The Influence of Kindergarten Teachers' Knowledge and Instructional Activities on Academic Related Skills of Children in the Talensi District

Agyenta Cletus Aboochi[a*], Agyenta Charity Lariba[b], Jacob Kwaku Nkrumah[c], Akosua Tachie-Menson[d]

[a,d] *Kwame Nkrumah University of Science and Technology, Department of Educational Innovation in Science and Technology*

[b]*School of medicine, Jiangsu university, Zhenjiang, China*

[c]*Automotive Engineering Research Institute, Jiangsu University, Zhenjiang, China*

[a] *Email: cletusagyenta@gmail.com*

[b]*Email: agyentacharity96@gmail.com*

[c]*Email: jnkrumah@tatu.edu.gh*

[d]*Email: akosuatmenson@gmail.com*

Abstract

This study aimed to investigate the impact of teachers' knowledge and instructional activities on the learning abilities of kindergarten children in selected schools in the Talensi District of Ghana. A descriptive survey research design was employed, involving 98 selected teachers, with 76 of them participating in the study. Data was collected using a structured questionnaire and classroom observations. The collected data were analyzed using various descriptive and inferential statistics with the assistance of the SPSS program. The analysis revealed that kindergarten (KG) teachers possessed knowledge in areas such as the organization of the learning environment, child development, curriculum design for children, multiple forms of assessment, family and parent outreach, methods of teaching diverse children, and strategic use of resources and information and communication technology (ICT). Additionally, instructional activities employed by teachers included general exercises, logic, mathematics, and numeracy skills, reading, and writing activities, socio-emotional developmental activities, and creative art activities. Further analysis indicated a strong positive relationship between teachers' knowledge and academic-related skills. Similarly, a significant strong relationship was found between various instructional activities and academic-related skills.

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* Corresponding author.

This suggests that both teachers' knowledge and instructional activities play a crucial role in influencing the academic skills development of KG children.

The study recommends that the government should establish National Early Childhood Teachers' Training Centers in all regions to address the specific skills needs of teachers. Standardization of the KG curriculum is also advised to ensure consistency in educational content across all schools. Additionally, in-service training and provision of learning materials for KG teachers are recommended to support their work on a regular basis.

*Keywords***:** Cognitive; Classroom; Curriculum; Early Childhood Education; Kindergarten; Pedagogical; Pre-primary; Philosophical; Psychology.

1. Introduction

Recognizing the significance of early childhood learning experiences in shaping children's school readiness and lifelong success in education, communities worldwide have been establishing learning centers and programs to provide such opportunities and experiences for children across the globe [1]. These learning centers, commonly referred to as pre-schools, combine learning with play in programs run by professionally trained adults to nurture children for formal education [2]. The term "pre-school education" is also used to describe group settings for children aged approximately three to five years, deliberately designed to stimulate, and support their mental, physical, emotional, language, social, and other aspects of development [3]. According to [3], early childhood or pre-school education pertains to group settings for children aged approximately three to five years, deliberately designed to stimulate, and support their mental, physical, emotional, language, and social development. While the purpose and concept of pre-school education have often remained intact, various interventions and philosophies have emerged to shape the contents and structure of childhood education to the form that exists today. Despite the consistent goals of pre-school education, there have been multiple approaches to teaching in early childhood education, reflecting the diversity of educational philosophies and methods. [1] reported that early childhood or pre-school education is about "children who 'wonder if' imagine, create, fail, discover, manage conflict, solve problems, try, persevere, help, succeed, and love the freedom to lead and learn through play."

The United Nations Convention on the Rights of the Child emphasizes that the views of children are not to be perceived as objects to be formed, but as human subjects with their own intentions, interests, relational needs, and capacities [4]. Article 31 of the UN Convention of the Rights of the Child advocates in favor of children's right to engage in play and recreational activities [4]. As highlighted by [5], early childhood experiences should contribute to children's holistic development, providing them with a good start in life and opportunities to play. This suggests that early childhood is a crucial phase in individuals' lives due to the short-term and long-term implications of learning experiences for every child. Therefore, the concept of education and care should consider developmentally appropriate practices (DAP) to enhance children's learning potential. According to [6], developmentally appropriate practices in early childhood education rely on a play-based curriculum, meaningful adult-child interactions, and healthy relations between the home and the program. Teachers in early childhood education are encouraged to create an environment in which children can share their observations, propose conjectures, and justify their arguments. Through active participation in instruction, children can develop complex

cognitive skills and processes [6]. In teaching, teachers are encouraged to devote more time to class discussions and group work. In this instructional style, the teacher is neither the sole source of authority nor the primary source of knowledge. Teachers' questioning strategies also play a vital role in the quality of instruction children receive, as they can foster students' reasoning ability by asking questions that promote student thinking.

Shulman's presidential address, as cited by [7] to the American Educational Research Association membership, sparked increased attention to subject matter knowledge unique to teaching. Shulman revolutionized the study of teacher knowledge by focusing on the role of content in teaching. He initially defined three categories related to teacher knowledge [8], and later, in a related Harvard Education Review article [9], he specified seven categories of a knowledge base for teaching: knowledge of content; knowledge of curriculum; pedagogical content knowledge; knowledge of pedagogy; knowledge of learners and learning; knowledge of contexts of schooling; and knowledge of educational philosophies, goals, and objectives. In Ghana, Early Childhood Development Programs comprise various components, including Day Care programs based at centers or schools, in-home programs where caregivers go to the homes of children, nanny homes where parents take children to homes of nannies, and after-school homecare where children who close earlier from their centers are sent until their parents pick them up after work [10]. Before 2002, preschool education was not part of the formal system in Ghana; it was introduced as a result of recommendations made by the President's Committee on Review of Education Reforms in October 2002 [10].

Since the inception of the early childhood education system in Ghana, both the form and content have undergone several changes. The introduction of Day Care Centers by the Department of Social Welfare (DSW) marked the first attempt to provide a reliable place for working mothers, especially after maternity leave, to leave their children. On the other hand, pre-schools established under the Ghana Education Service aimed to prepare children for primary school [10]. Children typically enrolled in pre-schools are between the ages of three and five, though those as young as two years can also attend. This period before children enter primary education is generally referred to as pre-school age. Pre-school education is crucial for developing academic-related skills, laying the foundation for future success in formal education. Research indicates that the more knowledgeable and skilled pre-school educators are, the more likely they are to effectively help young children thrive and achieve their potential [11]. Well-trained and educated practitioners are also found to be less harsh and restrictive than staff with less preparation [12,13]. However, despite the importance of early childhood education, there are increasing concerns that most teachers in pre-school (Kindergarten) do not possess the requisite knowledge and training necessary to have a deeper understanding of child development and early childhood educational practices that provide richer educational experiences for children in pre-school. In Ghana, this problem is compounded by the lack of a state mandate in kindergarten education, a lack of administrative leadership demonstrating knowledge and expertise in early childhood education, and a lack of relevant professional development experiences for kindergarten teachers [15]. Although pre-service and in-service training opportunities exist for pre-school teachers to upgrade their knowledge and skills in childhood education, many teachers fail to do so [16]. Limited efforts are shown by kindergarten teachers towards increasing their knowledge base, exploring, and expanding their teaching and assessment methods, managing their learning environments, or strategically utilizing ICT and other resources to improve the quality of their instructional activities [17]. The resulting effect of these failures is that most teachers demonstrate visible signs of poor classroom management and teaching style, as well as a weak knowledge

of the appropriate and recommended development practices used in kindergarten education. In the Upper East region of Ghana, specifically the Talensi District, this situation is evident and has been the subject of discussions in Parents Teachers Association (PTA) meetings in most Kindergartens (KG). Many parents have consistently complained about the low quality of education at various KGs in the District. Despite the widespread recognition of the declining quality of KG education, limited research has been conducted to explore how teachers' knowledge and instructional activities affect the academic-related skills development of KG pupils, especially in the Talensi District. The existing literature leaves two important questions unanswered: 1) How knowledgeable are KG teachers on KG children's developmentally appropriate instructional practices? 2) How does the knowledge and resultant instructional practice of KG teachers influence their academic-related skills development? To address these questions, this study seeks to examine KG teachers' knowledge and instructional activities and their effects on academic-related skills development among KGs in the Talensi District of the Upper East Region of Ghana.

1.1 Objective of the study

The main objective of the study is to examine the influence of teachers' knowledge and instructional activities on kindergarten children learning abilities at selected schools in Talensi District. The specific objectives of this study are to:

   i.   To examine the knowledge of kindergarten teachers on childhood developmental training/education in the Talensi District of Ghana.

  ii.   To ascertain the instructional activities employed by teachers at kindergarten schools in the Talensi District

 iii.   To determine the influence of teachers' knowledge and instructional activities on children's academic related skills in the Talensi District of Ghana

1.2 Research Questions

   i.   What is the knowledge of kindergarten teachers on childhood developmental training/education in the Talensi District of Ghana?

  ii.   What instructional activities are employed by teachers at kindergarten schools in the Talensi District?

 iii.   How does teachers' knowledge and instructional activities influence children's academic related skills in the Talensi District of Ghana?

2. Literature Review

2.1 Theoretical Framework of the Study

The pedagogical concept of play in early childhood education has a long history. Prominent classical play theorists, such as Froebel and Dewey, regard play-based activities as the medium of children's learning [18]. Similarly, Vygotsky's learning theory guides this study. According to Vygotsky, cognitive development in children occurs as a result of one's cultural experiences and social interaction. Furthermore, he argued that learning occurs efficiently and effectively within the zone of proximal development [22]. In early childhood education

settings, children's protection and play can occur under the guidance of teachers/practitioners or adults. Research has shown that the discourse of children's learning and development through play has been generally based on Froebel's "children's garden" in most early childhood education settings [20]. Several early years curricula promote or advocate play-based teaching and learning [21]. Vygotsky's theory posits that children's interactions and conversations with a more capable peer are indicative of their development and learning. "Knowledge cannot be given directly from the teacher to the learner but must be constructed by the learner and reconstructed as new information becomes available" to the learner [24]. Consequently, during children's play, practitioners' involvement and interactions with peers work in the same direction to enhance learning. Play creates a zone of proximal development that influences cognitive learning among children [22]. Play helps children discover things and learn; thus, "play has been shown to be a leading source of development" (Vygotsky as cited in [21]).

2.2 The Concept of Pre-primary Education

Pre-primary education is defined as the initial stage of education before primary school for children. The term is used to refer to the provision of care and education for young children less than six years of age. In this study, the term pre-primary is used interchangeably with the term pre-school. Kindergarten is defined as an institutional school that provides education for 20 or more children during a single day, whether or not all children attend at the same time. Kindergartens are structured in three levels: nursery classes (for children ages 3-4), lower kindergarten (for children ages 4-5), and upper kindergarten (for children ages 5-6). Most of the kindergartens operate on a half-day basis, meaning children attend for three hours in the morning or three hours in the afternoon. Generally speaking, kindergartens are staffed by teachers, headteachers, and principals. From 2003, all kindergarten teachers and headteachers are required to possess a Qualified Kindergarten Teacher (QKT) qualification. Kindergarten principals are required to possess the Certificate in Kindergarten Education [25].

2.3. Importance of Pre-primary Education

Research in neurobiology, developmental psychology, social sciences, and economics has provided an understanding of the importance of the early years [26,27]. Children's early experiences impact their learning, behavior, and health throughout their lives. Preschool education plays a very important role in children's development as well as for preparing young children for a better start at primary school. Research studies on the effects of preschool education have pointed to positive and long-lasting impacts on children's cognitive, social-emotional, language, and early number concepts [28]. High-quality preschool is related to better intellectual and social-behavioral development [29]. The quality of preschool programs has been found to be significantly related to children's scores on standardized tests of reading and mathematics at age 6 [28]. Children, especially from a disadvantaged family background, benefit significantly from high-quality preschool programs [30]. A well-known longitudinal study on the effects of preschool education, the Perry Preschool Project, later known as High Scope, has demonstrated social and economic benefits, including reduced crime and delinquency and improved adult employment and adjustment [31].

2.4 Curriculum Reform for Teaching Kindergarten Children

Ghanaian kindergarten teachers, like their counterparts in many other parts of the world, face the challenges of implementing educational reforms and adopting new teaching approaches. Although they appear to be enthusiastically adopting teaching approaches imported from Western societies to help the children in their care achieve high-quality learning outcomes, there are concerns that quiet struggles continue beneath the surface. Anecdotal evidence suggests that kindergarten teachers may have difficulties in understanding how to best implement new curriculum in their everyday classroom activities. The majority of kindergartens have implemented curriculum reforms by adopting new teaching approaches to develop children's active learning attitudes, creativity, and problem-solving skills. However, some kindergartens have not considered children's needs, interests, and developmental stages in doing so [32]. Also, many kindergartens have a heavy curriculum and a tight schedule that may hinder children's learning. Some teachers still employ teacher-centered approaches and didactic instructional methods, which may neglect other aspects of children's development [33]. Some kindergartens still use whole class teaching and expect that all children would progress at the same rate [34]. Eighty percent of the kindergartens still emphasize writing training and give the children too many written exercises, many of them involving copying [32]. Further, some kindergartens still require children to memorize books and write dictated words [33]. To provide insight into Ghanaian kindergarten teachers' perspectives on curriculum and pedagogical practices, this study describes and analyzes the implementation of two commonly used pedagogical approaches in Ghanaian kindergartens: the thematic approach [35] and the project approach [36]. Both have been developed in Western societies, mainly in the United States (US), and both have been widely implemented in countries as diverse as South Korea [37] and Hong Kong.

2.5 Developmentally Appropriate Practices used by Teachers at the Kindergarten

Developmentally Appropriate Practice (DAP) originated in the United States in 1986 when a position statement on DAP was first adopted by the National Association for the Education of Young Children (NAEYC) [38]. The most recent version of the statement, introduced in 2009, aimed to offer "a framework for best practice" for early childhood education programs [38]. According to DAP authors [38], the statement recommended "five key areas of practice: i) creating a caring community of learners, ii) teaching to enhance development and learning, iii) planning curriculum to achieve important goals, iv) assessing children's development and learning, and v) establishing reciprocal relationships with families" (p. 16). In essence, Developmentally Appropriate Practice promotes the use of child-initiated activities, autonomy and self-regulation, and interaction between children and peers, and between children and adults. Within DAP, children should have plenty of opportunities to explore and experiment with concrete materials and to interact with adults and peers [39]. Teachers in a DAP classroom are seen as peers who ask questions, probe, and offer advice and information for the children when needed. It is fundamental that teachers respond to every child individually [38]. DAP emphasizes the development of the whole child [38] and suggests that children are born with curiosity and are keen to explore their environment and learn through discovery [22]. DAP merges the work of Piaget and Vygotsky with the concept of constructivism, "which assumes that learners construct their own knowledge based on interactions with their environment that challenge their thinking" [40]. Under this tenet, curriculum and pedagogical approaches should be determined by the readiness, ongoing needs, and interests of the children [41]. Teachers should be responsible for "classroom plans

and organization, sensitivity and responsiveness to all the children, and moment-to-moment interactions with them that have the greatest impact on children's development and learning" [38]. DAP is recognized by most Hong Kong (HK) kindergarten teachers as an effective contemporary curriculum framework [42]. However, [42] points out that although HK preschool settings reflect the basic pedagogical principles in DAP, the views and opinions of both parents and teachers on program quality are "somewhat different from the developmentally appropriate quality indicators" (p. 24). As [41] explained, kindergarten teachers sometimes tend to concentrate on their own teaching practices rather than focus on their students' learning needs, meaning that DAP is not well interpreted by these kindergarten teachers. In short, a gap exists between the theories or approaches espoused by early childhood educators and what they put into practice in their actual teaching [41]. This is important in the context of this study as the research methods used must be able to capture this type of gulf adequately.

2.6 Teachers' Knowledge about Kindergarten Education

An underlying theme that unites all of classroom management research, irrespective of which conceptual model one adopts, is the centrality of the teacher in all classroom procedures. In the late 1960s and early 1970s, researchers were interested in elucidating teacher factors that contributed to effective instruction by examining observable teacher behavior and the ways in which it correlated with student achievement [43]. This "process-product" model was presumed to be unidirectional, that is, teacher performance resulted directly in student performance. Over time this paradigm shifted as researchers became more interested in "teacher cognition," the mental processes that drive teachers' thinking, knowledge, beliefs, planning, and decision-making. The models that have emerged from this body of literature paint a multidirectional picture of the teacher-student dynamic in the classroom. Teachers plan and execute instruction based on thought processes, knowledge, and beliefs; students respond in specific ways; teacher behavior is then modified accordingly, and so on [44]. Research on teachers' beliefs and knowledge is a major focus of teacher cognition studies. [45] details the effort on the part of some scholars to operationally define and distinguish between knowledge and beliefs. Although there is consensus that knowledge generally refers to formal, objective, and explicit information while beliefs are seen as more subjective and implicit, many researchers support the notion that teachers' ideas "fall in the realm of what is both known and believed" and that "beliefs and knowledge [are] generally overlapping constructs" [39]. The term 'beliefs' has been used interchangeably in the research literature with a number of other words including attitudes, perceptions, conceptions, perspectives, judgments, and so forth [45]. Semantics aside, teachers' beliefs and knowledge are a vital component to understanding classroom processes. Meta-analyses of relevant studies have concluded that teachers' beliefs affect their actions, which in turn impacts student learning [45,46]. Finally, there is an important feature of teacher beliefs to bear in mind when examining this area of research. Pre-service teachers have spent thousands of hours in their professional arena, the school/classroom, by the time they reach college. They tend to have well-developed beliefs about an array of educational issues, which impacts their training and teaching experience [39,45].

2.7 Teachers' Knowledge about Classroom Management

According to [47], some of the central themes that have emerged from the literature on teacher beliefs and knowledge about classroom management include various orientations to management, which refer to teachers'

philosophical outlook toward the nature of the teacher-student relationship. This spectrum is perceived to range from 'controlling' or 'custodial' to 'democratic' or 'humanistic'. Studies on orientations to management are closely related to those exploring teachers' beliefs about discipline, as both are concerned with the varying perspectives teachers take on the role of adults in child development [47]. Beliefs about discipline have been conceptualized using categories meant to describe a particular viewpoint. Although the terminology used to label each category changes from one study to the next, there are considerable similarities in the theoretical content underlying them. Researchers explore whether teachers primarily focus on modifying behavior, restoring order, developing social skills, or fostering a teacher-student relationship in their approach to discipline. One subset of research on teachers' orientations to management explores the beliefs and knowledge of pre-service teachers as a means of assessing the quality of teacher education programs. Two other important constructs discussed in the literature on teachers' beliefs about classroom management are self-efficacy or perception of control and causal attributions. Self-efficacy refers to an individual's perception of his or her ability to perform behavior or accomplish something in a given situation and is a recurring theme in teacher belief research. It is often applied in studies about discipline as 'perception of control,' meaning how teachers view their level of control over their own classrooms. The second construct is teachers' causal attributions, or the reasons given to explain students' problem behaviors.

2.8 Preschool Teachers' Classroom Management Practices

The primary goal of research on beliefs and knowledge is to identify factors that influence teachers' practices. [48] outlines key features of classroom management in early childhood settings. The first is designing the educational environment to facilitate academic learning, ensure safety, and sustain order. Achieving this requires teachers to focus on arranging the physical setup of the classroom, establishing rules or routines for the various activities of the day, and monitoring student tasks and classroom events. Emphasizing these processes is supported by an ecological approach to classroom management, grounded in the work of Kounin and Gump [48]. This perspective stresses that teacher and student behaviors are contextual; one needs a thorough understanding of the setting or habitat to understand what is happening in it. [48] outlines six characteristics of the classroom-as-context. It is a place where heterogeneous groups of people compete for limited resources to accomplish a variety of goals. Numerous things happen simultaneously in the classroom; events are unpredictable, and teachers do not have time to reflect but must react immediately to ever-changing circumstances. Finally, the classroom is a public arena where students and teachers accumulate a shared set of experiences that serve as a foundation for all subsequent occurrences. Viewing classroom management through an ecological framework involves recognizing that each classroom activity is its own context, with unique rules and procedures. Students and teachers must adapt as routines and expectations change. This is particularly salient in early childhood settings where transitions between various types of activities typically occur at a relatively frequent pace throughout the day. The second feature of classroom management in early childhood settings is the 'social curriculum', which aims to foster children's moral and prosocial development. This is also uniquely relevant to early childhood education since major developmental areas cognitive, social, and emotional are interconnected in young children, making it difficult to address one without focusing on another [48]. Establishing a social curriculum adds a pedagogical dimension to classroom management, as teachers explicitly teach the skills necessary for successful social interactions, problem-solving, conflict resolution, resilience, and self-regulation. Furthermore, teachers attempt to facilitate the development of moral characteristics such as honesty, responsibility, justice, citizenship, and respect

[48]. There are formal curriculum materials available for early childhood classrooms that include lessons and materials for teaching social skills and encouraging moral growth. Alternatively, some districts, schools, and individual teachers use a more informal curriculum, typically developed locally, toward the same end. The final and most obvious component of classroom management is discipline, or the actions teachers take to address problematic behavior. Discipline can take on different forms depending on one's perspective. A classic behavioral approach is based on the premise that positive and negative behaviors are promoted or discouraged through reinforcement, or lack thereof. Teachers use reinforcement systems with groups of students and as an intervention strategy to address the specific behavior concerns of individual children [49]. However, the ecological paradigm and social curriculum described by [48] paint a different picture of the discipline process. With its emphasis on establishing the educational environment, the ecological approach stresses the proactive aspects of classroom management but does not provide a clear protocol for the reactive actions necessary for discipline. Misbehaviors are viewed as context-specific, so that the teacher might react differently to two instances of the same behavior depending on the circumstances. The primary function of discipline in an ecological model is to restore order to the environment that was deliberately established by the teacher with its requisite rules, routines, and procedures. Implicit in perceiving discipline as actions taken to sustain order is that teachers address misbehavior as quickly and quietly as possible so as to minimize disruption [48]. Conversely, a social curriculum approach to classroom management may result in teachers who view discipline as an opportunity to teach children what constitutes appropriate behavior, a process that might be more protracted and perceived as a learning opportunity rather than an obstacle [50]. When enhancing students' social and moral development is a component of classroom management, "how a teacher achieves order is as important as whether a teacher achieves order" [51].

2.9 Teacher Effectiveness

Despite its disregard for non-cognitive outcomes, a substantial body of literature has now demonstrated that teachers significantly impact academic achievement compared to other common dimensions of school quality, such as school resources, instructional interventions, and class size reductions [23]. According to a review by [52], 7% to 21% of the variance in achievement gains is attributable to differences in teacher effectiveness. Analyzing the Tennessee STAR experiment, they found that moving a student from the 25th to the 75th percentile of teacher effectiveness would increase reading and math gains by 0.35 and 0.48 standard deviations, respectively. [53] reported even larger effect sizes, ranging from 0.77 to 0.78 for reading gains and 0.72 to 0.85 for math gains. [54] observed a one standard deviation increase in teacher effectiveness associated with a lower-bound gain of 0.11 standard deviations for math achievement and 0.10 standard deviations for reading. Rockoff found an effect close to the lower bound estimate. The variations in estimated effects arise partly from differences in the grade under study, other data issues, and methodological strategies employed to address problems of self-selection and sampling variability. If teachers matter as much as these studies suggest, a critical question is the extent to which a teacher's performance can be predicted by observable characteristics such as experience, education, certification, and test scores. Numerous studies conclude that experienced teachers are more effective in increasing student achievement [55]. In a comprehensive analysis of teacher experience, [55] found that having a highly experienced teacher in the fifth grade, i.e., a teacher with more than 27 compared to zero years of experience, is associated with an increase of 0.13 standard deviations for math and 0.095 standard deviations for reading, with half the gain occurring in the first two years of teaching. Other studies find that measures of teachers' ability, as captured by

standardized tests or licensure scores, are positively associated with student achievement [56]. However, most of the variation in teacher quality is not captured by the teacher characteristics measured in administrative and survey data. Collectively, existing studies have significantly enhanced our knowledge of teachers' effects on student academic achievement. Education is about more than academic achievement, and we know very little about schools' or teachers' effectiveness in achieving other educational goals. Little is known about the determinants of social/behavioral development, including a positive orientation to learning, the ability to interact in a school-sanctioned way with teachers and other students, or the ability to observe school rules and avoid behaviors that violate the school's standards of appropriate student conduct, such as fighting with other students. It is possible that teachers effective in promoting academic growth also enhance students' social/behavioral skills. On the other hand, these teacher qualities may be largely independent of each other, either because they call on different abilities or because teachers disagree about the relative importance of social/behavioral development in promoting academic development and influencing future success in the labor market. It may even be the case that instruction in academic and social or behavioral-related skills may compete with each other, with the consequence that specific teachers excel in either one area or the other. Two studies (Alexander, Entwisle, & Thompson as cited in [57]) address the relationship between teachers' attributes and students' non-cognitive outcomes. Neither of these studies, however, specifically estimates teacher effects on non-cognitive outcomes. Consistent with prevailing (and, we argue, limited) sociological theories about cultural capital, they both address the issue of school evaluation processes, and specifically how student-teacher status differentials (measured in terms of class or race) result in low-status students' receipt of poorer evaluations. Alexander, Entwisle, and Thompson cited in [58] examined the effects of teacher-student social background matching in the first grade on teachers' evaluations of students' maturity. The authors found that students' race strongly conditioned the evaluations of teachers from high-status backgrounds but had no effect on the evaluations of low socioeconomic status teachers. [59] used nationally representative samples of kindergartners (the Early Childhood Longitudinal Study–Kindergarten Cohort) and adolescents (the National Educational Longitudinal Study) to examine the effects of student-teacher racial matching on teachers' evaluations of students' externalizing problem behaviors and approaches to learning. They found that black students receive poorer behavioral ratings when matched to white teachers, with effect sizes of 0.05 to 0.1 standard deviations. Both studies used cross-sectional outcome measures and therefore did not address change in teachers' ratings of students over time. In summary, the current literature leaves unaddressed the impact of teachers' knowledge, particularly during the early elementary years. This study, therefore, uses data from the Early Childhood Longitudinal Study Kindergarten Cohort to fill this gap in several respects.

2.10 Domains of Child Development

Researchers with an interest in human development examine the ways in which individuals and their behavior evolve over time. A child's life represents a period of significant development across various growth dimensions, encompassing physical, cognitive, and psychological/social aspects. Physical development pertains to the body's growth and the acquisition and mastery of both gross and fine motor skills. It involves the development of balance, coordination, and movement. As the child progresses, physical development also encompasses hand-eye coordination and fine manual dexterity. Cognitive development is focused on thinking and learning processes. It is defined as the process through which individuals acquire spatial information, encode it, store it, and apply it to comprehend the everyday world. This process elucidates how people 'know the environment' [60]. Human

cognitive development spans from the early understanding of object permanence in infants to the development of memory skills, logical thinking, and ultimately, to abstract thinking and the ability to reason. Psychological development involves the formation of self-esteem, confidence, and a sense of self-identity. Social development includes the cultivation of socialization skills and the ability to interact with others.

2.10.1 Child Development from Preschool through Adolescence

This subheading addresses childhood development from preschool through adolescence. The design considerations outlined in this study will specifically target developmental issues spanning these age groups. It is essential to note that in the second part of this study, the Jamestown Settlement, as part of its marketing to elementary school-age children (ages 7-12 years), in connection with the Virginia Standards of Learning program, is most relevant for analysis concerning children aged 7-12 years. The design considerations will be employed to concentrate on the issues pertinent to children in that age group.

2.10.2 Preschool (3-6 years of age)

Between the ages of three and five, children undergo rapid development in their physical, cognitive, and psychological or social competence as they engage with their environment. This period is characterized by significant changes. Physically, preschoolers are mastering both gross and fine motor skills, including activities like walking, running, jumping, and skipping. Socially, the developing child transitions from being entirely dependent on adults to learning to play and share with others. Throughout this stage, children begin to form a sense of self-identity, and towards the end of the stage, they feel the need to express themselves as individuals. Intellectual development occurs through experiences and exploration of their surroundings. Preschoolers start to understand and use symbols. With the development of language skills, young children ask questions constantly, displaying a constant interest in the world around them. This phase is characterized by radical and rapid changes, with play occupying most of the child's waking hours.

2.10.3 Physical Development (3-6 years of age)

The development of gross and fine motor skills follows a generally steady timeline for most normal children. By the age of three, most children have mastered a variety of skills such as jumping, hopping on one foot, skipping, and running. By the age of four or five, these skills become more refined, accompanied by an increase in body control. One reason why motor skills develop rapidly during the preschool years is that children spend a significant amount of time practicing them [61]. "To become a master player is the height of achievement for children ages three to five" [62]. Physical play is the work of early childhood, used to develop the body and skills [63]. A five to six-year-old has improved on all previous skills to the point of mastery. At this age, children display grace and skill in many activities. Motor skills are exhibited without hesitation, and children become more adventurous, pushing the limits of their newly developed skills. Activities are performed with greater fine motor skill and finesse. Eye-hand coordination becomes more developed. Children at this age have a good sense of balance and can use their hands and feet with considerable skill, although some of the more detailed fine motor skills, such as writing, may still be challenging [63]. Greater control over the body represents a significant milestone during the

preschool years [17]. This control serves as a signal that the child is ready to enter school.

2.10.4 Ssocial/Psychological Development (3-6 years of age)

While learning to master the motor skills necessary for physical development, the child begins to move toward self-reliance and peer interaction [64]. Many motor skills have been developed and refined by this stage. The mobile child becomes curious about other children. Confidence in walking and running moves the child farther away, exploring beyond the previous boundaries. Children become more confident and daring, willing to push the limits of their skills. Preschoolers' social skill development begins as communication skills improve. Socially, this age is when onlooker and parallel play begins. The preschooler starts to interact with others from a distance, playing the same games as others but not directly engaging. Young children may use this type of play to become acquainted with and gain acceptance from older or unknown peers [65]. The nature of preschool play changes over time, growing more interactive and cooperative. Children develop their first true friendships in the later preschool years [66]. As young children learn to become more self-sufficient and to care for themselves, they develop school readiness skills like following instructions and identifying letters, spending many hours at play with their peers. Playing with others prepares preschoolers for the demands of school and the social relationships they will later develop [63,65].

2.10.5 Summary of Developmentally Appropriate Practices (3-6 years of age)

The first five years of life "work their subtle power on us throughout our lives. We remember few specifics. But our bedrock emotional security, our trust, comes from this time. We spend our first years striving to develop what psychologists call 'a sense of competence.' This drive for mastery - of grasping, crawling, walking, talking, and play, leads to astonishingly rapid and broad learning" [59]. Young children spend the majority of their waking hours interacting with the physical environment [60]. Practice play, solitary play, constructive play, dramatic play, these are the activities that fill the preschoolers' life. As preschoolers, children begin to play with other children, communicating with each other and sharing toys. Appropriate learning environments will provide props and tools that foster the types of play that preschoolers engage in. They should be allowed to express their independence and participate in self-guided activities.

2.10.6 Elementary School Age (7-12 years of age)

These years are some of the easiest in a child's life. Physical development is relatively problem-free, making it easy to master new skills. At this stage of development, most children are able to learn quickly and think logically. The brain is fully developed, and children become capable of more sophisticated learning. Socially, the child's world "seems perfect, for most school-age children think their parents are helpful, their teachers are fair, and their friends loyal" [63]. Writer Edith Cobb emphasized the potency of this time in her essay 'The Ecology of Imagination in Childhood.' This is a time when children are 'in love with the universe.' Here, she says, lie 'latent power and purpose, the seeds of the writer's art, the painter's vision, the explorer's passion.' "These are the years when the child is seen by societies throughout the world as a vessel into which knowledge, skill, and tradition, in short, culture can be steadily and reliably poured" [55].

2.10.7 Physical Development (7-12 years of age)

Slow and steady growth marks this developmental stage. Compared to the extreme growth occurring from birth through the preschool years and the physical changes that occur in adolescence, this stage is quite uneventful. The major developments in motor skills are improved muscle coordination and manipulative skills [61]. At this stage, children can perform almost any motor skill as long as it does not require adult strength or judgment [63]. School-age children are learning to ride bicycles, ice skate, and swim – all activities that require overall coordination and strength. These are the years when a child progresses from tying shoes and fastening buttons to being able to use each hand independently. By the age of twelve, children can manipulate objects almost at the level of an adult [61].

2.10.8 Cognitive Development (7-12 years of age)

Intellectually, children in the school years grow substantially. As they enter the concrete operations stage, for the first time, they are capable of applying logical thought processes to concrete problems. Concrete operational thought, according to Piaget, occurs from the ages of about seven to twelve years. It is defined by the active and appropriate use of logic, but only in concrete circumstances. For example, at this stage, the child has the ability to apply reversible mental action on real, concrete objects. Another feature is the understanding of conservation; the knowledge that quantities such as mass, weight, and volume are unrelated to the arrangement and physical appearance of objects. The child can classify objects, reasoning about their interrelationships. Children of this stage are overcoming the egocentric perspective that was present as preschoolers, a process called decentering, and are able to take multiple aspects of a situation into account. This is a stage of concrete, physical reality. Children cannot understand truly abstract or hypothetical questions or ones that require formal logic to answer. During middle childhood, short-term memory capacity expands greatly. The child is developing individual memory functions, and by approximately age ten, all aspects of memory (encoding, retrieval, rehearsal, search, clustering elaboration, and organization) will be present, although not yet fully developed or able to be controlled [33]. Language improves tremendously with school and parental encouragement. The extent of the child's vocabulary continues to increase. The average six-year-old has a vocabulary of between 8,000 and 14,000 words, and within three years, they have added 5,000 more words [61]. Grammar and syntax improve, although there are still some pronunciation and comprehension difficulties. School-aged children enjoy telling jokes, evidence of developing memory, logic, and social skills [63]. Children master fundamental skills of reading, writing, and arithmetic and are formally exposed to the larger world and its culture. Achievement becomes important.

2.10.9 Social/Psychological Development (7-12 years of age)

These are the years where children struggle to answer the question "who am I?" Here, children begin to view themselves less in terms of external physical attributes (short, thin, with blond hair) and more in terms of psychological traits (smart, pretty, a fast runner) [61]. In addition to working on their self-concepts, children in the middle school years are also developing self-esteem. They are also creating a sense of self-efficacy, forming expectations about what they are capable of doing and achieving. Social dependence on peers is strong during the early education years. Children are more interested in same-sex friends and less dependent on their parents and

families. Family, school, and community can have a profound effect on the personality and achievement of a child at this stage.

2.10.10 Summary of Developmentally Appropriate Practices (7-12 years of age)

At this stage, the development of the mind overshadows any development of the body. Children in the early school years increasingly create dramas in miniature by manipulating puppets, blocks, cars, small animal, and people figurines. Play progresses to formal and informal games with peers. This type of play enhances their coordination and physical abilities as well as refining their social skills. These games require the concepts of cooperation and competition. Board games, computer games, and jump rope are played during these years. Children will create their own games; riddles, number games, and secret codes allow them to exercise their growing understanding of language [30]. Children in elementary school are moving on to "the exercises of initiative, making choices and learning to sustain their play, relationships, and oral language, their modes for developing knowledge about the world" [62].

2.10.11 Adolescence (13-18 years of age)

Adolescence has been described as "probably the most challenging and complicated period of life to describe, study, or experience. Between the ages of ten and twenty, more changes occur, and greater individual variation is evident, than during any other period" [63]. A significant amount of physical growth comes with the adolescent growth spurt. There is great diversity in the cognitive development during these years. Many adolescents enter a stage of adolescent egocentrism while others progress to the stage of abstract thinking, a defining characteristic of adult thought. Psychologically and socially, adolescents are developing even more diversely. As they work to construct their self-identity, this group "strives for the emotional maturity and economic independence that characterize adulthood" [63].

2.10.12 Physical Development (13-18 years of age)

The rapid physical growth that occurs during adolescence rivals that of infancy. There is an increase in muscle growth with a corresponding increase in strength. Fine motor skills are being mastered, often in response to choices made about self and the future. Computer keyboarding or typing may be mastered by those students looking in that direction for a future career. Carpentry and other craft skills may be preferred by some. Still, others will excel at the piano keyboard or guitar strings. Adolescence is a time of adjusting motor skills to coordinate with the body's new height, size, and shape as well as with the psychological/social choices pertaining to self-identity.

2.10.13 Cognitive Development (13-18 years of age)

Formal operational thought defines the cognitive development of the adolescent. Thought is no longer limited to concrete experiences. Adolescents at this stage are able to think abstractly, make up hypothetical situations, speculate, and fantasize - emphasizing possibility more than reality. Thought begins to become more logical, devising questions and systematically testing answers and solving problems. There are significant improvements

in mental processes during this time. Adolescents are learning how to organize memories and develop strategies for how to apply what they have stored. Memory capacity is increased. Adolescents have improved perceptual, verbal, math, and spatial abilities. They can pay attention for longer periods of time. Cultural factors can have a significant effect on the cognitive development of the adolescent. There is even some question today as to whether this level of formal operational thought is ever reached by everyone. Some studies show that only 40-60% of college students and adults have reached this stage [61].

2.10.14 Social/Psychological Development (13-18 years of age)

The pursuit of independence and self-identity is crucial during adolescence. Adolescents struggle to define themselves and their role in society, and these struggles often lead to friction with parents and family. Figuring out where they belong becomes a major challenge for this group. Friendships hold a prominent place in the adolescent's life, with school groups and social cliques serving as references for comparing social success. Adolescents tend to conform to peers they admire and are highly susceptible to peer pressure. Thought becomes more logical, abstract, and idealistic during adolescence. As individuals spend more time away from the family, their self-concepts grow more distinct. Each adolescent ultimately decides what is best for themselves, leading to a time of conflict and choice. Issues such as career, money, politics, sex, and religion come to the forefront. Levels of self-esteem become separate and distinct, as adolescents place different values on different aspects of themselves. Some adolescents may enter a stage of 'adolescent egocentrism,' where they become self-absorbed and view themselves as the center of everyone's focus. This egocentric view can lead to social problems, as adolescents may rebel against authority. Cultural factors, gender, race, and socio-economic status can have a substantial effect on self-esteem during this critical developmental stage.

2.10.15 Summary of Developmentally Appropriate Practices (13-18 years of age)

Adolescents engage in various activities to meet others' standards and develop a greater understanding of the logical relationships among the concrete objects in their world. Play for adolescents evolves into formalized games with rules, and winning becomes important. Organized team sports play a crucial role in supporting social development, with peers often becoming more important than family during this stage. Adolescents channel their energies into specialized clubs that align with their personal interests, such as music, home economics, books, drama, and more. By participating in and taking on roles within these groups, adolescents come to better understand how they fit into society [67]. The involvement in such activities contributes to their social and personal development, providing them with valuable skills and insights as they transition from adolescence to adulthood. As stated, "Play is often viewed as the way in which the juvenile, through his/her extended childhood, learns the skills necessary in adulthood" [33].

2.10.16 Conceptual Framework for the Study

It seems that you have provided a brief overview of the conceptual framework for a study. The assumption is that teachers' knowledge and instructional activities play a crucial role in influencing the learning abilities and academic skills of kindergarten children. This assumption is grounded in various education theories and related

literature, including references to specific studies and prominent theories like the theory of cognitive development and social interaction. If you have any specific questions or if there's more information you'd like to discuss or analyze regarding this conceptual framework, please feel free to provide additional details or ask specific questions.
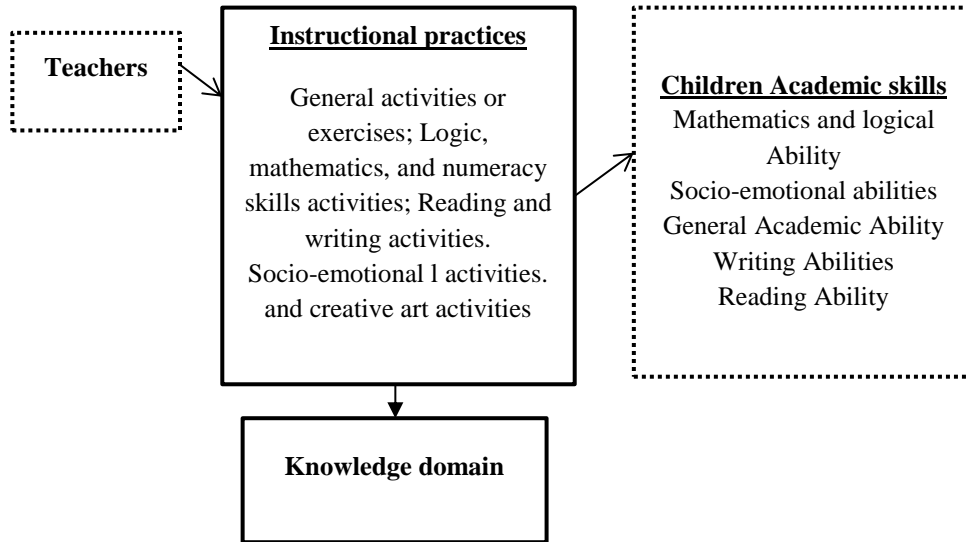

Figure1: Conceptual Framework for the Study

3. MethOdOlOgy

3.1 Research Philosophy

All researches are based on some underlying philosophical assumptions about what constitutes 'valid' research and which philosophy is appropriate for the development of knowledge in a given study. Even though there are other distinct ways in which research philosophy is classified, the most common and widely used classification is into the objectivist/positive and interpretivist philosophies. While none of these worldviews or philosophies is accepted to be superior to the other, adopting any one of them have repercussion on the nature of inquiry. The positivist philosophy or worldview is based on the assumption that reality or truth is objectively given and is measurable using properties which are independent of the researcher and his or her instruments; in other words, knowledge is objective and quantifiable [72,74]. From the positivist point of view scientific methods and systematic knowledge generation process using quantification can be applied to enhance precision in the description of parameters and the relationship among variables of any research work. Constructivist/ Interpretivist on the other hand maintain that the behaviors of social object (e.g. human beings) are based on subjective interpretation and that it is only through the study of subjective interpretation of reality that social objects can be understood. Constructivists believe that although there may be many interpretations of reality, the interpretations are in themselves a part of the scientific knowledge they are pursuing. Interpretivist thus focuses on exploring the complexity of social phenomena with a view to gaining understanding. The purpose of research from the interpretivist viewpoint is to understand and interpret everyday events, experiences, and social structures as well as the values people attach to these phenomena [75]. Positivism has enjoyed wide recognition and acceptance

among natural science and social scientist over the years. [73] have stated that the basic thought of positivism which view behavior as caused (initiated) by something, which if understood, could be applied to explain, and predict human behaviors is widely accepted to many researchers. In studies where a phenomenon exists only in a specific social structure that does not fit existing pattern or trend positivism becomes less valid in drawing conclusion. In this study, the positivist/objectivist philosophy was considered much more appropriate because the study sought to establish trends and cause and effects/association between teachers' knowledge and instructional activities on one side the academic related skills development on the other side. Positivist philosophy as [75] noted adheres to the view that only "factual" knowledge gained through observation (the senses), including measurement, is trustworthy. As a result of this, the role of the researcher in this study was limited to data collection and interpretation through objective approach and presentation of findings that are observable and quantifiable.

3.2 Research Approach

The research approach employed in a study to a large extent determines the nature and types of data collected, levels of measurement and methods of analysis. Basically, there are three approaches that are used in research viz. qualitative approach, quantitative approach, and the mixed approach [76]. While quantitative approaches deal with numerical measurements (interval and ratio level measurements); qualitative approaches deal with measurement by text/words (nominal and ordinal level measurements). The mixed methods combine the two approaches. According to to [77], the decision to choose a specific research approach should be based on its suitability to answer the research questions. By the nature of this study, the mixed method approach was employed. According to to [78] qualitative research approach is appropriately used when there is the need to understand meaning people give to a phenomenon under investigation within a specific social setting. [69] also opined that quantitative research approach should be used when a study seeks to confirm hypotheses or theory on a particular phenomenon using empirical data. The used of mixed method enabled the researcher to obtain quantitative measures of the variables on teachers' knowledge and instructional activities and pupils academic related skills development and also at the same time obtain a detail contextual analysis of the situation under investigation.

3.3 Research Design

The researcher adopted the descriptive survey research design to examine the influence of kindergarten teacher's knowledge and instructional activities on the academic related skills development in the Talensi District of the Upper East Region. The use of survey design enables the researcher to reach a large and representative proportion of the stakeholder of the study for insightful examination and analysis. As [79] noted, descriptive survey research is conducted with aim of describing the characteristics of the particular phenomenon, event, individual, or of a group in relation to certain variables, practices, or characteristics. By using descriptive research design, the researcher is able to observe, describe and examine the effects of teacher's knowledge and instructional activities on academic related skills development of the kindergarten pupil in the Talensi District. The use of the mixed method approach also enabled the researcher to identify, examine the knowledge and instructional practices of the kindergarten teachers and explore possible correlations or association with academic related skills

development. As [80] noted the mixed method approach enable researchers to obtain and utilized much more comprehensive data that include numbers, statistics, words, pictures, and narrative. By using both the qualitative and quantitative approaches in this study, the researcher was able to provide a much more detailed analysis on not only the teachers' knowledge and instructional activities but also their influence on academic related skills development of the pupil.

3.4 Population of the Study

From a broader perspective, the population of the study consisted of all Kindergarten Schools in the Talensi District of the Upper East Region of Ghana. Based on the objectives of the study, the unit of interest for analysis included teachers at the kindergarten schools. The target population of the study therefore was teachers at kindergarten schools in the Talensi District of the Upper East Region. Available information at the Talensi District Directorate of the Ghana Education Service shows that there are currently 51 Kindergartens spread throughout the Talensi District. The records from the Talensi District Directorate of the GES also show that these 51 Kindergartens are handled by 137 teachers. The target population of the study therefore includes all 137 teachers at the Kindergarten Schools in the Talensi District.

3.5 Sample and Sampling Techniques

The ultimate goal of every survey research is to learn about a large population by surveying a sample of that population. In this study, the study area is relatively large and consisted of large numbers of the study units (teachers). As a result of the large population size, it was necessary to select a sample of the study units for the survey. [81] have cautioned that when it is necessary to select a sample for a study, size of the population, the homogeneity of the study elements and the degree to which a researcher get access to the study subjects must be taken into consideration in determining the sample size and sampling method to use. Against the backdrop of this consideration a multistage sampling method was employed. In the first stage of the sampling, four sub-districts were selected randomly out of the total of 6 sub-districts under the Talensi Districts. From the selected sub-districts, Kindergartens were selected relative to the number of kindergartens in each sub-district. Census sampling was used to select all 98 teachers. The use of census at this stage was informed by the relatively small number of teachers in each Kindergarten.

3.6. Sample Size Calculation

In order to ensure that a research study findings are valid and generalizable to the entire population, the sample size of the survey must be of adequate size relative to the size of the accessible population [79], [82] cautioned that the sample size must be "big enough" such that an effect of such magnitude as to be of scientific significance will also be statistically significant but not "too big," also where an effect of little scientific importance is nevertheless statistically detectable. [83] have identified four major methods for determining sample size viz. using a census for small populations, a sample size of a similar study, published tables or formulas to calculate a sample size. But as [82] noted arbitrary sample size can be selected while taking into consideration the need for adequacy in representation and the need to fulfil statistical requirement for generalisation. Considering that the

final stage of sampling the study units were relatively small, a census approach was employed. At the end of the study 76 out of 98 Kindergarten Teachers in the selected schools were reached given a response rate of 77.6%.

3.7 Types and Sources of Data

The data collected for the study included both primary and secondary data. The primary data collected included firsthand information on teachers' knowledge and instructional practices in the Kindergarten Schools in the Talensi District and their judgment on the level of academic related skill development among the pupils. The primary data were specific to the research problem under investigation and the variables being measured and were obtained from teachers through questionnaire administration and classroom observations. Specifically, the primary data collected included the demographic characteristics of the teachers, and their response to questions relating their knowledge of kindergarten education and the instructional methods employed by them and their rating of the academic related abilities of the pupil they instruct. The data collected for the study also included secondary data. The secondary data included records on academic performance of the pupils in the selected Kindergarten Schools in the Talensi District and relevant information on teachers' knowledge and instructional methods. The secondary data were collected to complement the primary data collected for the study and were obtained from school records and report books. Desk review methods were employed to obtain secondary data for the study. The secondary data collected were mainly quantitative data.

3.8 Data Collection Methods and Instrumentation

Three main techniques used in collecting data for the study viz. questionnaire administration, observational technique, and document review. Questionnaire administration was conducted with selected teachers from the selected Kindergartens in the Talensi District of the Upper East Region of Ghana. This method involves distribution of self-design questionnaire to the selected teachers to answer and return after completion. The questionnaire administration was conducted by the researcher with the selected teachers at their respective schools. The main instruments used were structured questionnaires that contain mainly closed-ended questions. The questionnaires used were structured in such a way that respondent could easily read and understand without assistance. Classroom observational method was also conducted to obtain data for the study. An advantage of observation that made it suitable for the study was the fact that the researcher sees things as they occur or happen in their natural setting/classroom [72]. In this study, the observations were performed by the researcher in class that selected teachers were teaching for a period of not less than 10 minutes for each. During the observation, particular attention was placed on how the teachers use applicable knowledge in kindergarten education and the instructional activities employed. Efforts were made to capture vividly and accurately the behaviours of teachers and the reactions of students in the classrooms. The document reviews were also conducted to obtain secondary data from records and reports of the selected schools.

3.9 Validity and Reliability of the Instrument

Face and content validity procedures would be considered in this study. Face validity would be established by giving the prepared instrument to the researcher's colleague students. Observations from them on the instrument

would be used to affect the necessary corrections before the instruments would be administered on participants. The content validity would be determined by the research supervisor. Comments from the supervisor would be used to effect the necessary corrections before the instrument would be administered on participants. Reliability is concerned with consistency, dependability, or stability of a test [84]. In this study, reliability would be treated as stability which measures the degree to which a research instrument yields consistent results or data after repeated trial [85]. Test-retest method of reliability would be employed where the pilot questionnaires would be administered twice to the same group, with a time span of one month. Pilot-test would be conducted on other teachers and headteachers who would not be part of the main study so as to check the reliability of the instrument. The pre-testing would be used to detect any errors that would be identified in instrument and can help elicit the required responses. According to [86], all data gathering instrument should be piloted to test how long it takes participants to complete them and to check that all questions and instructions are clear and to enable the researcher to remove any items which do not yield us stable data. Reliability is the degree to which a measurement instrument can be depended upon to secure consistent results upon repeated application whereas validity is the degree to which any measurement instrument succeeds in describing what it is designed to measure [87]. The reliability of research data collection instrument and the validity of the data collected are fundamental in every research studies. As [88] noted, any measurement or data is only as good as the rules that direct its application. The "goodness" of the rules reflects on the reliability and validity of the measurement. In this study validity of the data was ensured in a number of ways. In the first place, feedback from fellow students were used to check for the acceptability of the instruments by participants as being logical on the face of it (face validity). The content of the instrument was also validated by the thesis supervisors and researchers (expertly reviewed). According to [87] content validity guarantees that the instruments employed in research adequately represent the universe of questions that could have been asked. To ensure construct validity (credibility of conclusions), data was collected from multiple sources (students and teachers) for triangulation. This allowed for cross verification of the observations, questionnaires, and the structured interviews. Hence, the researcher's bias was reduced to allow for objective scrutiny of data. Reliability of data has been defined by [81] as the consistency of survey responses over time. That is the possibility of obtaining the same or similar results with the data collected were repeated over time. A good data must be reliable and to ensure reliability pre-testing of the questionnaires were done to eliminate unclear and likely to be misunderstood questions and correct them before administration of the questionnaire. After the field administration, the researcher also examined each questionnaire completed to identify errors that may be caused by carelessness in administration and scoring.

3.10 Data Analysis

The data collected for the study were analysed using two main approaches. For all qualitative data collected, thematic coding and content analysis principles were applied in analysing them. The step in the process of the qualitative analysis involved transcribing all the data (qualitative data) into textual format. The transcribed data were then categorized into themes based on the objectives and research questions. The focus in the process of categorization involved identifying key ideas and patterns of responses received from the field in relation to the research objectives and questions. The qualitative analysis approach was involved in identifying and describing the mining closure and reclamation practices employed by mining operators in the Amansie West District. The second approach in the data analysis involves quantitative statistical analysis and manipulation. The first step

involved editing, coding, and entering of the data into the Statistical Product for Service Solution (SPSS) version 20. The analysis method here involves use descriptive and inferential statistical methods. The descriptive statistical analysis method involves use of frequencies and proportions, measures of central tendencies and variability to further describe and examine the knowledge of the teacher on Kindergarten education and instructional activities as well as challenges to Kindergarten education in the Talensi District. The Inferential statistical analysis involved the use of Pearson Chi-square test of association and logistic regression to determine the influence teachers' knowledge and instructional practices on the academic related skills development Kindergarten pupils in the Talensi District of the Upper West Region.

3.11 Ethical Considerations

Researches most times though unintended may affect or injure the dignity, rights, safety, and well-being of participants [89]. Against this backdrop, it is prudent to put in mechanisms to eliminate or at least reduce the possibility of the research having negative effects on its participants. This study inculcated a number of considerations and ethical practices to ensure that its participants are not in any way affected or disadvantaged for participating in the study. To ensure ethics, a pilot study was first conducted with similar population of the research participants to identify ethical concerns that participants may have concerned the study. One other reason for the pilot study was to assess the skill and comfort level of the potential participants with the research interview. Through the pilot study, ethical concerns raised were addressed before the conduct of the study. In addition, to this, informed consent was also sought from all research participants before they participated in the study. An introductory letter that also sought for informed consent of the research participants was sent to the school in which the study was conducted two weeks before the conduct of the data collection. This satisfies [89] concerns that human subjects in research study must be informed about the nature of the research project by obtaining their consent prior to their participation in the study. All information regarding the nature of the study was stated in an informed consent letter that was sent to the school prior to the study. Furthermore, participation in the study was made voluntary for participants so that selected participants who are not comfortable with the study could opt out. Also personal identifiers such as names, contact numbers and addresses were not demanded. This was done to ensure that respondents' comments are not traceable to them personally so that their confidentially could be assured.

4. Results And Discussions

4.1 Demographic Characteristics of the Respondents

The demographic characteristics of the respondents that were examined in the study included the gender, age, marital status, teacher's years of experience as a KG teachers and length of time spent in their current school and their level of education. The results of analysis on the variables above are presented in Table 4.2. From the results if clearly noted that the respondents were dominated by females constituting 73.7% (N=56) while the male constituted 26.3% (N=20). This observation support conventional and documented evidence of female dominance in pre-school teaching [10]. In terms of age, the results show that the majority (52.6%) of the respondents were middle age (31-40) while the least group teachers who were 51 to 60 years. From the results, it is also noted that

none of the teachers were less than 20 years or any older than 60 years. According to the Ghana labour law (ACT - 1993 (PNDCL 327)) the compulsory retirement age is 50 years. However, given that most pre-schools are privately owned (GSS, 2014) it was expected that some teachers could be over 60 years. With regards to marital status, the results show that the majority (71.1%)of the respondents were married, 14(18.4%) are yet to marry while 10.5% are either divorce, separated or widowed. As [90] noted, in Ghana individual age significantly correlate with their marital status. The average age most Ghana married is 28 years, therefore given the ages of the respondents it is expected that many would be married. With regards of the experience in terms of years of service as teacher at the KG level and the length of time spent show most of them are not experienced in KG teaching. As the results shows, the majority (73.7%)of the respondent have spent five years or less in teaching at the KG level. The result also shows that only 2.6% (N=2) have spent more than 15 years teaching at the KG level. An interview with one of the KG Head revealed that most of the teachers often used teaching at the KG level as a transitional position between jobs. The results on their length of service to their current school are even shorter as almost all (97.4%) indicated they have taught in their present school for 5 years or less. In terms of education, the results revealed that only a little more than a quarter (26.3%)of the respondent have bachelor's degrees. Cumulatively, about 73.7% have lower than bachelor's degree education. It is interesting to note that about 2.6% (N=2) of the teachers have only Basic Education certificate and are teaching at the kindergarten level. Nearly half (42.1%) have HND/Diploma level educational qualification while 28.9% have had up to High School education (WASSCE). The results clearly show that not many of the teachers have had higher education.

Table 1: Demographic Characteristics of Respondents

Characteristics	Response	Frequency	Percentage
Gender	Male	20	26.3
	Female	56	73.7
Age	21-30	14	18.4
	31-40	40	52.6
	41-50	12	15.8
	51-60	10	13.2
Marital Status	Never married	14	18.4
	Married	54	71.1
	divorced/separated	6	7.9
	Widowed	2	2.6
Experience in KG teaching(years)	5 or less	56	73.7
	6-10	16	21.1
	11-15	2	2.6
	More than 15	2	2.6
Experience in current school	5 or less	74	97.4
	6-10	2	2.6
Education qualification	BECE	2	2.6
	WASSCE/SSSCE/ MSLC	22	28.9
	HND/Diploma	32	42.1
	Bachelor's degree	20	26.3

Source: Field Survey (2018)

4.2 Knowledge of Teachers on Childhood Developmental Training/Education

The study examines the knowledge of teachers on childhood development training and education based on seven (7) critical domain supported by literature as key for child academic skill related development [68], [91].The results in Table 4.2, presents analysis of a self-reported rating of the extent of knowledge of the teachers on the seven domains using 5 point Likert scale defined as 1=Very low, 2=Low, 3=Fair, 4=High, 5=very High. The results in Table 4.2 show that mean ratings and relative importance and ranking of the respondents' knowledge on the seven domains. The results indicated that teachers had high knowledge in organization of learning environment (Mean=3.9, RII=0.89), while usage of strategic use of resources and ICT was rated low (Mean=2.8, RII=0.568). For the remainder of the statements on the domains of child development training and education items, the results show that the teachers have just a fair knowledge of them. Clearly as seen in the ranking presented, organization of learning was ranked the highest, followed by knowledge of child development, curriculum design for children, use of multiple forms of assessment and family and parent outreach. The lowest rankings were recorded for strategic use of resources and ICT and methods of teaching diverse children. According to to [80], it is important that early childhood education teachers should believe in their ability to organize and execute the courses that are necessary to bring out the best results in children. The quality of services and outcomes of early childhood education can be access through the knowledge, skills, and competencies that the teachers have and are able to transfer to the children. By the result of this study, it is noted that most teachers rated low their use of strategic teaching and learning resources including ICT. This observation on implies that the teachers do not believe in their ability to effectively use these tools to positively influence the educational outcome of the children they teach. As [14] noted in child education, it is not academic qualification per se that has an impact on child outcomes but the ability to create a high-quality pedagogic environment. To be able to create high quality learning atmosphere, early childhood education teachers must have good understanding of child development and learning, organization of learning environment, basic knowledge of curriculum design for children, multiple assessment, and how to apply different methods of teaching to meet the needs of diverse children. [73] have noted that enriched stimulating environments and high-quality pedagogy are leads to better learning outcomes and enhance early development of academic related skills among children. Given the results from this study, it can be inferred that most of the teachers have the basic knowledge and fair understanding of various aspect of childhood education that can enhance learning outcome of children. Notwithstanding this, a higher knowledge in the identified domains namely knowledge of child development, curriculum design for children, use of multiple forms of assessment, family and parent outreach, methods of teaching diverse children and strategic use of resources and ICT could guarantee a better chance and higher rate of academic skill development among the children they teach. This assertion is supported by existing literature on childhood education. [92] have noted that a more specialized staff education and training on early childhood education is strongly associated with stable, sensitive, and stimulating interactions. [7] also added those elements of high staff quality such as content (curriculum) knowledge and their ability to create a multi-disciplinary learning environment significantly result in better childhood education and academic related skills development.

Table.2: Rating of Teachers of Childhood Developmental Training/Education

1=Low……………..5=High

Knowledge domain	1	2	3	4	5	Total	∑W	Mean	RII	Rank
Organization of learning environment	0	4	8	52	12	76	300	3.9	0.789	1
Knowledge of child development	0	18	8	46	4	76	264	3.5	0.695	2
Curriculum design for children	0	8	34	30	4	76	258	3.4	0.679	3
Use of multiple forms of assessment	0	22	16	34	4	76	248	3.3	0.653	4
Family and parent outreach	0	36	8	16	16	76	240	3.2	0.632	5
Methods of teaching diverse children	0	18	34	20	4	76	238	3.1	0.626	6
Strategic use of resources and ICT	0	46	4	18	8	76	216	2.8	0.568	7

Source: Field Survey (2018) **[Scale**: 1=Very low, 2=Low, 3=Fair, 4=High, 5=very High**]**

4.3 Instructional Activities Employed by Teachers at Kindergarten Schools

The study also sought to identify and examine the instructional activities employed by KG teachers in the Talensi District in the Upper East Region of Ghana. From the survey, observations conducted, five (5) major instructional activities were identified; these included general activities or exercises, logic, mathematics, and numeracy skills activities, reading and writing activities, socio-emotional developmental activities, and creative art activities. The activities identified above were also found to be similar to prior studies including that of [70], [93]. The results on how the above instructional activities are implemented in teaching KGs in the Talensi District as follows.

4.4 General Activities/ Exercise

General activities or exercises used in childhood education and development involve use of outdoor and indoor games that has the ability to result in the acquisition of academic related knowledge or skill. From the results of this study, the general activities and exercises undertaken by KG teachers include exploring animals, plant, and/or wheels and gears, playing outdoor games such as football, "ampe" circling, underlining, and/or marking items on worksheets, identification of items by name, health and safety activities, games/activities directed or made by parents and other specifically planned outdoor activities. A 5-point Likert scale defined as 1=Almost Never (less than monthly), 2 =Rarely (monthly), 3=Sometimes (Weekly), 4 =Regularly (2-4 times a week) and 5=Very Often (daily) was used to determine the frequency with which each activity is practiced. The results from the analysis are presented in Table 4.3. From the results in Table 4.3, it is clearly observed that the playing outdoor games such as football, 'ampe, (Mean=4.3, SD=0.898), children identifying items by names (Mean=4.0, SD=0.993) and circling, underlining, and or marking items on worksheets (Mean=3.9, SD=1.140) were the most frequently conducted general academic exercise or activities. Playing games activities directed by or made by parents was the least frequently engage activity. The results suggest that physical exercising activities were most frequently engage activities in the KGs in the Talensi District. According to [69] general activities or exercises are integral part of childhood learning and academic skills development. The results as presented above show frequent engagement in most of the general activities or exercises and therefore expected to enhance the learning ability

and academic skills development base on the assertion of [69]. The rationale for [69] assertion is also grounded in some childhood learning and education theory. According to [71] acute and chronic general activities and exercise interventions in childhood education enhance mental engagement of children and improve their cognitive and academic related skills.

Table 3: General activities/exercise Employed by Teachers at Kindergarten Schools

Activities	N	Mean	Std. Dev	Co V (%)
Playing outdoor games such as football, 'ampe, etc.	76	4.3	0.898	20.9
Children identifying items by names	76	4.0	0.993	24.8
Circling, underlining, and or marking items on worksheets	76	3.9	1.140	29.2
Specifically planned outdoor activities	76	3.3	1.138	34.5
Exploring animals, plant, and/or wheels and gears	76	3.3	1.147	34.8
Health and safety activities	76	3.0	1.155	38.5
Games/activities directed by or made by parents	76	1.8	0.846	47.0

Source: Field Survey (2018)

4.5 Logic, Mathematics and Numeracy

The study also identified logic, mathematics and numerical instructional activities employed by KG teachers in the Talensi District. From the results, the logic, mathematics, and numeracy instructional activities employed by the teachers included, playing with games and puzzles, cutting their own shapes from paper, playing with manipulates such as pegboards, puzzles, and/or Legos, rote counting, and competitive math activities to learn math facts. The above activities were examined based on a 5-point Likert scale to find out frequent each activity is employed by teachers. The results from the analysis are presented in Table 4. 4. From the results in Table 4.4, it is quite clear that competitive math activities to learn math facts (Mean=3.5, SD=0.856) with the second most frequent activity being playing with manipulates such as pegboards, puzzles, and/or Legos (Mean=3.4, SD=0.753). The least engaged in logic, mathematics, and numeracy instructional activities were playing with games and puzzles (Mean=3.1, SD=1.374) and cutting their own shapes from paper (Mean=2.8, SD=1.046). From the results, it can be suggested children engagement in logic, mathematics and numerical instructional activities were quite frequent. The importance of logic, mathematics and numeracy in childhood education has been underscore by many scholars. According to [94], mathematics and numeracy is fundamental in the development and enhancement of a child's learning journey. At the heart of mathematics and numeracy is the development of critical thinking and systematic problem-solving skills. Therefore, providing children with diverse and quality mathematical and numeric experiences will assist in their journey of becoming confident, capable, and lifelong learns.

Table 4: Logic, Mathematics and Numeracy Instructional Activities used by Teachers

Activities	N	Mean	Std. Dev	CoV (%)
Competitive math activities to learn math facts	76	3.5	0.856	24.5
Playing with manipulates such as pegboards, puzzles, and/or Legos	76	3.4	0.753	22.1
Rote counting	76	3.2	1.640	51.3
Playing with games and puzzles	76	3.1	1.374	44.3
Cutting their own shapes from paper	76	2.8	1.046	37.4

Source: Field Survey (2018) [Scale: 1=Almost Never 2 =Rarely, 3=S sometimes, 4 =Regularly, 5=Very Often**]**

4.6 Reading and Writing Activities

The study also examined the extent of involvement of the KG children in reading and writing instructional activities. The results in Table 4.5 presents the extent or frequency of engagement of KG children in reading and writing activities based on a 5-point Likert scale defined as 1=Almost Never (less than monthly), 2=Rarely (monthly), 3=Sometimes (Weekly), 4 =Regularly (2-4 times a week) and 5=Very Often (daily). From the results it clear that the most frequent reading and writing instructional activities the teachers engage their children in included copying from the chalkboard (Mean=4.6, SD=0.595), reciting the alphabets (Mean=4.5, SD=1.101) and using flashcards with sight words (mean=3.9, SD=0.813). The least engaged in reading and writing activity was Practicing handwriting on lines (Mean=3.3, SD=1.100). From the results, it is generally observed that on the averaged each teacher frequently engage in reading and writing instructional activities. On this basis it is expected that reading and writing skills of the children will easily be developed. According to [95], more time in meaning-focused activities such as book reading and writing activities are related to vocabulary growth and other academic related skills development. Varying and frequent engagement of children in their Instruction, interactions, reading and writing activities among the KG teachers and the children in the Talensi District as observed above should have positive implication for vocabulary growth and emergent literacy among the KG children.

Table 5: Reading and Writing Instructional Activities used by Teachers

Activities	N	Mean	Std. Dev	CoV(%)
Copying from the chalkboard	76	4.6	0.595	12.9
Reciting the alphabet	76	4.5	1.101	24.5
Using flashcards with sight words	76	3.9	0.813	20.8
Children practice reading ability in class	76	3.6	0.755	21.0
Practicing handwriting on lines	76	3.3	1.100	33.3

Source: Field Survey (2018) **[**Scale: 1=Almost Never 2 =Rarely, 3=Sometimes, 4 =Regularly, 5=Very Often**]**

4.7 Socio-emotional Development Activities

There are some socio-emotional developmental activities that KG teachers also employed in childhood development and education. In this study, the researcher also examined the kinds of socio-emotional developmental activities used and the frequency they are employed by the teachers based on a 5-point Likert scale defined as 1=Almost Never 2 =Rarely 3=Sometimes 4 =Regularly and 5=Very Often. The results in Table 4.6 present the mean indication how often they are used and the associated standard deviations. From the results, it is clearly noted that the most frequent some socio-emotional developmental activities engaged by the teachers were sitting for longer than 15 minutes (Mean= 3.6, SD=0.681), social reinforcement (verbal praise, approval, attention, etc.) for misbehavior (Mean=3.4, Mean=0.814) and allowing children to coordinate their own activities in centers (Mean=3.3, SD=0.664). The least frequently used socio-emotional developmental activities based on the results in Table 4.6 Losing special privileges (trips, recess, free time, parties, etc.) for misbehavior (Mean=2.8, SD=0.907), large group teacher directed instructions (Mean=2.7, SD=0.854) and using isolation (standing in the corner or outside of the room) to obtain child compliance (Mean= 2.7, SD=1.242). From a preponderance of literature, empirical evidence and the theoretical foundations for inclusion of socio-emotional developmental activities in early childhood education, it is expected that socio-emotional developmental activities will enhance the social cohesion and academic skill development of children. According to to [96] socio-emotional skills are relevant for enhancing child's attentiveness, participation, and concentration in the classroom activities. This means that some form of socio-emotional abilities, children may not be able to participate actively in academic skills developmental training.

Table 6: Socio-emotional Development Instructional Activities used by Teachers

Activities	N	Mean	Std. Dev	CoV (%)
Sitting for longer than 15 minutes	76	3.6	0.681	18.9
Social reinforcement for misbehavior	76	3.4	0.814	23.9
Children coordinating their own activities in centers	76	3.3	0.664	20.1
Tangible rewards for appropriate behavior and/or performance	76	3.0	1.071	35.7
Waiting for longer than 5 minutes between activities	76	2.9	0.963	33.2
Multicultural and nonsexist activities	76	2.8	0.838	29.9
Losing special privileges for misbehavior	76	2.8	0.907	32.4
Large group teacher directed instructions	76	2.7	0.854	31.6
Using isolation (standing in the corner or outside of the room) to obtain child compliance	76	2.7	1.242	46.0

Source: Field Survey (2018) **[**Scale: 1=Almost Never 2 =Rarely, 3=Sometimes, 4 =Regularly, 5=Very Often**]**

4.8 Art and Creative Activities

Creative art is an important learning activity for children everywhere [97]. Under this section, the researcher sought to determine the extent of involvement or usage of creative art instructional methods by KG teachers in

the Talensi District. The results in Table 4.7 presents results on how frequent teachers are engaged in various creative art instructional activities based on a 5-point Likert scale defined as 1=Almost Never 2 =Rarely 3=Ssometimes 4 =Regularly and 5=Very Often. From the results, it is obvious that the most frequently employed creative art instructional activities including drawing, painting, working with play dough, and other art media (Mean=4.6, SD=0.678), creative movement [dancing etc.] (Mean=4.6, SD=0.753) and singing and/or listening to music (Mean=4.4, SD= 0.681). On the other hand, the least engaged in creative art activities including doing creative writing [combining symbols/ invented spelling and drawing] (Mean=3.4, SD=0.814), participating in dramatic play (Mean=3.4, SD=1.100) and building with blocks (Mean=3.2, SD=0.761). According to to [97], creative art is an essential element and potent too for developing critical thinking skill in children. [73] also noted that, children who are involved in creative arts activities practice aesthetic inquiry and reflective thinking which are essential for learning and academic skills development. On the basis of the results of this study, it is noted the KG children are frequently engaged in drawing, painting, working with play dough, and other art media, creative movement, singing and/or listening to music which based on [97] observation would contribute the development of academic skills in the schools.

Table 7: Creative Art Instructional Activities used by Teachers

Activities	N	Mean	Std. Dev.	CoV (%)
Drawing, painting, working with play dough, and other art media	76	4.6	0.678	14.74
Creative movement (dancing etc.)	76	4.6	0.753	16.37
Singing and/or listening to music	76	4.4	0.681	15.48
Doing creative writing (combining symbols/ invented spelling and drawing)	76	3.4	0.814	23.94
Participating in dramatic play	76	3.4	1.100	32.35
Building with blocks	76	3.2	0.761	23.78

Source: Field Survey (2018) **[**Scale: 1=Almost Never 2 =Rarely, 3=Ssometimes, 4 =Regularly, 5=Very Often**]**

4.9 Influence of teachers' knowledge and instructional activities on academic related skills of children

Under this section, the researcher sought to establish the interrelationship between teachers' knowledge and instructional activities on academic related skills of children. To establish this, the researcher first sought to obtain the rating of teachers on the academic related skill development of the children they teach. The results from the analysis are presented below:

4.9.1 Academic Related Skills of Students

The academic related skills development of the children was assessed under five (5) thematic areas viz. general academic ability, reading ability, writing ability, mathematics and logical ability and their socio-emotional abilities. A 5-point Likert scale construct defined as 1=Very low, 2=Low, 3=Average, 4=High and 5=Very high was used to ascertain the teachers' opinion about extent to which their students have gained the mentioned academic related skills. From the results it is noted that mathematics and logical ability were rated high

(Mean=4.0, SD=0.729) while the remainder were rated as average. Relatively reading ability was rated the least academic skill the children have developed (Mean=3.0, SD=0.914). The results suggest that apart from mathematics and logical ability abilities, all other skills were rated on average. The results mean there is difference in the rate and types of academic skills. From this result it is noted that after mathematics and logical skills, socio-emotional abilities was the next highly developed academic related abilities followed by general knowledge or academic ability and then writing Abilities.

Table 8: Teachers Rating of Academic Related Abilities of KG pupil

Academic Related Ability	N	Mean	Std. Dev	CoV (%)
Mathematics and logical Ability	76	4.0	0.729	18.2
Socio-emotional abilities	76	3.3	0.611	18.5
General Academic Ability	76	3.3	0.723	21.9
Writing Abilities	76	3.1	0.911	29.4
Reading Ability	76	3.0	0.914	30.5

Source: Field Survey (2018) [1=Very low, 2=Low, 3=Average, 4=High and 5=Very high**]**

4.9.2 Effects of teacher Knowledge on Academic related skills

The study also examined the relationship between teachers' knowledge and academic related skills development among the kg children they teach. A Pearson correlation analysis was performed to find the correlation between teachers' knowledge and academic related skills such as general knowledge, reading ability, writing ability, math and logical skills, socio-emotional skills. The results obtained from the correlation analysis are presented in Table 4.9. From the results there it is noted that there is positive relationship between teachers' knowledge and each of the academic related skills of the children. The relationship between teachers' knowledge and general academic skills development of the children was strong positive and significant at 5% level of significance (r=0.520, p=0.00). The results also show a significant positive but weak relationship between teachers' knowledge and mathematics and logical skills development (r=0.416, p=0.00) and also teachers' knowledge and Socio-emotional skills development (r=0.246, p=0.03). The relationship between teachers' knowledge and reading and writing abilities were also positive but not statistically significant. The results obtained and presented in Table 4.7 have demonstrated that there is interconnectedness between what the KG knowledge level and academic skills development among the children they teach. The relationship being positive means that, teachers with high knowledge tend to have the children they teach also having high academic skills or abilities and the vice versa. This relationship supports the assertions that teachers' knowledge positively influences the academic skills development of children. According to to [93] teacher knowledge, teaching practices are critical to children learning and academic skills development. This is supported in this study that there is significant relationship between teacher knowledge and academic skills development of children. With the strong association between teacher knowledge and academic skills development of children. This means that having high knowledgeable teachers in KG result in higher development of academic skills among KG children. Therefore, to ensure that children are able to develop and acquire relevant academic related skills, the KG teachers must have high

knowledge of relevant concepts in childhood education and development.

Table 9: Relationship between teacher knowledge and academic related skills of children

		General knowledge	Reading	Writing	Math and Logic	Socio-emotional
Teacher Knowledge	**Pearson Correlation (r)**	.520[**]	.175	.043	.416[**]	.246[*]
	P-value	.000	.130	.711	.000	.032

Source: Field Survey (2018)

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

4.9.3 Interrelationship between Instructional Activities and Academic –skill development

Under this section, a Pearson correlation analysis was also performed to determine the strength and direction of the association between instructional activities employed by teachers and academic related skills development of the children. The results of the correlation analysis are presented in Table 4.10. From results it is noted that there is a significant and strong positive relationship between the various instructional activities and the academic skills or abilities of the KG children. There is no significant negative relationship between any of the instructional activities and the children academic skills development. The results in Table 4.10 show that there is a strong positive and significant relationship between general activities and exercise and general knowledge or academic ability (r=0.807, p=0.00), writing ability (r=0.600, p=0.00), mathematics and logical activities (r=0.505, p=0.00) and then socio-emotional development (r=0.552, p=0.00). Logic mathematics and numeracy learning activities also have weak positive but significant relationship with general knowledge or academic ability (r=0.496, p=0.00), reading ability (r=0.462, p=0.00), mathematics and logical activities (r=0.486, p=0.00) and then socio-emotional development (r=0.403, p=0.00). From the results, it is noted that each instructional activity is positively and significantly correlated with at least three academic skills development activities except for creative art activities which is significantly related with only reading abilities. Generally, the results have revealed that general academic activities and exercises have the most significant and strongest relationship with the KG children's' general knowledge and academic abilities, writing ability and mathematics and logical skills development. The results also revealed that reading and writing activities have the strongest relationship with the KG children reading skills and socio-emotional development. Interestingly specific activities such as logic, mathematics and numerical activities did not have the strongest relationship with mathematics and logical activities and socio-emotional development activities did not also have the strongest relationship with socio-emotional skills development. The results in Table 4.10 suggest that general academic activities and exercises have the widest and more significant influence on the various academic related skills of the KG children. This confirms [69] assertions that general

activities or exercises are integral part of childhood learning and academic skills development. The results can also be explained by [71] position that acute and chronic general activities and exercise interventions in childhood education enhance mental engagement of children and improve their cognitive and academic related skills. The positive and significant relationship between other instructional activities and academic related skills development confirms the outcome of previous studies by [93] in which a strong link was established between teacher knowledge, teaching practices or methods and academic skills development of children.

Table 10: Relationship between instructional Activities and academic skills of children

Instructional Activities		Academic Related Knowledge				
		General knowledge	Reading	Writing	Math and Logic	Socio-emotional
GAE	Pearson Correlation	.807**	.487**	.600**	.505**	.552**
	Sig. (2-tailed)	.000	.000	.000	.000	.000
	N	76	76	76	76	76
LMN	Pearson Correlation	.496**	.462**	.225	.486**	.403**
	Sig. (2-tailed)	.000	.000	.051	.000	.000
	N	76	76	76	76	76
RWA	Pearson Correlation	.541**	.621**	.104	.380**	.562**
	Sig. (2-tailed)	.000	.000	.373	.001	.000
	N	76	76	76	76	76
SDA	Pearson Correlation	.508**	.753**	.478**	.369**	.441**
	Sig. (2-tailed)	.000	.000	.000	.001	.000
	N	76	76	76	76	76
ACA	Pearson Correlation	-.087	.413**	-.144	-.025	.073
	Sig. (2-tailed)	.453	.000	.216	.832	.532
	N	76	76	76	76	76

Source: Field survey (2018)

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

4.10 Challenges confronting kindergarten education in the Talensi District

Through key informants' interview and personal observations, the major challenges that were identified confronting KG education at the Talensi District include unavailability of relevant teaching and learning aids, lack of in-service training opportunities, large class sizes, and unavailability of childcare facilities. It was observed from the study that a good number of KG schools are held in old dilapidated structured with poorly ventilated

rooms, bad lighting and little or no room for play at all. One of the teachers lamented about this challenge and said: "Indeed the kinds of buildings we are that Kindergarten Schools are held in the Talensi District are very bad. Most of the structures are old and not designed to fit the needs of children's education. In the rural areas, there are even some KG schools that are held under trees. In this circumstance it is very difficult to follow all the instructional activities that can enhance children learning". The observation above is in consonance with prior studies that have identified lack of adequate and appropriate infrastructure for children education as key challenge confronting early childhood education in general. A report by [10] on the 2011 Ghana: Evaluation of UNICEF's Early Childhood Development Program with Focus on Government of Netherlands Funding (2008-2010) - Ghana Country Case Study Report, the challenge regarding infrastructure is clearly highlighted. The report above by [10] noted that as a result of limited funds, most District Assemblies have not been able to put up infrastructures befitting the needs of KG education. The result of this study is in tandem with general national trends. Lack of relevant teaching and learning materials in most KG was also another challenge confronting KG education at the Talensi district. Given the fact that childhood education requires the use of various visual aid and materials are key to their learning [93]. Given the significant role of teaching and learning materials in childhood, education limited availability as observed in this study will have a significant impact on academic skill development. Other challenges identified included, limited number of teachers, large classroom size and lack of training opportunities for teachers. Childhood education is evolving and therefore continuous training is necessary to keep teachers updated with the latest teaching styles and instructional activities that can enhance learning outcomes of children. The above situation in the Talensi District is compounded by large class size and limited number of teachers. On this, one of the teachers also lamented their situation saying; "In the Talensi District there many KGs that are handled by only one teacher. In some cases, the teacher in the KG did not receive any formal education or any in-service training after they are employed." Considering the many needs and attention that children need, it is difficult to imagine how one teacher can effectively handle the challenges and learning needs of the KG pupil in the district.

Table 11: Challenges confronting KG education and implications in Talensi District

Challenges	Descriptions
Unavailability of relevant teaching and learning aids	-Basic reading and writing aids not available -Not all children get access to books and other materials during classes
Lack of in-service training opportunities	-Many of the teacher never took part in any training - Some teachers do not have any training on childhood education
Large class sizes	-Teacher have difficulty in controlling class -
Unavailability of childcare facilities	-Many child-friendly facilities not available -School environment not sufficiently safe for children
Inadequate teaching staff	-Not all children get access to the teacher for remedial learning.

Source: Field Survey (2018)

5. Conclusions

Early childhood education and training centers play a crucial role in fostering the academic and social development of children. However, the quality of teaching, training, instructional activities, and the knowledge of teachers in early educational centers significantly influence the development of academic-related skills. This study aimed to explore the impact of teachers' knowledge and instructional activities on academic-related skills at a Kindergarten school in the Talensi District. The study findings revealed that Kindergarten (KG) teachers possess some knowledge of child education and training, particularly in the organization of the learning environment, understanding child development, curriculum design for children, utilization of multiple forms of assessment, family and parent outreach, methods for teaching diverse children, and strategic use of resources and ICT. The study also identified various instructional activities employed by teachers, including general exercises, logic, mathematics, and numeracy skills activities, reading, and writing activities, socio-emotional developmental activities, and creative art activities. Further analysis indicated a strong positive relationship between teachers' knowledge and academic-related skills. Similarly, a significant strong relationship was found between various instructional activities and academic-related skills. Based on these results, the study concludes that teachers' knowledge and instructional activities significantly influence the development of academic-related skills in children in KG. Therefore, to enhance academic skills development among children in KG, steps must be taken to improve both the knowledge of teachers and the instructional activities employed by them.

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