. What association exist between gender, age, tuition assistance from parents, taking extra classes in mathematics and pupils' transitional experiences.
3. To what extent do transitional experiences affect pupils 'mathematics performance?

Significance of the Study

The outcomes of this study contributes to what is already known about students' transitional experiences in mathematics. The findings will serve as a foundation for future study in the fields of transition and mathematics education. The experiences of pupils during transition in this study can be used by policymakers in formulating transitional programmes that will aid the teaching and learning of mathematics during transition in the primary level.

Again, the findings of this study will assist basic school headteachers and teachers in paying special attention to pupils throughout school transitions and guiding them in the selection of appropriate teaching techniques and resources for mathematics teaching and learning. The study would also produce results that provide teachers and parents with in-depth knowledge on the need to make transitional arrangements to cater for various learning needs of pupils across subjects in the school curriculum. In addition to this, the findings from this research would contribute to the body of knowledge available to Mathematics educators, teachers and parents on how to handle pupils during transition.

Finally, the findings of this study will aid in the improvement of mathematics teaching and learning in transitional classes.

The findings of this study can be used to investigate other factors that influence students' transitional experiences in mathematics and their impact on their performance in the future.

Delimitation

The present study was designed to explore the transitional experiences of lower primary pupils (primary 3) when they move to upper primary (primary 4). This implies that, the research did not look at the other upper primary classes (primary 5 and 6). This is due to the fact that educational system in Ghana do not consider these classes as transitional classes. Again, the study could have been carried out across the entire Greater-Accra region of Ghana and across all the transitional classes in the pre-tertiary education system in Ghana, but due to factors such as time and resources, it focused on pupils in primary 4 and their teachers in some selected schools in the sub-metro A of the Accra metropolis.

In addition to this, the research employed the participation of only public primary schools and teachers. This implies that private primary schools and teachers were not considered.

Furthermore, the study explored the transitional experiences of lower primary pupils to upper primary in mathematics. These transitional experiences were put into three themes (subscales) namely; change in language of instruction, change in teaching method and change in mathematics content. This implies that all other transitional experiences were not considered.

Again, the study did not consider how schools and teachers minimize or eleminiate difficulties in learning mathematics among pupils transitioning from lower to upper primary. The study focused on the transitional experiences pupils go through and the extent to which the transitional experiences influence their mathematics performance.

Finally, the research sort to find out the association that exists between gender, age, extra classes and tuition assistance from parents on pupils transitional experiences. This implies that, the effects of these demographic characteristics (gender, age, extra classes and tuition from parents) of pupils on their transitional experiences were not considered.

Limitations

The research was confined to 12 public primary schools in the Greater-Accra metropolis of the Greater-Accra region of Ghana. It was aimed towards teachers and pupils in Primary 4. The study explored some transitional experiences of lower primary pupils when they move to upper primary in mathematics and how its affect their performance.

Despite its small size, the Greater-Accra region is the country's most densely populated area. It also has the greatest number of students population. The number of public primary schools in the Greater-Accra area accounts for about a quarter of all primary schools in Ghana. The researcher was unable to visit all of the primary schools in the Greater-Accra region due to time and resource. This may not represent the views of the whole primary school population in the Greater Accra region to the degree necessary.

Defination of Terms

With respect to this research, the following terms are defined as follows;

1. Transition: Transition in the education system is the process of moving from one level /environment into another. Say from lower to upper primary lever, junior high to senior high level etc
2. Transitional Experiences: The transitional experiences are the changes pupils go through when they move from one level of education to another. These changes include; physical structure, curriculum content, teaching and learning practices etc
3. Mathematics Content: Mathematics contents are various topics that are being taught in mathematics such as: the concepts of numbers and numerals, measurement, geometry, statistics and probability and so on.
4. Language of Instrution: The language of instruction is the medium of language used in teaching. This may be the mother tongue of pupils (a language they speak at home and in their community), the official or

national language of the country, an international language such as English or a combination of the two.

5. Teaching Methods: A teaching method comprises the principles and strategies used by teachers to enable pupils learning.

Organisation of the Study

The study is divided into five chapters. The background, statement of the problem, purpose of the study, research questions, delimitation, limitation, definition of terms and relevance are all covered in the first chapter. The second chapter reviews related literature, while the third chapter focuses on data collection methods, sample size, sampling procedure, and descriptions of research tools used for data collection, as well as data analysis methodologies. The fourth chapter is devoted to a discussion of results and the findings of the study. The final chapter contained the summary of the research, as well as conclusions and recommendations..

CHAPTER TWO

LITERATURE REVIEW

This chapter reviewed literature related to transitional experiences of pupils in mathematics. The chapter is divided into two sections. The theoretical frameworks of the study are discussed in the first section. Also, empirical studies on transition and mathematics education and other specific academic genres were reviewed to demonstrate how this study ties in with and differs from previous researches

Theoretical framework

Dewey's theory of continuity

This study was done within the theoretical framework of John Dewey's idea of educational continuity, which he refers to as "the category of continuity or the experienced continuum" (Dewey, 1963, 1966, 1986, pp. 33–50). Dewey states that pupils "have learned in a way of knowledge and skill in one situation becomes an instrument of understanding and dealing effectively with the situations which follow" (p. 44). He claimed that "the principle of continuity of experience means that every experience both takes up something from those which have gone before and modifies in some way the quality of those which come after" (p. 35). He also emphasized that it is the responsibility of teachers to assign students assignments based on their prior experiences and to make links to new ones. Then and only then would new experiences become instructive. Despite the fact that these concepts were first introduced about a century ago, they are still alive and well in scientific literature (Elkjaer, 2000) and are used to analyze teaching and learning

(Carver & Enfield, 2006). Other scholars have further extended this theoretical method (Fishman & McCarthy, 1998).

Linking Dewey's theory on continuity of experience in education to this Study

Dewey's theory on continuity of experience in education proposes that learning should be done in continuity or the "experiential continuum". In the context of this study, the theory can be explained through the use of what pupils' have been taught in Primary 3 mathematics content that should become an instrument of understanding and dealing with Primary 4 mathematics content. He claimed that "the principle of continuity of experience means that every experience both takes up something from those which have gone before and modifies it in a way that quality of those which are yet to come after" (p. 12). What this implies in this study is that those mathematical concepts taught in the transitional class take up something from those taught in the lower primary. However, it is the responsibility of teachers to give pupils assignments that are founded on their earlier experiences and gradually build on to create connections to the new ones. This would enable pupils to understand the concept taught in the transition class. Hence, the theory is significant to the study.

Piaget's Theory of Cognitive Development

Piaget's cognitive development theory provides a logical explanation for the creation and development of human intelligence. The theory compacts with the core of information itself and how it is gained progressively by humans. The theory of Piaget is mainly recognized as a theory of the developmental stage. Cognitive growth for Piaget is a gradual reshuffle of mental progressions ascending from biological fruition and experience in the environment. According to Piaget (1971), children cultivate alertness of the universe, come across irregularities in what they are previously aware of and what they see in their environs and amend their thoughts accordingly. In addition, Piaget (1971) contended that cognitive development is at the core of the hominoid organism, and dialect is contingent on the attainment of information and understanding through cognitive development.

Linking the theory of cognitive development to the study

This study can be situated in this theory since the study focused on children aged 7-11 years. The age group forms the concrete operational stage of Piaget's third stage of cognitive development theory (mostly from lower Primary 1 to upper Primary 6). Here, children begin to think logically about concrete events and their thinking becomes more logical and organized. At this stage, pupils learn through manipulations of concrete objects (counters, pebbles, abacus, Cuisenaire rods etc). A mathematics manipulative is a physical device that is designed to depict abstract mathematical principles plainly and concretely (Moyer, 2001). This study advocates the use of tangible objects, as well as Piaget's emphasis on teaching from concrete to representational to abstract, to assist young learners make sense of their arithmetic skills and perform well when they transit. As a result, the theory is important to the research.

Constructivism theory

The present study employed the Constructivism theory of learning to help explain transitional experiences and the performance of pupils in mathematics. This theory applies to the study since it supports the idea of using blended teaching ways in teaching mathematics. Constructivism believes that awareness that arises through the interface between acquaintance and knowledge is not exterior to the innovation that a child is informed of and waiting; rather, understanding is procreated over a progression of new evidence that interacts with previous learners' understanding and capabilities (Du Plessis & Muzaffer, 2010). When it is being used rather than when it is presented in a unique manner that separates it from previous capability and the potential for interaction with it, Piaget and Vygotsky regarded information as important for teachers and pupils. This can be expounded as pupils would learn best when they are taught with methods that allow them to interact with other pupils in the classroom, thus the learner-centred methods such as small group discussion and other interactive methods of teaching mathematics.

Teachers should establish circumstances for pupils to discern and actively construct knowledge. According to constructivism, learning how to learn through inquiry-oriented classroom lessons to improve the higher-order thought skills of interpretation and synthesis. From this perspective, modules ought to be drawn upon, bond and analyse their prior acquaintance and practices through self-discovery and interface with other pupils and with the instructors. The crucial rule is to occupy pupils in creative, hands-on activities, working in groups and amalgamation of awareness across traditional subject areas (Du Plesis & Muzaffer, 2010). The above theory suggests that learning should take place under a condition that supports interaction, hence the need to critically examine the teaching methods of teaching mathematics to know which of them are suitable for pupils' when they transit. Also, the study adopts the Constructivism Theory because it examines the teaching methods used in teaching mathematics when pupils move from the lower primary school to upper primary.

Linking the constructivism theory to this study

The Constructivism theory of learning talks about the fact that learning should be done through an external medium thus, interaction. In the context of this study, the theory can be explained through the use of the two teaching methods used in teaching mathematics. That is the expository methods and interactive methods of teaching. In the use of a method like the interactive method, individual pupils would have the opportunity to interact with other pupils. Also, in the expository method, the teacher can interact and introduce mathematics concepts to pupils for the first time in the lesson delivery. To learn mathematics at this formative stage, children must construct their own internal structures. Children create their own routines while reading and writing. It is important to notice that youngsters must go through the invented spelling stage before they can grasp the concepts of spelling structures. Correspondingly, in mathematics, young students try to count or organize things in their environment and come up with their own rules. Pupils should be encouraged to try out constructivist own strategies, refine them through debate, and engage in a range of assignments, especially at this level of their mathematics education. In addition, when using a constructivist approach, students frequently work in pairs or small groups to solve problems collaboratively. Tasks written on a single sheet can be assigned to groups of two or more pupils, necessitating consultation, debate, and cooperation in the study of mathematics. Furthermore, students work at their own pace but are urged to finish the activity as completely as possible within the allotted time.

Finally, children are encouraged to respect one another's solutions, avoid discrediting their partners' reasoning and discuss the train of thoughts used in the process. Hence, the theory is significant to the study.

Vygotsky's cultural-historical theory

This research concentrated on the elements of Vygotsky's Cultural-Historical Theory that centered on language as a tool for making sense of social behaviors and cognitive development (Vygotsky, 1978). Within their culture, language acts as a psychological instrument for children's intellectual growth (Boyle, 2015).

Language serves as a facilitator in the entire development of an individual's concept formulation in mathematics courses (Davis & Agbenyega, 2012). Because language is a "very personal and social activity among human beings" (Vygotsky, 1978, p.126), there is a requirement for social contact in order for learners to engage in dialogical processes and use language to promote conceptual comprehension of subject matter.

Language comes in a variety of ways, including spoken, gestural, and symbolic. Math has its own verbal, gestural, and symbolic language forms that learners must grasp in order to participate successfully in mathematics instruction (Munro, Derwing & Thomson, 2015; Zevenbergen, Mousley & Sullivan, 2004). Language is used by children to express mathematical concepts, demands, and expectations. In this manner, all human civilizations' various forms and uses of language may be considered cultural tools since they allow individuals to think and express ideas that are unique to that group (Bodrova & Leong, 2008).

Students gain emotionally and cognitively, according to O'Boyle and McDonough (2015), when they are included in the classroom's social dynamics and instructional language, which acts as a tool for beginning connections with others (Vygotsky, 1962). Using a medium of teaching that is not the same as the children's native language might cause some youngsters to become confused and disinterested (Sullivan, Jorgensen, Boaler & Lerman, 2013; Zevenbergen, Hyde & Power, 2001).

Linking Vygotsky's cultural-historical theory to the study

Understanding mathematical language in all of its forms is beneficial to children's intense relationships, as it allows them to listen to and respond to one another's ideas, as well as extend and improve their understanding (Bodrova & Leong, 200; Zevenbergen et al., 2004). The usage of the English language and the type of mathematics instruction in Ghanaian upper primary schools may be preventing many young learners from grasping and creating the fundamental concepts required for subsequent mathematics learning. As a result, it is critical to investigate the English language as a medium of instruction in mathematics classrooms when students move from lower to upper primary, focusing on the question: How does the English language as an instructional language contribute to students' mathematics performance when they move? As a result, the theory is important to the research.

Historical perspective of school transition

Research on primary to post-primary school transition has its origins in the twentieth-century middle school movement, which arose in reaction to social, economic, theoretical, and political developments (Lounsbury, 1960). Dr. William Alexander gave a significant lecture at Cornell University in

1963, outlining the need for a "new middle school for the instruction of young learners that would meet their particular social, emotional, and educational needs" (National Association of Secondary School Principals, n.d).

Researchers at the time, including Donald Eichhorn, John Lounsbury, and Theodore Moss, were also producing works to support the concept of middle schooling, and as their ideas about the curriculum for young learners gained traction in the global educational sector (Beane, 1990), a movement arose that led to many research foci, including the optimization of student transfer between schools (Beane, 1990).

Authors such as Dale (2008) wrote key books in the 1980s, emphasizing the need of educational continuity for young learners. The transition from a limited curricular focus to broader fields of study was prompted by investigations into how this may be accomplished. Importantly, Measor and Woods (1984) studied transition from the perspective of students, emphasizing the significance of school setting and the results of a successful school move. In addition, Hirsch and Rapkin (1987) looked into the psychological well-being of transitioning students and emphasized the importance of taking an ecological approach to transition, while Pollard (1987) summarized school transition as a process, emphasized the need for more research, and helped move school transition into the realms of evidence-based policy.

The corpus of literature focused on the many social, emotional, academic, school, family, and individual elements of school transition has gradually increased over the last 30 years as a consequence of the motivation of these scholars. In addition, the World Bank recognized the relevance of the transition to health and well-being in their 2007 study "Development and the Next Generation," which included the primary to secondary school transition as one of five life changes linked to improved health outcomes for students (World Bank, 2007). Much of the present study has been conducted in the United States and Europe, where the beneficial and bad effects of school transition during a student's education experience have long been acknowledged.

However, there has been little original research into transition in Australia, with the majority of the information available based on the work of modern international authors, with just a few Australian authors and organizations being found (Coffey, 2011; Dockett & Perry, 2003; Hanewald, 2013; Holdsworth, 201NCCA 2200; Pereira & Pooley, 2007; Wajsenberg, 2004; Waters, Lester, & Cross, 2014; Waters, Lester, Wenden & Cross, 2012). However, a comprehensive knowledge of school transition remains challenging, owing to a variety of study techniques and methods, as well as worldwide disparities in school systems, structures, and governing bodies (Bishop, 2019; Benner, 2011). The expanding corpus of transition literature demonstrates that health authorities.

The school transition

Moving from a known primary school to a known post-primary school is referred to as a school transition (Green, 1997). As a result, this change is referred to as a "institutional discontinuity" (Anderson, Jacobs, Schramm & Splittgerber, 2000; Rice, 1997). Anderson et al. (2000) explained that there are two types of institutional discontinuities: organizational and social. Organizational discontinuities include changes in class/school size, increased pupil autonomy, and more rigorous academic standards. Social discontinuities include changes in population diversity and sense of belonging. The transition from primary to post-primary school involves both organizational and social changes. These breaks occur as a result of the schooling system being separated into parts that students move between (Green, 1997). In Ireland, for example, official education begins in primary school, which students generally begin when they are five years old. Students transfer from 'sixth classes to 'first year' in post-primary school after eight years in primary school.

With regard to mathematics, the topic is a key component of elementary and secondary school curriculum. A substantial overhaul of elementary school mathematics occurred in 1999. The curriculum, which is still in use today, emphasizes a constructivist approach to mathematics instruction in which children are essential. Its major goal is to educate youngsters to confront the challenges of the twenty-first century by teaching them to think quantitatively and speak statistically in order to solve issues (NCCA, 1999). However, these improvements in primary school were not mirrored in secondary school, where the curriculum had stayed mostly unaltered since the 1960s, with a focus on mathematical structures, abstraction, and rigor (Lyons, Lynch, Close, Sheerin & Boland, 2003). This resulted in a very procedural approach to mathematics education in secondary schools (NCCA, 2005), as well as a lack of consistency between the subject's teaching and learning at both levels (Prendergast & Treacy, 2018).

Inconsistency between the two curricula persisted until 2010, when a significant overhaul of post-primary mathematics instruction known as "Project Maths" was introduced into all schools across the country. Project

Maths' major goal was to develop a better understanding of mathematics so that students could comprehend the importance of what they were learning, how mathematics can be used to solve issues, and how mathematics is used in everyday life (Prendergast & O'Donoghue, 2014). Its adoption necessitated alterations to what students learn in mathematics, how they learn it, and how they are evaluated.

The establishment of a Common Introductory Course (CIC) for entering first-year students was a significant component of the Project Maths curriculum reform at the secondary level. A Bridging Framework was created in collaboration with the CIC to connect the sixth grade and first-year curricula and promote a smoother transition from primary to secondary mathematics. Primary mathematics curriculum may now be connected to secondary mathematics subject to guarantee greater continuity, not just in instructional techniques, but also in content.

Transitioning from primary to secondary school generally includes students transitioning from a distinct, more heterogeneous school to a post-primary school with a higher expectation of autonomous academic achievement and less teacher scaffolding (Hanewald, 2013). Alspaugh (1998) conducted an empirical research in the United States that found that when students progressed from elementary to secondary school, their mathematics achievement levels decreased. Waldrip and Prain (2015) studied students' performance in mathematics, reading, and writing throughout the changeover in New Zealand. Despite having a reasonably favorable attitude toward mathematics, the results showed a decrease in achievement for the typical student.

The researchers also discovered that mathematics had the most variation in students' results, and that the difference between high- and low-achieving students widened as they progressed through post-primary education. In the United States, Mizelle and Irvin (2000) discovered that some students' self-image as capable learners was harmed by their anticipation of more challenging mathematics in secondary school. Furthermore, as the transfer to secondary school grew nearer, students' trust in them eroded, influencing their views about the topic.

Pupils’ attitudes toward mathematics, in particular, have been observed to deteriorate as they progress from elementary to secondary school (Galton, Hargreaves & Pell, 2003). Eccles et al. discovered in the United States as early as 1984 that following the shift, there was a dramatic increase in pupils' pessimism regarding their aptitude and potential in mathematics, as well as more unfavorable opinions on the subject's usefulness. This decline in students' attitudes about mathematics was recently echoed in data from the TIMSS large-scale worldwide comparison research, which was performed in 2015. On average, 81 percent of 9 to 10 year-old children (upper primary school pupils) in the nations that participated in the TIMSS fourth grade survey said they like or enjoyed learning mathematics, while 21% said they did not. However, in the eighth-grade research, on average, 61 percent of 13-14-year-old pupils (lower secondary level students) said they like or enjoyed learning mathematics, while 38 percent said they did not (Mullis, Martin, Foy & Hooper, 2016). This is significant since several studies have found a link between students' attitudes toward mathematics and their academic success (Ma & Kishor, 1997; Papanastasiou, 2000).

Hence, there is a wealth of research describing a range of problems that occur with the transition from lower to upper primary. However, most of this data is dependent on the transitional experiences of students. Teachers, both at the elementary and secondary levels, are the other major stakeholders in the process. Teachers play a critical role in students' education and transition experiences (Gutman & Midgley, 2000), thus they are in a unique position to provide the social and academic assistance that students require to make successful transitions (Hopwood, Hay & Dyment, 2016).

Despite this, little is known about instructors' perspectives on both sides of the split, as well as the difficulties they see as troublesome in transitioning pupils from year to year. To far, the most significant piece of research in this field is a qualitative study conducted by Hopwood et al. (2016) in Australia, in which twelve teachers from both lower and upper elementary schools were interviewed. Curriculum continuity and awareness, communication between lower primary and upper primary schools, and adequate teacher support were identified as three key methods that lower primary to upper primary school teachers believed were essential for facilitating successful transition experiences for pupils (Hopwood et al., 2016). The authors' study, which used a quantitative methodology and a considerably larger sample size of instructors, expands on these findings in an Irish setting.

The essence of mathematics education

Every school system that aspires to prepare its citizens for a productive life in the twenty-first century must include mathematics as a core component. To promote innovation and a technology-driven economy, the creation of highly competent and well-educated personnel is vital. Strong mathematical growth and a skilled pool are required to support a diverse range of value-added economic activities and innovations. Many countries are concerned about the quality of mathematical education they provide. The expanding popularity of TIMSS and PISA reflects the worldwide interest in the importance of mathematics education. At the individual level, mathematics supports many parts of our daily lives, from deciphering newspaper headlines to making informed personal finance decisions. It helps students learn in a variety of subjects, including science and business. Wherever computations, measurements, graphical interpretations, and statistical analysis are required, a solid understanding of basic mathematics is required.

Learning mathematics is also a great way to exercise your mind and increase your ability to think logically, abstractly, critically, and creatively. These are critical 21st-century skills that we must instill in our students so that they can live productive lives and continue to learn throughout their lives. Pupils begin at different levels. Not everyone will be interested in maths and have the same inherent ability to learn it. Some people will find it delightful, while others may find it tough. Some individuals will be intrigued by the concepts and results, while others will be confused by the calculations and regulations. As a result, it is critical for the mathematics curriculum to provide diversified pathways and options that will enable every student at all stages of school, particularly in upper elementary and beyond, to reach their full potential.

The curriculum must appeal to 21st-century students, who are digital natives who are comfortable with technology and who work and think in unique ways. The new generation of learners, pedagogical changes, and technological capabilities must all be considered when studying mathematics. Modern techniques, according to studies, have increased the need for visual and tactile assistance to help youngsters comprehend mathematical ideas and procedures. The old rote learning didactic techniques of teaching mathematics are progressively being replaced with interactive teaching approaches. On the other hand, another noteworthy recent shift in mathematics is the advent of hands-on learning in mathematics classrooms. This makes mathematics education basically practical and dynamic, demanding fresh modifications in teaching the subject. In the United States, the Agenda for Action was developed as a method for fostering problem-solving abilities that was viewed as a touchstone for reform (Clarke, Clarke & Sullivan, 1996). As a result, the Agenda recommended that mathematics education programs at all grade levels make full use of hands-on learning. It would be interesting to learn how far such mathematics teaching ideas have been adopted in Ghanaian schools.

The national mathematics curriculum aims to guarantee that all students obtain a degree of knowledge of mathematics that will serve them well throughout their life, as well as for those who have the desire and ability to pursue mathematics at the greatest level possible. As a result, mathematics is an integral part of our natural science curriculum. Pupils begin learning mathematics on the first day of formal instruction and continue to do so until the conclusion of secondary school. Every youngster will receive at least 12 years of meaningful mathematics education as a result of this.

Transition and mathematics achievement

Over the past 20 years, research has impressively documented an progressively lesser percentage of students pursuing mathematics at upper primary. The choice not to pursue mathematics has been seriously influenced by students' attitudes toward performance in mathematics. This, in turn, is molded by math experiences in school and the teaching experience in school (Nardi & Steward, 2003). Negative attitudes about mathematics are difficult to modify once developed and might continue into adulthood, despite the fact that views vary during the school years (Newstead, 1998). Preserving interest in mathematics during the middle years may encourage more positive attitudes, making mathematics education more appealing. Many young learners' school mathematics involvement has decreased significantly as compared to while they were in primary school (NSW Department of Education and Training, 2005). There has also been a rise in absenteeism, disruptive behavior, alienation, and isolation among young learners (Sullivan, McDonough, & Harrison, 2004). Rowe, Hill and Holmes-Smith (1995) noticed a notable halt in the development of learning in the middle years, with those in the bottom decline appearing to not improve academically beyond Year 4 level. Underachievement appears to be significantly connected to disinterest in mathematics caused by particular instructional techniques (Boaler, 2002).

Pupils face social, organizational, and intellectual changes as they progress through upper elementary school and beyond. Pupils ready to move on from lower primary school sometimes have preconceived notions and unrealistic expectations about the obstacles that primary schools provide. Many Primary 3 students anticipate that the work in Primary 4 will be more difficult, posing a challenge for some and causing fear and concern for others (Howard & Johnson, 2004). Kirkpatrick (1992) conducted an Australian study of students' perceptions of the transition to secondary school, and found that while academic work in their first year of secondary school was no harder or easier than in their final primary year, they still struggled to adjust to the new academic environment. Despite the absence of challenge, the transfer to secondary school frequently results in some amount of achievement loss, a phenomenon not unique to Australian children (McGee et al., 2003) In addition to scholastic concerns, children transitioning to high school experience major social adjustments. Many students must learn to manage with a much bigger school setting, where there is a greater focus on control, more impersonal student/teacher connections, and a higher chance of public assessments of pupils than in primary schools (Hardy, Bukowski, & Sippola, 2002). Despite the fact that a large body of research indicates that social contact in the classroom is an essential contributor to excellent learning outcomes, mathematics classrooms appear to be an outlier.

Due to the frequently personalised character of mathematics instruction, some students perceive mathematics classes as “other-worldly”, with little link to their own lives and maybe no connection to other academic subjects (Boaler, 200s). Individualised work in the mathematics classroom has a long history of stifling meaning, engagement, and comprehension. “Whether teachers do or not, students' mathematics classes see themselves as a community, and it is contradictory to the concept of any community that it should limit communication between participants, and that prevailing practices prohibit meaning and agency,” Boaler continues (p.394). Emotional well-being is essential for students to operate successfully at school and in society. In addition to ties with peers, relationships with instructors have a significant influence on students' mathematics learning. The amount of time students spend with their instructors, developing connections, is one of the most visible contrasts between elementary and secondary school. The Connecting Through the Middle Years project (Henry, Barty, & Tregenza, 2003), found that when dealing with pupils and the ‘drop-out’ syndrome a link was made with ‘connectedness’, referring to the sense of belonging which results in a feeling of well-being.

Methods of teaching mathematics

Mathematics may be taught using a variety of approaches and methods. Every teacher has a unique method of presenting a lesson. As a result, some academics believe that there are as many teaching techniques as there are instructors. On the other hand, when it comes to teaching mathematics, there is no one best or most effective technique. According to Miheso-O'Connor (2002), no single teaching style may be the best option for all situations. However, there is a lot of information regarding the features of excellent mathematics teaching techniques. It is critical for every teacher to pick and apply approaches that have these qualities. The effectiveness of a teacher's performance and effort in the classroom determines the quality of delivering mathematical information (Rukangu, 2000).

Teaching in general, and mathematics teaching in particular, has traditionally depended on the teachers' presentation followed by practice of the essential abilities. Most teachers, according to Womack (2012), describe the rules on the board, offer some instances of the rule in action, and then allow the class many additional examples and exercises to perform on their own with little or no explanation. They went on to say that teachers think that with enough practice, comprehension will ultimately come. However, research has demonstrated that this alone does not ensure idea comprehension. In any literature on effective mathematics training, a variety of teaching approaches emerge regularly. Hands-on learning, problem-oriented learning, an emphasis on meaning, whole-class discussion, and small group work are examples of these. Effective mathematics education necessitates ongoing efforts to learn and improve. As successful means of teaching mathematics, several researchers have tackled various difficulties pertaining to these themes.

The use of small groups as part of mathematics education, especially in upper elementary and beyond, is supported by research. This approach can lead to improved learning outcomes, as evaluated by standard achievement metrics, as well as other significant outcomes (Marshall, 2018).

A classroom in which problem-solving plays a major role, according to Posamentier and Stepelman (1999), can offer a suitable atmosphere for mathematics learning. When students are presented with an issue that is both hard and fascinating, they experience both the desire to solve the problem and the tension that comes with it. If a problem is to improve students' knowledge of mathematics, it must have two characteristics. To begin, an issue must have the ability to establish a learning environment that invites students to debate their thoughts on the mathematical structures and underlying computing methods found in the problem's solution. Second, a problem must have the ability to direct students' studies into previously unknown but crucial areas of mathematics (Bergeson et al., 2000).

According to Nur (2010), research has repeatedly demonstrated that emphasizing teaching for meaning has beneficial benefits on student learning, including better initial acquisition, stronger retention, and a higher chance of using the concepts in new circumstances. Collopy (2003) discovered that focusing on the meanings provides pupils with a solid basis for learning new related concepts. It also aids them in determining when to employ specific abilities or processes since they can identify the underlying reasons why these techniques operate. At the computational level, the research found that achievement levels in interactive classes differed considerably from those in traditional courses. However, there were significant variations in success between interactive and traditional classes in terms of cognitive development application and understanding (Miheso-O'Connor, 2002:83). The study also discovered that today, didactic teaching accounts for 75% of mathematics instruction and classroom engagement accounts for just 25%.

Nevetheless, research shows that when utilised to share and explain the range of methods through which individual students have addressed issues, whole-class discussion may be helpful. It enables students to see the various approaches to evaluating an issue as well as the range of appropriate and acceptable answers (Collopy, 2003). Several mathematics educators think that for a mathematics teaching technique to be effective, it must include a variety of well-balanced pedagogical approaches and activities to accommodate students with varied learning styles. According to Cockcroft (1982), mathematics instruction at all levels should contain chances for teacher exposition, teacher-pupil debate, and pupil-pupil discussion. Appropriate practical work, including the consolidation and practice of core skills and routines, investigative work, and problem-solving, as well as the application of mathematics to everyday circumstances.

The overburdening of the mathematics curriculum has an impact on teachers' teaching methods. Mathematics is taught conceptually in order to cover the syllabus, and pupils are not allowed time to discover things for themselves. Teachers may be frustrated by a lack of instructional materials and unsupportive principals (Ibid). Several studies on mathematics teaching approaches have been conducted. Forrester (2000) looked into the role, implementation, and efficacy of learners' post-16 practical activities. Regardless of the learner's age, the study concluded that practical exercises improve mathematical understanding.

Mereku (2003) explored the amount to which a specific activity-based teaching approach is used in a teacher's classroom practice, rather than the effectiveness with which the method has enhanced learners' performance. For data collecting, the researchers used a variety of methods. These included movement and discourse patterns in observed lessons, as well as a survey of teaching strategies utilized in teachers' classrooms. Teachers should use exploration or activity approaches aimed at learning tasks that foster inquiry, creativity, manipulating, and manual abilities, according to the study. Teachers should also encourage students to learn by doing rather than passively receiving information, and emphasize understanding rather than mechanical memory.

A discussion and group technique, according to Bloom (1982), is a learning activity in which the teacher and students communicate together to share opinions, views, or knowledge about a topic or an issue. It contributes significantly to learning. A true discussion must begin with an attempt to gather viewpoints and information from the students so that they can be taken seriously and their repercussions explored. The teacher may not define the objectives in inquiry conversations; instead, she or he organizes for the debate to take place, and the activity is left open-ended. The discussion and conclusions are led by the teachers, and the discussion and conclusions are carried out by the students. Students continue out the discussion and arrive at a concussion because learning is seen as a leader. Learning is viewed as the result of active student participation and creative inquiry. Whole-class discussions, panels, symposia, roundtables, forums, committees, and small groups are examples of participation activities that fall under discussion. Some strategies in these activities allow learners to share their thoughts, opinions, and information, as well as to express other points of view. They are interactive in nature. The types of strategies used by teachers in the Accra Metropolitan of the Greater Accra Region to teach mathematics have not been experimentally documented. Thus, the need for this study.

Teacher qualification

To qualify, according to the Longman Advanced American Dictionary, means to have the authority to perform something. As a result, a qualified mathematics teacher has the authority to instruct in the subject. Despite the fact that this right is in accordance with each country's educational rules, the problem has two fundamental and universal aspects. These factors include the teacher's knowledge of the subject and ability to instruct successfully. In reality, an upper primary school mathematics teacher with a bachelor's degree in mathematics is qualified.

Researchers have shown that having a major in mathematics or science is linked to higher student success in these subjects. Pupils taught by instructors with a bachelor's degree in mathematics made more progress than students taught by teachers without a bachelor's degree in mathematics (Alexander & Fuller, 2005). Few educators, economists, or politicians would disagree that, when all other factors are equal, highly qualified teachers create higher student success than instructors with lower qualifications. Indeed, effective instructors have measurable effects on students' exam results (Alexander & Fuller, 2005). Having a trained mathematics teacher in the classroom, on the other hand, is a common issue. Despite the fact that study findings stress the significance of having competent mathematics instructors in the classroom, qualified mathematics teachers are in short supply in most regions of both developed and developing nations.

In Ghana, most teachers teaching at the primary level are not subject teachers who have specialized in a particular subject area. This makes the teaching of some subjects a challenge most especially, mathematics. Given this, the researcher recommends that teachers teaching at the primary level in Ghanaian schools should be given training in subject areas.

Pupils' experiences during the transition

Initial studies on the transition from primary to secondary school focused mostly on changes in children's academic performance. The shift from elementary to secondary school has an impact on all pupils in some form. It has been discovered that most students' average scores may first drop when compared to their original performance. This conclusion is supported by research from throughout the world, where students make the shift at various ages (Murdock, Anderman & Hodge, 2000; Fabian, 2007). Pupils believed it takes time to adjust to the post-primary school mathematics curriculum, and that they struggle with a variety of courses. During the transition from elementary to secondary school, several students expressed a decline in their enthusiasm and like for mathematics. They also admitted to having reduced involvement as a result of changes in mathematics teaching and learning.

The lack of appropriately qualified mathematics teachers at the primary level, according to the author, could be a result of students' disengagement in mathematics when they transit. At the higher elementary school levels, while students are still transitioning from a concrete-manipulative state to abstract thought, more hands-on activities and tangible objects should be used. Even if the structure of the upper primary school timetable makes it more difficult for teachers to provide such activities, including such pedagogies would most likely be beneficial during the transition phase. Numerous research have been referenced in support of the study. The results of this study on students' performance throughout the transition from elementary to secondary schools revealed that students' academic achievement drops. According to the author, this performance drop might be transient or permanent. During this time, students' views toward mathematics frequently deteriorate. Schools and mathematics teachers must take steps to ensure that students' academic abilities are maintained.

It could be argued that regardless of the age at which the transition occurs, there appears to be consistent evidence to show that any change in schooling can result in a decline in accomplishment, academic performance, and attainment. Scholars have proposed a number of different theories for why performance is declining. This drop, according to Eccles, Wigfield, Harold and Blumenfeld (1993), is due to a shift in students' perceptions of themselves as learners as they progress through school. It appears that as pupils' progress in schooling their attitudes and performance in mathematics decreases. Individual differences should always be addressed while transitioning, according to Eccles, Lord, Roeser, Barber, and Hernandez-Jozefowicz (1997). Individual variations, they said, can impact future development; for example, if a childs early scores drop in Year 4 due to poor coping skills and social support, the child may acquire a negative self-concept that undermines his or her academic performance. Reduced motivation can then become a self-fulfilling prophecy, resulting in additional reductions in performance and, possibly, disengagement from school (Fenzel, 2000).

Another explanation for the drop in mathematics performance during the transition is that students' perceptions about work and ability shift throughout this time. As students approach puberty, Nicholls and Gardner (1999) found that they viewability as a stable attribute with only a tiny link to effort. In post-primary education, it might be argued that skill is valued more than effort (for example, GCSE scores), and if a student puts in a lot of effort and then fails, they and others may perceive themselves as incompetent and lose incentive to engage with that task again. Wampler, Munsch, and Adams (2002), on the other hand, contend that an initial dip in outcomes may benefit youngsters with more personal and cognitive resources. Their theory was that by challenging these students' self-perceptions of academic competency, they would be motivated to work more. Their advice went on to say that improving their grades not only reinforces their overall positive self-perception, but also drives their academic motivation (Wampler et al., 2002).

The focus of transition research has shifted to social and emotional elements related with transitioning to secondary school, but the bulk of studies have focused on non-vulnerable populations. As previously said, transition can have an impact on and alter a student's self-concept. There is evidence that the transition from primary to secondary school can negatively impact students' self-esteem (Harter, Whitesell, & Kowalski, 1992) and subjective evaluation of core curriculum subjects (Anderso). It has also been discovered that most children experience periods of anxiety and/or depression during this time (Wigfield, Eccles, MacIver, Reuman & Midgley, 1991). As previously stated, some children find systemic shifts particularly difficult (Lord, Eccles & McCarthy, 1994). These students frequently suffer from low self-esteem and poor academic achievement. According to a study conducted in the United States, students who find transitions extremely stressful and difficult to cope are more likely than their classmates of the same age to drop out before graduating (Roderick, 1993). According to Pratt and George (2005), the majority of anxiety and concerns expressed by students are based on rumours and stories and are more social than academic in nature.

There is some indication from research indicating students in transition have heightened feelings of loneliness throughout their first year of secondary school (Hertzog & Morgan, 1998). McGee, Ward, Gibbons, and Harlow (2003) stated that transitions are now more well-organized and user-friendly than they were in the past, and that few students experience anxiety for long periods of time. According to McGee et al. (2003), anxiety about adjusting to a new class fades rapidly and is generally replaced by long-term concerns about schooling. This result is intriguing since it appears to contradict earlier research that suggests that students' motivation to learn decreases as they become older. It should be highlighted, however, that the findings of McGee et al. (2003) cannot be applied to the entire UK population. In New Zealand, the author looked into the transition from middle to secondary school. Some students in New Zealand attend middle school (Years 9 and 10) before moving on to secondary school (Years 11 and 12). (age 15). In the United Kingdom, children begin secondary school at the age of 11, four years younger than the participants in the study. As a result, it may be argued that fifteen-year-olds have more maturity to deal with the transition to secondary school than their eleven-year-old counterparts, which explains why they acclimate to their new school so fast. Also, as they reach the age of national exams, 15-year-olds may be more anxious about schooling.

Peer interactions and friendships, as previously mentioned, are key variables for students to feel happy and enthusiastic about school. Friendships and social engagement are especially important for young students during transition. Friendship networks may be disrupted during this period of adjustment. This can have an impact on students' grades and success. Pupils with weak social and intellectual abilities, as well as low self-esteem, are more likely to struggle in post-primary school, as forming friendship groups is more difficult for them. As a result, people may feel lonely and alone as they go through the adjustment (Mathews, 2012).

A number of studies have also found that when students progress from lower to upper primary, they see changes in norms and discipline. In a recent Irish research, Swartz, Kim, Uno, Mortimer and O'Brien (2011) discovered that half of the children in her study thought the code of discipline in upper elementary school was tougher, with more regulations to follow, than the code of discipline in lower primary school. According to Drudy (2003), post-primary schools have a culture of control and a higher level of formality than what transferring first-year students are used to. The majority of worldwide research on the transition from primary to secondary education has focused on students' social adjustment to school life rather than their learning experiences (Galton, Morrison & Pell, 2000). For students, however, the shift means being exposed to a variety of new academic disciplines, having many professors rather than just one, and, in many cases, being exposed to alternative teaching techniques.

The lack of curricular consistency between the elementary and secondary levels has been identified as a major concern in previous study. In the 1970s, a study of classroom procedures in the United Kingdom revealed little consistency in terms of curricular background or teaching approaches. Students were introduced to new vocabulary and a new manner of carrying out operations in disciplines such as mathematics (Galton et al., 2000). The adoption of the National Curriculum in the United Kingdom was found to alter the nature of elementary education, with senior courses in primary schools resembling secondary schools in the 1970s (Hargreaves and Galton, 2002).

Nonetheless, there was little consistency between primary and secondary school, with distinct material and terminology in mathematics, a repeat of known skills and knowledge in certain situations, and little effort to find out what students had done in elementary school (Hargreaves & Galton, 2002). Despite advances in transfer procedures from lower to upper primary schools in the United Kingdom, curriculum and teaching techniques have generally stayed constant, and induction programs seldom address the new ways of learning and teaching styles visible in secondary school (Hargreaves & Galton, 2002). Similarly, a review of the Northern Ireland curriculum found differences in the knowledge and abilities of children migrating from various primary schools, some pupils entering upper primary level without the necessary competencies, and some repetition of previously taught content (Harland et al., 2002). Low achievers were less likely than high achievers to believe that their elementary school had adequately prepared them for their secondary education. In the North American and New Zealand settings, a comparable discontinuity in the lower primary to upper primary levels has been found (Walsh, 1995).

In the post-primary level, teaching techniques also differed, with a move from an emphasis on children' engagement in mathematics teaching and learning to one where learners were required to listen to the instructor (Stables, 1995). In comparison to lower primary school, there is a greater emphasis on setting exercises based on textbooks or worksheets, with few opportunities for group discussion or hands-on experimentation; there are teacher-pupil exchanges with an emphasis on imparting information to pupils when they transit; and there are teacher-pupil exchanges with an emphasis on imparting information to pupils when they transit (Hargreaves & Galton, 2002). The change has been described as a shift from a student-centered atmosphere to one that is more regimented and dominated by teachers (McGee et al., 2003). In Ireland, it has been stated that, despite curricular reform, nothing has changed in upper primary teaching techniques, with the focus on instruction rather than involvement (Gleeson & Donnabháin 2009; Callan, 1997; Mac Naughton, 2003). Teachers are perceived as less helpful, pleasant, and understanding by children at the upper primary level than at the lower primary level, indicating that the quality of teacher-pupil interactions changes throughout time (Ferguson & Fraser, 1999).

Prior to moving to post-primary school, social issues typically take precedence over academic worries in the thoughts of students (Hargreaves & Galton, 2002). However, many students were anxious about the difficulty of classwork and the amount of homework they would receive in a New Zealand research (McGee et al., 2003), while students in a British study were 'not looking forward to Mathematics homework' (Hargreaves & Galton, 2002; p.44). In some institutions, the shift appears to be linked to varying academic standards and exposure to a broader range of topic areas taught by various instructors (Walsh, 1995). The lack of curricular consistency, as well as changes in teaching techniques, has been shown to affect students' academic development in the first year of upper primary school. According to a British research from the 1970s, almost 40% of transfer students failed to make progress in mathematics instruction and learning (Galton & Willcocks, 1983). However, this study involved fewer than 100 students, and the variations in scores were minor. It is probably more accurate to state that students' development has been disrupted rather than that their overall performance has declined. Even though the adoption of the National Curricular in Britain was meant to enhance curriculum continuity between the two levels, there was a drop in progress among students in the 1990s (Hargreaves & Galton, 2002). In the United States, there has been evidence of a drop in grades (and school attendance) following the transfer to upper primary school (Reyes, Gillock &

Kobus, 1994; Crockett, Petersen, Graber, Schulenberg & Ebata 1989; Mullins & Irvin, 2000). Differences in school sectors in terms of educational demands, teacher attitudes, and classroom structure have been blamed for the drop (Eccles et al., 1993). The performance of low-income and minority pupils suffers the most during the transition phase (Simmons et al., 1991).

Influence of language on the teaching and learning of mathematics during transition

Because language is how mathematical concepts (as all ideas) are transmitted between the teacher and the student, whether through spoken or written materials, research in mathematics education has focused on the importance of language in mathematics (Cocking & Mestre, 2013). As a result, language plays a crucial part in the educational process. That is likely why Postman and Weingartner (1969) believe that language is not just a means of expression, but also a means of control, and that what we see and therefore learn is a result of our language processes. According to Cooney (1975, p. 90), "communication breaks down when people lack specific concepts.". Because ideas enable children to create knowledge and communicate with others, when students do not grasp what the teacher is attempting to convey, the teacher is not communicating. However, this notion of the relationship between language and concept learning that has been emphasized in the psychology of mathematics learning underscores the importance of discussion in mathematics learning (Skemp, 2012).

Discussion, according to Pirie and Schwarzenberger (1988), can help students grasp mathematical topics. Mathematical conversation, according to Pirie and Schwarzenberger, is "purposeful dialogue about a mathematical subject in which actual learners' participation and involvement are present" (p. 67). However, as Ntenza (2006) observed in his study on the use of language in geometry courses in KwaZulu-Natal schools, the debate is rarely employed in classroom communication. Secondary school pupils' use of vocabulary to explain mathematical ideas and principles was inconsistent, implying that a lack of language to describe the concepts indicates a lack of knowledge of the topics.

Since the introduction of western-style schooling in multilingual Ghana, the language policy in Ghana has had a turbulent history, with successive government administrations always deciding to alter or completely change whatever policy was in place before they took office. The Director General of the Ghana Education Service (GES) signed a letter in January 2001 to remind GES officials, teacher organizations, and all heads of Basic Schools in the country about the government's then-current language policy, which was first established in 1971. The following is an excerpt from the widely circulated letter: Essentially, the Policy states that instruction at the Lower Primary Level (Primary 1–3) will be conducted in the pupil's mother tongue or the major Ghanaian language of the local area, with English being studied as one of the Lower Primary Level subjects. Class instruction will be done in English beginning in Primary 4, and the Ghanaian language will be studied as one of the courses provided.

Understanding the function of language in mathematics teaching and learning is an equally significant topic in mathematical education. Language proficiency is an important element of educational achievement, according to Smith (2017); moreover, mathematics competency is crucial to educational success. The nature of the connection between the language of teaching and mathematical success is one of the study's main topics.

The importance of instructional language in students' learning and acquisition of mathematical ideas has been discovered (Munro, Vithal & Murray, 2015; Pagliano & Gillies, 2015; UNESCO, 2007). The medium through which knowledge is produced and reproduced is instructional language, which is the language in which fundamental skills and information are transmitted to the people (Prah, 2005). Instructional language may be thought of as a social activity since it is the official medium of communication through which education is provided (Davis & Agbenyaga, 2012). The ability of students to comprehend and master learning abilities and concepts is inextricably tied to their familiarity with the instructional language (UNESCO, 2007).

Children in Ghana speak a variety of languages at home, including Twi, Ewe, Fante, Dagbani, Frafra, Ga, and others. Mathematics textbooks, on the other hand, are written in English at all levels of education. The government's education policy mandates that all subjects in public schools from Primary 1-3 be taught in the child's native language to enable them to access the curriculum and build foundation knowledge, with the exception of Ghanaian language instruction. From Primary 4 onwards, the English language is used as the medium of instruction. It is anticipated that by the fourth grade, students would have a fundamental knowledge of the English language.

According to a UNESCO study on improving learning, learning and inclusiveness cannot be achieved when instructions and concepts are given to students in a language and culture that they are unfamiliar with, resulting in exclusion (UNESCO, 2007). Teaching mathematical skills and concepts to students in an English language in which they are not fluent can make learning more challenging, leading to disengagement and exclusion from meaningful involvement. From upper elementary onwards, English as an instructional language effectively excludes millions of students from meaningful mathematics learning, particularly those from ethnic minority groups who speak a different language at home (Davis & Agbenyega, 2012). In other words, using English as a medium of education that students do not fully comprehend creates hurdles for students and limits their learning development (Pagliano & Gillies, 2015). "Anguage and multilingualism, in particular, connect with learning mathematics," according to Barwell, Barton, and Setati (2007, p. 17). This is reiterated by Moschkovich (2007) that it is a complicated task to learn mathematics in a language one is not proficient in, implying that language can simultaneously hinder the development of mathematics skills in that early stage of their life.

Halliday (2007) argues that students should study in their native language from primary school to primary school before progressively transitioning to a second language as the major medium of teaching. Maintaining the first or home language at this stage is a right enshrined in the Convention on the Rights of the Child (article 30, 1990). In Ghana, however, students are required to study maths in English practically as soon as they begin Primary 1. (Davis & Agbenyega, 2012). According to CNET (2008), students acquire mathematical subject more quickly in the language they comprehend best and are better prepared to master a second language if they are educated in their native tongue.

According to Guglieluni (2012), including students' mother tongues into mathematics education and learning will result in improved mathematical success when they transition. According to Dellicarpini and Alonso (2014), material cannot be taught in mathematics if students do not grasp English as a medium of teaching.

By translating back and forth between local and official instructional languages, a lack of command of instructional language might cause learners to get confused (Bourdieu, Passeron & de Saint Martin, 1996). For example, Abrams, Taylor and Guo (2013) study of mathematical learning among indigenous students in remote parts of Australia found that their low achievement was exacerbated by mathematics instruction and concepts taught in English within a cultural framework that was unfamiliar to the indigenous people.

Language, according to Kraayenoord (2015), has a critical role in our relationships with others, as well as in building our thoughts and affecting learning. This means that a number of the difficulties students have when learning mathematical reasoning are language-related. Pupils may be enabled to fully engage in the curriculum when instructional language and cultural backgrounds are regarded as resources, according to the argument (Cummins, 2000). Miri, Alibakhshi and Mostafaei-Alaei (2017) asserts that using L1 in education benefits students psychologically, sociologically, and educationally, particularly in the field of mathematics instruction, and that every effort should be made to give L1 education from Primary 1 to Primary 6.

The researcher recommends the reinforcement of the use of Ghanaian language in schools as the medium of instruction by implementing the late-exit transitional bilingual education however, more needs to be done in the areas of training highly motivated mathematics teachers, providing effective supervision, providing educational materials useful in teaching mathematics, providing parental and community involvement in education, and formulating sound language and educational policies.

Teaching and learning Resources

When presenting mathematics lessons during the transition, Klement (2014) believe that the use of suitable instructional resources is just as crucial as the use of effective teaching techniques. They go on to say that in order to achieve the best outcomes, students must utilize these tools in meaningful ways, rather than just watching the teacher demonstrate how to use them. The quality of the resource and the teacher's ability both play a role in effective education. Many studies have shown that using physical materials can lead to more meaningful usage of notational systems and improved idea development in students.

Growvs and Cebulla (2000) determined that utilizing manipulative materials produced larger success improvements than not using them in a thorough assessment of activity-based learning in mathematics from kindergarten to grade eight. They also found that using tangible teaching materials for a long time by teachers who are familiar with them improves students' achievement and attitudes toward mathematics. According to Marshall (2018), there is a favorable relationship between textbook availability and success. A more recent meta-analysis of sixty studies (from kindergarten to post-secondary) comparing the effects of using concrete materials versus the effects of more abstract instruction suggests that teachers should use manipulative materials in mathematics instruction more frequently to give students hands-on experience that helps them construct useful meanings for the mathematical ideas they are learning. According to Growvs and Cebulla (2000), using the same material to teach numerous ideas throughout education has the benefit of cutting down on the time it takes to present the content while also assisting students in seeing connections between ideas. Backens (1970) discovered that arithmetic education on television had a varied influence on students' success at different levels of competence.

A good number of researchers assert that the use of appropriate concrete materials in teaching mathematics plays an essential role in enhancing pupils' mathematics performance (Allsopp, McHatton & Farmer, 2010; Lai, & Hwang, 2016; Lowrie, Logan, & Ramful, 2017). However, the teaching materials used in mathematics classrooms when pupils transit from the lower primary to the upper primary school in the Greater-Accra Region have not been recorded, hence the need for this study.

Teacher characteristics

Human beings are typically seen to be social beings with opinions, emotions, and perspectives that not only affect but also decide their decisions. Teachers' ideas about mathematics impact their instructional practice and, as a result, their students' attitudes, interests, and success, especially as they progress from one level of school to the next (Nicolaidou & Philippou, 2003). According to studies by Ali, Akhter, and Khan (2010), and Marbán and Mulenga (2019), mathematics instructors' teaching methods are largely determined by their systems of beliefs, namely their conceptions of the nature of mathematics and mental models of teaching and learning mathematics. When students progress from one level of school to the next, teachers' opinions regarding the nature of mathematics are likely to have an impact on their mathematical performance.

Teachers' conceptions of the nature and meaning of mathematics, according to Nicolaidou and Philippou (2003), are critical to their approach to mathematics education. They went on to say that a teacher's understanding of the nature of mathematics is an important aspect of a math classroom. Teachers of mathematics at all levels hold two distinct perspectives on the subject's nature. The conventional absolutist viewpoint and the non-traditional constructivist viewpoint are the two options. Mathematics is described as a large collection of fixed and infallible concepts and skills by teachers who have an absolutist view of the discipline. Constructivists, on the other hand, consider it as a constantly growing area of human creativity and innovation, according to (DeVries, 2004). He further claims that teachers who adopt an absolutist perspective of mathematics and its teaching and learning are more likely to: construct a teacher-centered instructional environment, teach mathematics as memorized rules, and represent mathematics as an infallible subject. Teachers that believe in a constructivist approach to mathematics should use a teacher-student interaction method of education, enabling students to explore and discover while teachers serve as facilitators in the classroom. However, the attitudes of mathematics teachers towards the subject have not been scientifically documented in the upper primary schools in the Greater-Accra region of Ghana, therefore the need for this study.

Chapter Summary

The literature for this investigation was reviewed in this chapter. It demonstrated how interactive teaching strategies might affect students' math performance during the transition. It was also discussed how important it is to employ teaching resources when teaching mathematics throughout the shift. It also discussed how teacher attitudes toward mathematics teaching and learning, as well as assessment procedures and instructional language, can affect students' math performance throughout transition.

CHAPTER THREE

RESEARCH METHODS

The methodology utilised to arrived at the study's findings were provided in this chapter. Research design, study population, sample and sampling procedure, method of data collecting, research instrument, ethical consideration, and data analysis were all topics covered in this chapter.

Research Design

This research used a mixed-methods approach. A mixed-method research design is a type of research methodology that entails gathering, analysing, and combining qualitative and quantitative data in a single study. The most important reason to utilise mixed methods in research is that when qualitative and quantitative research approaches are integrated, they provide a better knowledge of the study topic than when they are used separately (Harrison, Reilly & Creswell, 2020). Mixed-method research, from a philosophical standpoint, takes an eclectic, pragmatic, and common-sense approach, implying that the researcher combine quantitative and qualitative methods in a way that works best for the specific research questions being studied or investigated in a given context, with no interference (Creswell & Hirose, 2019). A mixed-method research strategy collects both quantitative and qualitative data, seeks to confirm and supplement results, and approaches research in a balanced manner. A mixed-method research approach, according to Tashakkori and Creswell (2007), is useful for gathering data in descriptive investigations. As a result, both quantitative and qualitative approaches were employed to conduct this research. This study employed a mixed-method approach because it was thought that combining qualitative and quantitative methods would yield more comprehensive data than each isolated method (Dewasiri, Weerakoon & Azeez, 2018). The researcher wanted to learn more about the quantitative outcomes of the pupil, so she conducted a follow-up interview (focused group discussion) with pupils and interviewed their teachers in the teaching and learning of mathematics during this transition (lower-upper primary). Incorporating qualitative and quantitative approaches into research results in thorough and comprehensive data that helps researchers achieve their goals and answer their concerns (Bryman, 2016). There are four types of mixed-method study designs, according to Hall (2013): 1) triangulation, 2) embedded, 3) explanatory, and 4) exploratory.

Hence, this study used a sequential explanatory mixed-method design, which involves an initial quantitative survey and a follow-up qualitative survey, with the quantitative results taking precedence. The qualitative findings aided in the explanation of the quantitative findings and the development of a deeper understanding of the quantitative findings (Creswell, 2011). When a researcher needs qualitative data to explain quantitative results, the sequential explanatory mixed-method design is used (Creswell & Clark, 2012).

According to Klassen, Creswell, Clark, Smith and Meissner (2007), the sequential explanatory design starts with quantitative data gathering and analysis and then moves on to qualitative data collection and analysis. The researcher discovers specific quantitative findings that require additional explanation in the sequential explanatory approach. As a result, a mixed-methods study design may produce extensive and complete data as well as data interpretation. This research is based on pupils' transitional experiences in mathematics from lower to upper primary. Several transition studies, on the other hand, adopted a mixed-methods approach. Dannels (2018), for example, devised and implemented a mixed-method design to assess instructors' and students' opinions of the transition from elementary to junior high school. Other studies in the United Arab Emirates used mixed-methods research to examine how Arabic and English language teachers felt about using technology into their classes.Similarly, Almekhlafi and Almeqdadi (2010) investigated teachers' perspectives of technology integration in UAE classrooms using a mixed-methods approach. All of these studies used a mixed-methods strategy to obtain valid results and detailed and reliable data.

Population

The target population for this study was all Primary 4 pupils and their teachers in all the public primary schools in the Accra metropolis of the Greater- Accra region of Ghana. These formed the base for the sample of the study. This group of primary pupils and teachers were selected because Primary 4 is a transitional class and the study focused on the transitional experiences of lower primary pupils to upper primary in mathematics. Therefore, they provided useful information for this study.

Sample and Sampling Procedure

The Accra metropolis has 4 sub-metros which one sub-metro (sub-metro A) was purposively sampled for the study. A stratified sampling technique were used to sampled schools and pupils for the study. The schools within the sub-metro A has two groups- high achieving and low achieving schools. These two groups (high-achieving schools and low- achieving schools) were considered as strata and random sampling technique was used to select from each of the groups proportional to the stratum size.

Again, pupils were put into two groups(boys and girls) and were considered as strata. Random sampling technique was used to select from each subgroup proportional to the the stratum size. This was to aid the selection of a good number of schools and pupils from each group to represent in the study. The list of all the schools and pupils in sub-metro A were obtained and computer-generated random numbers were used to select 12 schools out of the 17 schools and 275 pupils out of 530 pupils based on Krejcie and Morgan's sample determination table (1970). This gave all the schools and pupils of each stratum equal chance to be selected and used for the study. This helped to avoid any bias from the researcher that may have influence of the outcome of the study.

The study also employed purporsive sampling technique to select 12 primary 4 teachers for the study. This is because each primary 4 class slected has one teacher.

Table 1: Distribution of sample respondents from public primary 4 in Sub-metro A of the Accra metropolis in the Greater-Accra Region of Ghana

Schools	Number of pupils	Number of teachers
A	22	1
B	23	1
C	23	1
D	24	1
E	24	1
F	22	1
G	23	1
H	22	1
I	22	1
J	24	1
K	23	1
L	23	1

Source: Field Survey (2021)

Data Collection Instruments

Two research instruments were used for the study. A five likert scale questionnaire and a semi-structured interview guide for teachers and pupils. The items in the questionnaire were closed-ended type questions whiles the items in the interview guides were open-ended type. The two research instruments were developed by the researcher and given to the supervisor and other experienced lecturers in the area of mathematics at the University of Cape Coast to ascertain whether they elicited valid responses.

The content of the instruments were based on the background characteristics of respondents and the transitional experiences of pupils from lower primary to upper primary in mathematics. The questionnaire was read out to pupils and translated to the local language since most of the pupils involved in the study could not read and understand the English language efficiently, although the English language is the instructional language from upper primary school level and beyond in Ghana.

A secondary data on pupils primary 3 third term exam score and primary 4 first and second terms exam scores were obtained from the class teachers to find out the extent to which transitional experiences influence their mathematics performance.

Questionnaire for pupils

This study developed a questionnaire to collect quantitative data from pupils. There were various sections to the questionnaire. The first part of the questionnaire was used to collect information on demographic characteristics of pupils such as age, gender, extra classes, parental tuition support, and educational level of parents. Following were sections on pupils' experiences during transition to Primary 4 in mathematics.

A questionnaire with a close-ended form of questions for collecting specific information was developed based on 5 points Likert scale such as strongly agreed (5), agreed (4),undecided (3) disagreed (2) and strongly disagreed (1). The questions were created with the intent of assisting the researcher in achieving the research's objectives and, in particular, answering the research questions. A good questionnaire not only obtains the cooperation of respondents and elicits reliable information, but it also gives a valid assessment of the study questions.

The questionnaires were chosen for the study because they supplied an even stimulation potential to a large number of participants at the same time and allowed the investigation to collect data quickly.

Interview

A semi-structured opened-ended questions were used to probe teachers and pupils on the outcome of the transitional experiences of pupils (quantitative results) for the qualitative survey of the study. The researcher asked pupils and teachers questions based on the responses from the quantitative data. This helped explained the outcome of the quantitative data. The interview for pupils was not for everyone who participated in the quantitative survey. The researcher selected pupls who were willing to take part in the interview section. In all, a total of 50 pupils were involved in the interview and they were put in groups of 5, 10 pupils in each group.

However, the 12 teachers involved in the study were also interviewed to confirmed the transitional experiences of pupils in mathematics. Teachers were interviewed by the researcher in order to gain further information and expand on the comments made by the pupils in the questionnaire. Repondents can discuss how they perceive the world around them, how they feel about their interpretations, and how they see events from their own perspectives" during the interview (Cohen & Manion, 2000: 267).

As a result, it was believed that the interview would allow for more in-depth exploration of themes than a questionnaire would allow. The research interview as a data collecting tool has the advantage of allowing greater depth than other data collection approaches. Thus, it was used in this study since it allowed the researcher to ask teachers and students more thorough questions, listen to their responses, and seek explanations from them (Cohen, Manion & Morrison, 2017). This is because semi-structured interviews are more flexible, allowing the researcher to dig deeper for more information. It also allows responders to express themselves more freely with fewer constraints (Evans & Lewis, 2018). This provides an opportunity to collect data that is rich in information and relevant to the study's purpose (Mikuska, 2017). The interview brought to bear a clear understanding of the quantitative data.

Pre-testing of Instrument

The research instruments were pre-tested in the Ga West Municipal basic schools of Greater- Accra region of Ghana. The aim was to ascertain the relevance of the questions, their clarity and sensitivity. Therefore, in March 2020, the instruments were pre-tested in schools that shared similar characteristics with the sampled schools. The schools were selected to ensure that they share similar school environments, educational administration and similar geographical locations with the sampled schools.

A total of 50 primary 4 pupils and two primary 4 teachers were involved in the process. Following the pre-testing of the instruments, it was realized that it took an average duration of 35 to 40 minutes for both teachers and pupils to complete the instruments. Also, through the process, few of the items that were not eliciting valid responses because of lack of clarity were revised. The experiences from the pre-test exercise were used to improve the instruments for the actual data collection exercise.

Validity and Reliability of Instruments

According to to Heale and Twycross (2015), clarity, fairness, and validity constitute important criteria for evaluating instruments and test items. The supervisor was consulted to ensure the validity and reliability of the instrument. A pre-test was taken to avoid leading questions. Also, all findings were cross-checked by the researcher (Cohen et al., 2017). The Cronbach coefficient alpha values of the subscales were obtained to range from .71-.76. These values agree with Vaske's (2008) and Bernstein and Nunnally (1994) recommendation that reliability coefficients in the .65-.80 range are suitable and acceptable.

The issue of reliability is important in research because, according to Chan and Idris (2017), reliability is about the dependability of scores for decision-making issues. Whether conducting quantitative research, qualitative research, or a combination of the two, all researchers must strive to guarantee that their findings are trustworthy. According to Cohen et al. (2017), reliability is obtained when the research is conducted on a similar group of respondents in a similar situation and produces similar results. They (Cohen et al., 2017) also claimed that quantitative research was easier to verify dependability than qualitative research. The internal consistency of the research instrument was calculated using the Cronbach's alpha coefficient. From the reliablilty analysis, a Cronbach's alpha of .73 was obtain. According to Pallant (2013), the reliability coefficient of .60 show level reliability, thus with a Cronbach's alpha of .73, the instrument for this study is considered highly reliable.

Data Collection Procedure

The researcher observed all institutional protocols by obtaining an introduction letter from the University of Cape Coast, Department of Basic Education, required permission from the headteachers and teachers to conduct the research their schools. The purpose of the study was explained to them and their consent of participation was sought before engaging them in the study. The questionnaires were distributed to pupils sampled for the study and were required to complete the administration of the research instruments within two weeks.

A follow-up interview was also used as a data collection methods for the study. These process were adopted because the researcher wanted first-hand information from the respondents based on the quantitative data. This necessitated the adoption of the interview guide as instruments for gathering data. Interviews were conducted with the permison of the respondents.

Ethical Consideration

The researcher sought clearance from the Institutional Review Board, University of Cape Coast in conducting this study by submitting a copy of the research proposal and instruments for review. The right norms of behavior required when doing research are referred to as research ethics. It explains the necessity for participants to be aware of the goals, objectives, and potential negative consequences of their participation (Privitera & Ahlgrim-Delzell, 2018). Participants have the right to withdraw even after permission has been obtained, according to the ethics. Informed consent is derived from the participant's right to freedom, according to Cohen et al. (2017). It is the moral obligation of researchers to protect volunteers from damage. As a result, the researcher bears main responsibility for doing ethical research. Researchers must make every effort to ensure that the physical, social, and psychological well-being of research participants is not harmed as a result of the study. Mutual respect and trust should define research interactions wherever feasible.

The ethical issues considered under this study included ensuring the anonymity of respondents and confidentiality of their responses. As a result, data were not gathered on the personal identities of the respondents. Other ethical issues considered under this study were observing institutional protocols and seeking the consent of participation of the respondents before carrying out the data collection exercise. The study also gave ample time to the respondents to avoid interferences with their job tasks.

Data Processing and Analysis

The data were first cleaned to correct all grammatical errors and inconsistencies. The quantitative data was processed with Statistical Product for Service Solutions (SPSS) version 21. The qualitative data were transcribed and organized under major thematic areas alongside the research questions. Thematic analyses were used to analyse the qualitative data.

Research question one that guided the study was "What are the transitional experiences of lower primary pulpils to upper primary in mathematics?" This question was answered using descriptive statistics: means and standard diviations. Thematic analysis were also used to analyse the qualitative data.

Research question two that guided the study was "What association exist between gender, age, tuition assistance from parents, extra classes in Mathematics and pupil`s transitional experiences?" This analysis with respect to this research question was point biserial corelation. This corelation is a special type of Pearson product moment corelation which is applied when you have two continues variables, whereas in this case the variable is measured on a dichotomous scale.

The third research question that guided the study was "To what extent do transitional experiences affect pupil`s Mathematics performance?" The research question was answered using pupil`s Primary 3 and Primary 4 first and second term Mathematics scores. The analysis with respect to this research question was descriptive statistics, using means and standard deviations. In addition, a graph showing the descriptive statistics of pupil`s performance at the various levels (Primary 3 and Primary 4 first and second terms) was drawn. Analysis of Variance (ANOVA) was also used to compare the means scores across the three levels of pupils. It is appropriate to use ANOVA because it makes it possible to compare three or more means simultaneously. Post hoc test was also determined to check the source of the true differeances at the various levels (primary 3 and primary 4 scores).

Regression analysis (multiple and simple) were computed on the effect of experiences on mathematics performance in primary 4. First, the three subscales were used to predict pupils performance and second, the experiences in totality was used to predict pupils performance.

Data analysis plan is shown in Table 2. Table 2 shows the statistical tools which were employed in answering the various reseach questions as displayed below.

Table 2: Data Analysis plan

RESEARCH QUESTIONS	QUANTITATIVE STATISTICAL ANALYSIS	QUALITATIVE RESPONSE (Interview guide) Teachers	QUALITATIVE RESPONSE (Interview guide) Pupils
1	-Descriptive statistics (Means,Standard Deviations)	Thematic analysis	Thematic analysis
2	-Point-biserial Correlation		
3	-Descriptive statistics (Means,Standard Deviations) - ANOVA (Post-hoc test) - Regression (Simple and Multiple)		

Chapter Summary

This chapter has described the research design and the variables employed. It also emphasised the location of the study, the target population and sampling techniques and sample size. Similarly, it highlighted the research instruments, data collecting procedures and ethical considerations.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

This chapter dealt with the results and discussions on the data collected from the field. The result presented were based on the research questions that were posed to guide the study. The analysis and interpretation of the result of the study have been presented. The analyses were based on the 100% return rate of data obtained from the 275 pupils and 12 teachers in the Accra Metropolitan area of the Greater-Accra Region of Ghana.

Demographic characteristics of pupils

Data collected on the demographic characteristics of pupils were also analysed. Table 3 shows the various compositions of respondents used in the study.

Table 3: Demographic characteristics of pupils

Variables	Frequency	Percentage (%)
Gender		
Males	127	46.2
Females	148	53.8
Pupils who took extra classes		
Yes	148	53.8
No	127	46.2
Educational Level of parent		
Basic	68	24.7
Secondary	108	39.3
Tertiary	54	19.6
None	45	16.4
Assisted tuition from parent		
Yes	131	47.6
No	144	52.4

Source: Field Survey (2021)

Table 3 shows that, out of the 275 participants, 127 (46.2%) were males and 148 (53.8%) were females. The mean age of the pupils was 9.7 years with a standard deviation of ± 0.96. The age range of pupils participants was 9-12 years. The mean examination score of the Primary 3 pupils was 81.0 with a standard deviation of ± 6.5 and a range of 56 and 89. The mean examination score of pupils in Primary 4was 67.0 with a standard deviation of ± 7.9 and a range of 50-87. More than half of the pupils (148) representing 53.8% had taken extra classes in Mathematics. Most parents of pupils (108) representing 39.3% had secondary school education. A greater number (144) representing 52.4% of the children had not received assisted tuition from their parents.

Demographic characteristics of teacters

Data collected on the demographic characteristics of teachers were also analysed. Table 4 shows the various compositions of respondents used in the study.

Table 4: Demographic characteristics of Primary 4 teachers

Variables		**Frequency**	**Percentage (%)**
Gender			
	Male	2	16.7
	Female	10	83.3
Educational Qualification			
	Certificate A	0	0
	Diploma	1	8.3
	Degree	10	83.3
	Postgraduate	1	8.3
Teaching Experience			
	0-5 years	3	25
	6-10 years	5	41.6
	>10 years	4	33.3
Mathematics as a subject area of study			
	Yes	3	25
	No	9	75

Source: Field Survey (2021)

Table 3 shows the demographic characteristics of Primary 4 teachers. Out of the 12 teachers interviewed, 10 (83.3%) were females. The mean age of the teachers was 36.2 years with a standard deviation of 0.33. The age range of the teachers was 28-55 years. The majority of the teachers, 10(83.3%), had a first degree in basic education. A greater number, 5 (51.6%), had 6-10 years of teaching experience in Primary 4. Teachers who majored in mathematics, 3 (25%), were the least.

Research Question one

The first research question that guided the study was "what are the transitional experiences of lower primary pupils to upper primary in mathematics?

To answer this question, data obtained from pupils on the experiences they go through when they move to primary 4 was used. These experiences were put into three subscales namely; change in language of instruction, change in mathematucal content and change in teaching method.

Table 5: Transitional Expereinces of pupils

Transitional Experiences	Mean	Std. Deviation
Change of Language of Instruction	**2.61**	**0.512**
My teacher uses English Language in teaching mathematics in primary 4	1.79	0.859
I am able to speak English language fluently	3.26	1.292
I am able to understand English Language well when my teacher uses it to teacher mathematics in primary 4	3.30	1.107
Change in language of instruction has affected my understanding of mathematics topics in primary 4	2.20	1.026
My teacher combines both the local language and English language in teaching mathematics in primary 4	2.51	1.179
Teaching Method	**2.41**	**0.364**
I am experiencing a change in the teaching style of primary 4 mathematics	1.98	0.899
My primary 4 teacher uses hands-on activities during mathematic lessons.	3.38	1.092
My teacher relates mathematics topics to our everyday life when teaching	2.51	1.115
My teacher uses storytelling in explaining mathematics topics when teaching	3.31	1.204
My teacher is the only person that talk in class during mathematics lessons	2.29	1.184
My teacher uses images like pictures, counters, diagrams in teaching mathematics in primary 4	2.79	1.198
My teacher uses visuals like computers and projectors in teaching mathematics in primary 4	2.87	1.141
My teacher puts the class in smaller groups to solve mathematics problems in primary 4	3.20	1.259
My teacher encourages us to participate in class during mathematics lesson	1.93	1.316
My teacher gives exercises, mark and correct wrong answers	2.22	1.018
Change in Primary 4 Mathematics Content	**2.24**	**0.644**
I'm experiencing an increase in the workload of primary 4 mathematics content.	2.37	1.247
Mathematics in primary 4 has been made easier for me as compared to my primary previous class	1.84	0.975
I am experiencing a connection in primary 3 mathematics topics and that of primary 4	1.79	0.924
I am experiencing a change in primary 4 mathematics topics as compared to primary 3	2.93	1.607

Tabble 5 shows that, puplis experience change in language of instruction, teaching method and mathematics content. This claim was based on their mean score of 2.61, 2.41 and 2.24 with a standard deviation of 0.512, 0.354 and 0.644 respectively. This results indicate that, pupils go through experience when thry move from the lower primary to upper primary in the teaching and learning of mathematics. However the mean score indicate that, pupils experience an average change in language of instruction, teaching methods and mathematics content with change in language of instruction having the highest mean score (2.61).

Majority of teacher (9/12) interviewed shared a similar opinion concerning change in language of instruction in teaching mathematics in primary 4. In their opinion, they believe most pupils find it challenging understanding mathematical concepts when taught in the English language alone.

1. ***"I consume both local and English language in explaining mathematics*** concepts ***for pupils to understand it well"*** (P4 teacher 3)
2. ***"pupils are not all fluent in English language. However, few are able to express themselves during mathematics lesson, hence both langauges are used"*** (P4 teacher 7)

The response from the teachers on the change in language of instruction confirmed what the pupils indicated in then quantitative data that local and English are being used in explaining mathematics concept to pupils. This accont for average change in language of instruction. Pupils did not experience a greater shift from the local language to English language. Concerning the change in teaching method half of the teachers (6/12) interviewed indicated that mathematics lessons were made less participating. They further indicated using less object like counters, chats, pictures and diagrams during mathematics lessons.

" I sometimes relate mathematics concept to everyday life of pupils using pictures and diagrams" (P4 teacher 1).

"I do not often use storytelling in explaining mathematics concepts to pupils. Sometimes, it is a bit didfficult to create a strong story on a topic under discussion".

These response from the teachers also confirmed the average change in teaching method indicated by the pupils in the quantitative data. This accounted for the mean score of 2.41.

The responses from teachers concerning change in mathematics content; majority of teachers felt that there exist a connections between lower and upper primary mathematics contents. However, the upper primary has a wider scope.

" In my opinion, I think there has been a change in the workload of primary 3 mathematics content. The use of prime numbers, factors, least common multiples etc, are new to pupils in primary 4. Also, pupils now find the LCM before they can add and subract fractions" (P4 teacher 10).

Responses from pupils interview concerning change in language of instruction indicated that; ***" our primary 4 teacher make use of both local and English language in teaching mathematics while in primary 3 where only our local language was used in teaching mathematics"*** – Group 1

Another group indicated that; ***" our teacher repeates what he or she say in English language in our local language"*** – Group 3

This response from pupils interview also confirmed their qualitative data and what the teachers also indicated.

Pupils raised concerns on changes in primary 4 mathematics content. They indicated that;

1. ***“ primary 4 mathematics is difficult than primary 3”*** – Group 3
2. *“**our primary 4 mathematics looks a bit different from what we learnt in our primary 3. In primary 3, we used to add and subtract from fractions with same denominators but when we came to primary 4, we are adding and subtracting fractions that have different denominators”** – Group 2.*
3. ***“ In primary 3, we used to name and identify shapes and parts of shapes but when we came to primary 4, our teacher asks us to estimate the angles of the shapes”*** *– Group 5.*

Research question 2

The second research question that guided the study was “ What association exists between gender, age, tuition assistance from parents, extra classes in mathematics and pupils transitional experience.

To answer this question, a point biserial correlation was to used to find the association between the demographic characteristics of pupils and their transitional experiances. Table 6 shows the results of the Pearson Point biserial test of association and their transitiontional experiences.

Table 6: Association between pupils demographic characteristics and their transitional experiences

	Gender	Experience	Sig. value
Gender	1	0.048	0.429
Experience	0.048	1	
	Tuition Assistant	Experience	
Tuition Assistant	1	-0.07	0.191
Experience	-0.07	1	
	Extra class	Experience	
Extra classes	1	-0.030	0.624
Experience	-0.030	1	
	Age	Experience	
Age	1	0.068	0.261
Experience	0.068	1	

The results in table 5 indicate that there is no significant association between gender and experience (0..48) with sig. value of 0.429 and that of tuition assistant from parents as well (-0.07) with sig. value of 0.191. Also, there is no significant association extra classes and experience (-0.030) with sig. value of 0.624 and that of age and experience as well (0.068) with sig. value of 0.261. The results clearly show that there is not significant association between pupils demographic characteristics and their transitional experiences.

Research question three

The third research question that guided the study was " To what extent do transtiontional experiences affect pupils mathematics performance?"

To answer this question, first descriptive statistics (means and standard deviation) of pupils performance at primary 3 and primary 4 first and second terms were computed.

Table 7 shows the exams scores of pupils primary 3 and primary 4 first and second terms

Table 7: Descriptive Statistics of Pupils Performance at the various levels

	Mean	Std. Deviation
Primary 3 exam score	81.01	6.536
Primary 4 first term exam score	67.01	7.901
Primary 4 second term exam score	69.76	7.386

Table 6 revealed that, pupils performance at primary 3 had a mean score of 81.01 and Standard deviation of 6.536. This indicated that, pupils exam score in primary 3 was relatively high. In primary 4 first term, pupils mean score dropped to 67.01 with standard deviation of 7.901 and performance slightly increased in primary 4 second term with mean score of 69.76 and standard deviatioln of 7.386.

The face values of the mean scores of pupils performance at the various levels show a decreasing performance at the various levels show a decreasing performance as they transit to primary 4 first term and gradually increase a bit in primary 4 second term.

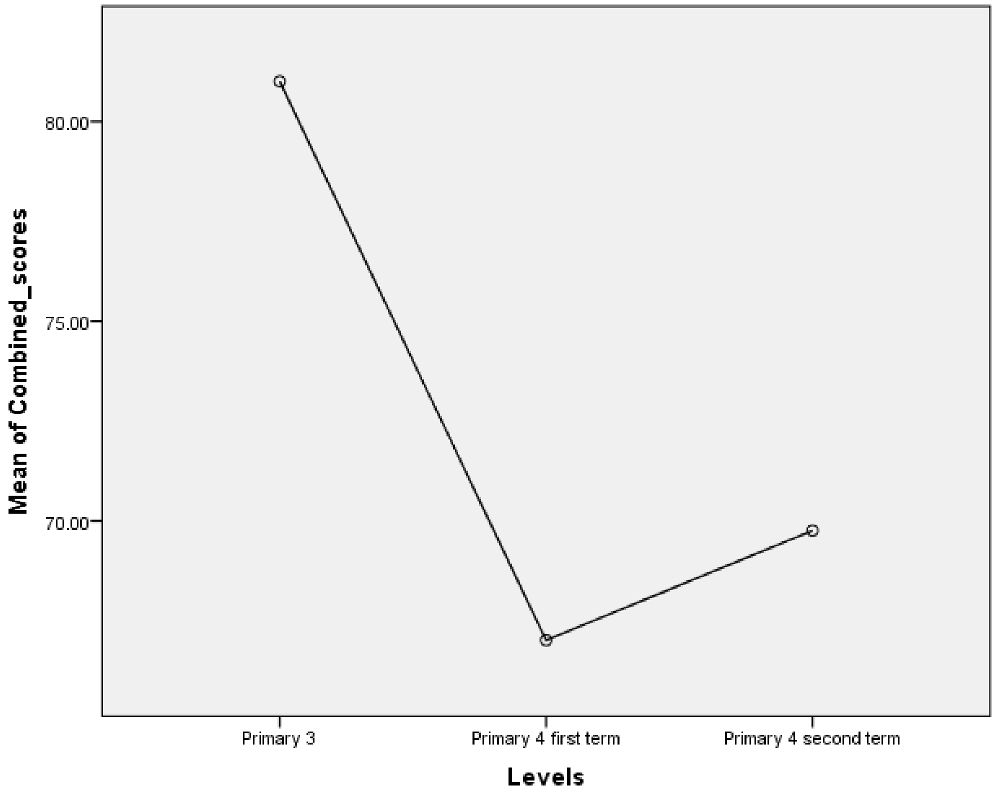

Figure 1: Mean plot of pupils performance at the various levels

Figure 1 indicate a high mean score (81.01) in primary 3 mathematics performance. However, there was a decrease in performance (67.01) in primary 4 first term. Performance increased slightly as pupils move to primary 4 second term.

The Analysis of Variance gives a clearer picture if the differences in the mean scores are significant. The output of ANOVA test to determine differences at the various levels (primary 3 and primary 4 first and second terms exam scores) is shown in table 7.

Table 8 ANOVA test on differences in mean scores at the various levels (primary 3 and primary 4 first and second terms)

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	30239.371	2	15119.686	284.036	.000
Within Groups	43703.055	821	53.231		
Total	73942.426	823			

Table 7 indicates that the sig. value = .000 which is less than alpha (0.05). This implies that there is a significant difference across the there levels (primary 3, primary 4 first and second terms) of pupils. The implication of this result shows that, there is a significant difference between performance of pupils at the various levels.

However, a Post Hoc test was comducted to determined the source of the difference.

Table 9: Post Hoc test to determine the source of the difference at the various levels (primary 3 and primary 4 scores).

Table 8: Post Hoc Test

Levels		**Mean Difference**	**Std. Error**	**Sig.**	**Effect Size**
Primary 3	Primary 4 first term	13.99636	.62220	.000	**0.78**
	Primary 4 second term	11.24815	.62277	.000	**0.63**
Primary 4 first term	Primary 3	-13.99636	.62220	.000	0.78
	Primary 4 second term	-2.74821	.62277	.000	**0.15**
Primary 4 second term	Primary 3	-11.24815	.62277	.000	0.63
	Primary 4 first term	2.74821	.62277	.000	0.15

A Post Hoc test was conducted to compare the means of the various levels of pupils. The results show that all the three have significant difference with sig. values of .000. Effect sizes are also shown and according to Cohen's Effect size Clarification, <0.2 indicate ignore, <0.5 indicate small, <0.8 indicate moderate, < 1.3 indicate large and > or = indicate very high effect size. From the table, the effect size of primary 3 against primary 4 first term = 0.78, indicating a moderate effect size. In the same vein, the effect size of primary 3 against primary 4 second term = 0.6 indicating moderate effect size and finally, the effect size of primay 4 first term against primary 4 second term = 0.15 which according to Cohen's effect size clarification, it should be ignored.

However, regression analysis was computed to check if experiences have influence on performance. This was done at two levels; (i) multiple linear regression and (ii) simple linear regression.

The multiple linear regression was computed to check if the various subscales (change in language of instruction, change in teaching method and change in mathematics content) have influence on performance.

Table 10: Multiple Linear Regression on the effect of transitional experiences on performance in primary 4.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	104.991	6.022		17.434	.000
Change in Language of Instruction	.166	1.388	.007	.120	.905
Teaching Method	-1.720	1.956	-.054	-.879	.380
Change Mathematics content	.215	1.097	.012	.196	.845

The result from table 9 shows that, the various subscles have no significant influence on performance. The R square indicate 0.3% change in performance. This means that 0.3% change accounted for change in performance in primary 4.

Simple linear regression was computed to check if experiences in totality have influence on performance.

Table 11: Simple linear regression on the effects of experience on pupils primary 4 mathematics performance

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	104.202	6.240		16.698	.000
Experience	-.938	2.385	-.024	-.393	.694

The result from the table 10 indicate that experience in totality have no significant influence on performance. The R square indicate 0.01% of experience in totality accounted for change in performance in primary 4.

The findings of the study indicated that pupils experience change in language of instruction, teaching methods and mathematics content. However, The finding indicated that, primary 4 mathematics content is a build on of primary 3 mathematics content as mathematics curriculum is a spiral curriculum- the content has been organized for development, building upon and complementing the previous concept thereby making the scope widens as pupils climb the academic ladder.

This is in agreement with Wolfe (2004) who indicated that mathematics textbooks at the post-primary covered more complex topics, thereby broadens the scope of mathematics content. The more complex topics include “estimating computation” and “numbers and their properties”.

Similarly, Chloe (2017) asserted that many pupils struggle during the transition, especially in the area of mathematics where content changed and new vocabularies are being introduced making mathematics inaccessible for young learners who want to pursue mathematics at the higher level of education. The data indicated that both the pupils and teacters involved in the study agreed to the fact that pupils experience a change in mathematics content during transition.

The finding indicated that, at the lower primary, mathematics concepts are explained and taught using pupils' local language but when they moved to the upper primary, the language of instruction changed to English Language. This is in accordance with the language policy of Ghana Education Service; thus, from primary 1-3, the child should be taught using his or her local language with the exception of English language that has to be taught using English. This is in agreement with Davis and Agbenyega, (2012) that in mathematics classroom, language serves as a mediator in facilitating the overall development of an individual's concept formation. Most of the teachers interviewed in this study saw the need to use a language that promote interaction in the classroom during mathematics lessons to facilitae conceptual understanding of the subject matter to pupils.

Davis and Agbenyaga (2012) further indicated that instructional language is the official medium of communication through which pedagogy is delivered and can be conceptualized as a social practice. They further explained that mathematics should be taught in the language that the child understands and can speak well to enable them to access the mathematics curriculum and build foundational knowledge in mathematics.

Similarly, a study on enhancing learning conducted by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) (2007) found that when instructions and concepts taught to students are based on unfamiliar language and culture, learning and inclusivity are hampered, resulting in exclusion.They further explained that teaching mathematical skills and concepts in the English language that pupils are not proficient in can make learning difficult and lead to disengagement and exclusion from meaningful participation.

Additionally, Orton (2004) emphasized the importance and relevance of language in mathematics teaching and learning. According to him "language is important not for communicating but also it facilitates thinking". He emphasized that the language of thought is almost often the primary language, thus mathematics communicated in one language may need to be translated into another to facilitate thinking. However, this is in support of the findings of the study. A teacher interviewed indicated that; *"For pupils to understand the mathematics topics well, I need to translate from the English language into pupils' local language and translate back into English language."* (Primary 4 teacher 7)

Furthermore, Munro and Derwing (2015) stressed that instructional language has been found to play a crucial role in pupils' learning acquisition of mathematical concepts. In this regard, a teacher interviewed confirmed that; *" I sometimes use the child's local language in explaining mathematics topics in primary 4 to enable them participate and contribute to class discussion".* (Primary 4 teacher 11)

With respect to change in the teaching method, Nur (2002) discovered that expository approaches to teaching accounted for 85 percent of mathematics teaching in Kenya, whereas interactive techniques accounted for just 15%. With the expository approach, the teacher is completely in charge and guides the lesson. He/she is also in charge of the discussion and asks questions by calling on pupils for answers.

However, the interactive methods of teaching such as small group discussion, the use of storytelling in explaining mathematical concepts and problem-solving methods which are strongly believed to enhance pupils' performance in mathematics were less used (35.7%) in the Accra metropolis of the Greater-Accra Region. According to Olaoye (2012), mathematics teachers experience in handling the subject with the pupils was found to exert greater influence on the academic performance of pupils. He further explained that the more experienced a mathematics teacher is in teaching the subject, the more they made innovations to make the subject exciting to the learners.

The results of this study also indicated that majority of the teachers (75%) involved in the study did not major in mathematics (subject area of study) at the colleges of education and universities. This makes them find the teaching of mathematics at the upper primary a bit challenging. According to Kajander (2006), using suitable instructional resources is just as essential as using effective teaching techniques. The findings of this study showed that the use of concrete objects in teaching mathematics was encouraging (53.5%). However, it was found that there is less use of concrete objects in teaching mathematics in primary schools. The majority of the teachers interviewed indicated that they make use of concrete objects like counters, pictures and charts. Nonetheless, projectors and computers are not used in the teaching and learning of mathematics in primary school. They revealed that "the teaching resources are not available in the school, so I just teach and go" (Primary 4teacher 10).

In the views of Growvs and Cebulla (2000), teachers should use manipulative materials in mathematics instruction more regularly. They further noted the long-term use of concrete instructional materials by teachers knowledgeable in their use improve pupils' achievements and attitudes towards mathematics at this early stage in their schooling. The results of this study make it clear that the data is a true reflection of what exists in terms of school transition and the teaching and learning of mathematics. This result is consistent with the findings of Midgley et. al., (2002) and Hopwood et. al., (2002) that teachers play a pivotal role in pupils' education and their transitional experiences in transiting successfully.

Another finding of the study indicated that gender, age, extra classes and yuition assistance from parents have no association with pupils transitional experiences.

However, the result of this study indicated that there was no association that exists between pupils demographic characteristics and experiences pupils go through in transition

The finding of this study indicated that age has no significant association with pupils' transitional experience. A teacher interviewed indicated that; *"I have realized that the mathematics curriculum targets all school-going children, whether young or old and at all levels of education"* (Primary 4teacher 5) . This is in contrast with a study conducted by Morrison and Pell (2000) that among the socio-demographic factors, younger age has consistently been identify as a predictor of poor transition. Additionall, vulnerable pupils tend to be younger, less able and more disruptive during transition (West, Sweeting, and Speed 2001).

The findings of this study indicated that tuition assistance from parents has no association with pupils' transitional experiences. This contradicts what Zan, Brown, Evans and Hannula (2006) submission that" parents contribute to developing early mathematics skills, the transmission of attitude towards mathematics, interest in and the value given to mathematics at early stages of learners".

According to studies, parents are their children's first educators. The early experiences that parents offer for their children establish the groundwork for what comes after informal schooling by building abilities and encouraging a desire to learn. Parents who provide their children more opportunity to learn mathematics (numbers) at home during this transition period greatly improve their child's future arithmetic abilities and success. Nonetheless, early numeracy instruction at home is linked to increased vocabulary as well as improved maths performance. Tuition assistance from parents plays an extremely important role within the educational success of their children, particularly in the area of mathematics during the transition as indicated by Wang and Cai (2012) that parents greater parental involvement in primary education is associated with higher school grades.

According to Dermie, Lewis and McLeen (2007), lack of parental support among the Somali pupils in the United Kingdom contributed to their poor performance in mathematics during the transition. Because of their lack of knowledge or ability to communicate in English, many Somali parents were unable to assist their children. Parents' education level is strongly related to improved pupil mathematics achievement at this stage of their education (Odhiambo, 2005). Hammer (2003) confirmed that the home environment is as important as what goes on in the school. However, this study did not find age and gender associated with pupils' experiences during the transition.

The extent to which transitional experiences affects pupils' performance in mathematics

The study indicated that there is a significant difference between the performance of pupils in primary 3, primary 4 first term and primary 4 second term. This observed decrease in performance is statistically significant (sig. value .000). This conclusion is comparable to Sweeting West, Young and Der's (2010) findings, which claim that transition has a detrimental impact on students' academic performance and overall well-being. Similarly, Prediger (2019) stated that the increase in subject depth and adjustments to new teaching techniques pose obstacles that may result in mathematics success loss.

Researchers have discovered that variables influencing students' mathematics success loss occur both outside and inside the school, as well as outside and inside the mathematics classroom (Marzano & Heflebower, 2011). Although the transition can impair students' success in a variety of disciplines, research suggest that mathematics is one of the most commonly affected topics (Grootenboer & Marshman, 2016). Rice (2001) stated that a seamless transition in mathematics from lower to upper primary school education may be achieved if research is used more effectively to guide the efforts of all parties engaged in a child's education.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

The purpose of this study was to explore the transitional experiences of lower primary pupils to upper primary and its effects on their mathematics performance in the Accra metro public basic schools in the Greater-Accra region of Ghana. To achieve this, purposive sampling technique was used to sample one sub-metro from the 4 sub-metros in the Accra metropolis, stratified sampling technique was used to select schools and pupils for the study. Purporsive sampling technique was used to select the teachers. A sample of 275 Primary 4 pupils and their class teachers (12) were selected for this study. Three research questions were posed to guide the study. The research questions which guided the study were;

1. What are the transitional experiences of pupils when they move to upper primary in mathematics?
2. What association exist between gender, age, tuition assistance from parents, extra classes in mathematics and pupils transitional experiences?
3. To what extent do transitional experiences affect pupils' mathematics performance?

The research design employed in this study was a sequencial explanatory mixed-method design (Creswell, 2014). This means that both quantitative and qualitative approaches were used to better understand the transitional experiences of pupils in mathematics and its effects on their performance. Thus, data were collected using two different instruments (questionnaire and semi-structured interview for pupils and teachers). Data were analysed using descriptive statistics (means and standard deviations), Pointbiserial correlation, ANOVA and regression analysis. Thematic analysis were used to analyse the qualitative (interview for pupils and teachers).

Findings / Conclusions

The study revealed the following:

1. Pupils experience change in the language of instruction, teaching methods and mathematics content
2. There is no association between gender, age, extra classes and tuition assistance from parents against pupils transitional experiences
3. There is a significant difference between the performance of pupils in primary 3, primary 4 first term and primary 4 second term
4. The subscales do not have significant effects on performance. This accounts for 0.3% of the change in performance

Recommendations / Suggestions for further study

1. The study recommends that teachers should monitor and assist pupils for a smooth transition from lower primary to upper primary to influence performance positively.
2. It is recommended to researchers to explore other transitional experiences that may affect performance significantly.
3. There should be a gradual shift from the child's local language to English language in mathematics during the transition from lower primary to upper primary level as suggested by Davis, Bishop and Seah (2013).

4. It is recommended to researchers to investigate the relationship between tuition assistant from parents and parents educational background on mathematics performance.
5. Further research in this area should consider examining the long term effect of transitional experiences on the performance of pupils in mathematics using longitudinal research designs
6. Studies of this nature could be carried out in second cycle instituions as well as tertiary instituions, in order to document the transitional experiences of pupils at all levels of education.

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APPENDICES

APPENDIX A: ETHICAL CLEARANCE

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
ETHICAL REVIEW BOARD

UNIVERSITY POST OFFICE
CAPE COAST, GHANA

Our Ref: CES-ERB/ucc.edu/v4/20-15

Date: 12. 03. 2020

Your Ref: ....

Chairman, CES-ERB
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Dear Sir/Madam,

ETHICAL REQUIREMENTS CLEARANCE FOR RESEARCH STUDY

The bearer, Victoria Adwere,..., Reg. No. .... is an M.Phil. / ~~Ph.D.~~ student in the Department of ...Basic Education .... in the College of Education Studies, University of Cape Coast, Cape Coast, Ghana. ~~He~~ / She wishes to undertake a research study on the topic:

Exploring the transitional experiences of Lower primary and upper primary pupils
....

The Ethical Review Board (ERB) of the College of Education Studies (CES) has assessed ~~his~~/her proposal and confirm that the proposal satisfies the College's ethical requirements for the conduct of the study.

In view of the above, the researcher has been cleared and given approval to commence ~~his~~/her study. The ERB would be grateful if you would give ~~him~~/her the necessary assistance to facilitate the conduct of the said research.

Thank you.
Yours faithfully,

Prof. Linda Dzama Forde
(Secretary, CES-ERB)

APPENDIX B: INTERVIEW GUIDE FOR TEACHERS

Dear Sir/Madam,

I am Victoria Adwere, a student of the University of Cape Coast. I am conducting a study on the transitional experiences of lower primary pupils to upper primary and its effects on their mathematics performance in the Accra metropolis of the Greater-Accra region of Ghana. The study sought to explore the transitional experiences of lower primary pupils to upper primary level, and its effects on their mathematics performance. The study also intended to find out whether age, gender, tuition assistance from parents, extra tuition in mathematics and parents educational background influence pupils' transitional experiences. The extent to which transitional experiences affect pupils' mathematics performance would be explored in this study. This is in partial fulfillment for the award of a Master of Philosophy degree at the University of Cape Coast. Any information provided will be treated with the utmost confidentiality.

I am by this introduction seeking your ascent to allow your primary four teachers to be interviewed on the above issues. The interview session will take a maximum of 20 minutes. The teacher is free to decline this invitation or opt out from the interview at any point in time. If you agree to the participation of your teachers in this exercise, please append your signature at the space provided below.

……………………………………. ……………………

Head teacher's Signature Date

…………………………………… ……………………

Teacher's Signature Date

Thank you

Informed Consent

I have read and understood the information above and willingly agreed to respond to the questions under the stated conditions. [ ]. Please tick the box at the end of the statement, if you agree to participate in the study.

SECTION A: Background information

1. Age……years
2. Gender….[ ] Male [ ]Female
3. What is your highest educational qualification? [ ]Diploma[ ] First Degree[ ]Master's degree
4. How long have you been teaching……………….
5. Did you do mathematics as subject area of study at the college or university?

SECTION B: Transitional experiences pupils go through when they transit from lower to upper primary level in mathematics.

This section seeks to find out the experiences pupils go through when they move to primary 4.

6. In your opinion, has there been a change in the primary 4 mathematics content as compared to primary 3 mathematics content?
7. Do you think the teaching approach of mathematics in primary 4 is different from that of primary 3?
8. In your opinion, has there been an increase in the workload of primary 4 mathematics content?
9. How often do you use hands-on learning and demonstration in teaching primary 4 mathematics topics?

10. Is there a connection in primary 3 and primary mathematics topics?
11. What language do you use in teaching mathematics in primary 4?
12. In your opinion, do you think pupils find it difficult in understanding mathematics topics when English language is use as a medium of instruction?
13. In your opinion, do you find it difficult in explaining mathematics topics to pupils using English as a medium of instruction?
14. In your opinion, do you think using English as a medium of instruction make teaching of mathematics more teacher-centered method of teaching?
15. Has there been a change in mathematics vocabularies when pupils moved to primary 4?
16. How often do you relate mathematics content to pupils' everyday life?
17. How often do use storytelling in explaining mathematics topics to pupils?
18. Do you use concrete objects in teaching primary 4 mathematics topics?
19. Do you use computers and projectors in teaching primary 4 mathematics topics?
20. In your opinion, do you think mathematics has been made easier for primary 4 pupils?
21. What in your opinion makes you think you encourage pupils to actively participate during mathematics lessons?
22. How often do you put pupils in smaller groups to solve mathematics problems?

23. How often do you give mathematics exercises, mark and correct wrong answers?

24. Do you combine both English language and pupils' local language in teaching mathematics?

25. Any additional information:

………………………………………………………………………………………

………………………………………………………………………………………

……………………

APPENDIX C: FOCUS GROUP DISCUSSION

The focus group discussion was meant to provide information about the transitional experiences of pupils of pupils in mathematics. A total of 50 pupils were involved in the focus group discussion, which was made up of 10 pupils in each group.

The focus group discussions centered on the three transitional experiences of pupils from lower primary to upper primary in mathematics namely; the language of instruction, mathematics content and methods of teaching mathematics. The researcher asked pupils questions based on these three transitional experiences.

APPENDIX D: PUPILS' QUESTIONNAIRE

Dear Sir/Madam,

I am Victoria Adwere, a student of the University of Cape Coast. I am conducting a study on the transitional experiences of lower primary pupils to upper primary and its effects on their mathematics performance in the Accra Metropolis. The study aims to; (i) examine the transitional experiences of pupils' from the lower primary to upper primary in mathematics. (ii) Explore the factors that influence pupils' transitional experiences. (iii) Assess the extent to which transitional experiences affects pupils' mathematics performance.

I am by this introduction seeking for your permission to allow your pupils at primary four to respond to the questionnaire on the above issues. If you agree to the participation of your pupils in the exercise, please append your signature at the space provided below.

……………………………………… ……………………

Teacher's Signature Date

…………………………………… ……………………

Witness's Signature Date

Thank you Please check [√] the appropriate responses for the various questions

Section A: Background information of pupils

1. Gender of pupil: [ ] Male [ ] Female

2. Age of pupils:

3. Having extra classes teacher at home [ ] Yes [ ] No

4. Getting tuition assistance from parents [ ] Yes [ ] No

5. Educational background of parents [ ] Basic [ ] Secondary [ ] Tertiary [ ] None

Section B: Experiences pupils go through when they transit from lower to upper primary. How do you agree to the following as part of the experiences you go through when transiting from lower to upper primary? Tick as applied. SA = Strongly Agree, A = Agree, UN= Undecided, D = Disagree and SD = Strongly Disagree

S/N	**Experiences**	**SA**	**A**	**UN**	**UN**	**SD**	**REASON**
6	I am experiencing a change in the primary 4 mathematics content.						
7	I am experiencing a change in the teaching style of primary 4 mathematics.						
8	I'm experiencing an increase in the workload of primary 4 mathematics content.						
9	My primary 4 teacher uses hands-on activities during mathematic lessons.						
10	I feel happy in learning						

	mathematics in primary 4						
11	I am experiencing a connection in primary 3 mathematics topics and that of primary 4						
S							

S/N	Experiences	SA	A	UN	D	SD	REASONS
12	My teacher uses English Language in teaching mathematics in primary 4						
13	I am able to speak English language fluently						
14	I am able to understand English Language well when my teacher uses it to teacher mathematics in primary 4						
15	Change in language of instruction has affected my understanding of mathematics topics in primary 4						
16	My teacher relates mathematics topics to our everyday life when teaching						
17	My teacher uses storytelling in explaining mathematics topics when teaching						
18	My teacher is the only person that talk in class during mathematics lessons						
19	My teacher uses images like pictures, counters, diagrams in teaching mathematics in primary 4						

20	My teacher uses visuals like computers and projectors in teaching mathematics in primary 4						
21	Mathematics in primary 4 has been made easier for me as compared to my primary previous class						
22	My teacher puts the class in smaller groups to solve mathematics problems in primary 4						
23	My teacher encourages us to participate in class during mathematics lesson						
24	My teacher gives exercises, mark and correct wrong answers						
25	My teacher combines both the local language and English language in teaching mathematics in primary 4						

Section C: Pupils mathematics scores in primary 3 and primary 4

26. My primary 3 third term mathematics scores…………

27. My primary 4 first term mathematics scores…………

28. My primary 4 second term mathematics………………