UNIVERSITY OF EDUCATION, WINNEBA

TEACHER KNOWLEDGE ABOUT ASSESSMENT PRACTICES FOR DIAGNOSING KINDERGARTENERS' COGNITIVE NEEDS IN KINDERGARTEN CENTRES WITHIN KUMASI METROPOLIS

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A thesis in the Department of Early Childhood Education, Faculty of Educational Studies, submitted to the School of Graduate Studies in partial fulfilment of the requirement for the award of the degree of Master of Philosophy (Early Childhood Education) in the University of Education, Winneba.

JUNE, 2022

DECLARATION

Student's Declaration

I, Faustina Atta Mensah hereby declare that this thesis with the exception of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my own original work and has not been submitted, either imparts or in whole for another degree elsewhere.

Signature: ……..……

Date: …….

Supervisor's Declaration

I hereby declare that the preparation and presentation of this work was supervised in accordance with the guidelines for supervision of thesis/dissertation as laid down by the University of Education, Winneba.

Name of Supervisor: DR. MICHAEL SUBBEY

Signature: ……..…….

Date: ……..…….

DEDICATION

To my husband, Mr. Dominic Akondo, my lovely daughters, Ewurabena Akondo Benjamin, Ama Pomaah Akondo Benjamin and my son, Nana Kweku Kankam Akondo.

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I am grateful to Almighty God first of all for my life and the strength he gave me to complete this work. I thank my supervisor, Dr. Michael Subbey for his unflinching support, constructive critiques, patience and encouragement throughout this journey. To my brothers, Seth Badu and Anthony Woode-Eshun, my sister Akua Twumwaa Oduro, members of the Department of Education and Professional Studies and the entire staff of St. Louis College of Education, Dr. Michael Aboagye of AMMUSTED, Professor Asonaba Kofi Addison and Dr Samuel Oppong Frimpong of University of Education, Winneba, I say God bless you for your enormous support and encouragement.

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ABSTRACT

The study examined teachers' knowledge about assessment practices for diagnosing cognitive needs of kindergarteners within Kumasi Metropolis. The study employed a sequential explanatory mixed methods design. A total of 132 kindergarten teachers were selected for the quantitative phase of the study using the Krejcie and Morgan sampling formula. Whiles 10 teachers were sampled using the opportunity sampling technique for the interview session. The quantitative data was collected using questionnaire and semi-structured interview guide was used for the collection of the qualitative data. Frequencies, percentage, mean and standard deviation were used in analysing the quantitative data with the aid of SPSS whilst the qualitative data was analysed thematically. The study found that majority of the kindergarten teachers in the Kumasi metropolis have an appreciable knowledge on assessment practices in diagnosing the cognitive needs of kindergarteners. However, they only adopt the observational checklist and rating scale for diagnostic practices. The challenges kindergarten teachers within the metropolis face when diagnosing the cognitive needs of kindergarteners using assessment practices included inadequate time for teaching and learning, lack of qualified personnel, inadequate equipment and materials, large class size, less teacher motivation, and misconception on the part of some teachers and parents. The study thus recommended to the metropolis education directorate and the Ghana Education Service to put in efforts to motivate kindergarten teachers to hold unto their positive knowledge and understanding of assessment practices for diagnosing cognitive needs of kindergarteners and its importance to the teacher and the learner. Again, the study recommended that the Ghana Education Service and kindergarten school principals should plan in-service professional programmes and activities for kindergarten teachers to keep up with the forms of diagnostic assessment, notably the diagnostic evaluation. Lastly, it was recommended to the Kumasi metropolis education directorate, the Ghana Education Service and other stakeholders to provide kindergarten schools with the needed teaching and learning materials to assist teachers in their duties.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The current consensus among Early Childhood Education (ECE) stakeholders has been that diagnostic assessment in early education plays a pivotal role in promoting the early learning and development of young children, including those from underprivileged homes (Giardiello, 2013). For instance, high-quality diagnostic assessment practices inform teachers' instructional decisions (i.e., provide kindergarten teachers with the necessary information about the child's strengths and weaknesses).

According to Hamilton and Swan (2011), the diagnostic process consists of four phases: (a) confirming that the screening process correctly identified the child as requiring early intervention; (b) determining the child's general level of broad-based skill areas; and (c) determining the child's general level of specific skill areas and (d) determining what the child can and cannot do within very specific skill areas to establish instructional objectives and to plan appropriate instruction.

A thorough diagnostic assessment is a crucial step to connect with the education of young children in particular. It bridges the gap between the screening phase, when children suspected of needing services are identified after a relatively brief evaluation, and the intervention period, when children receive needed special services to prepare them to function in mainstream education settings. Diagnostic assessment procedures are intended to help eliminate poorly planned intervention efforts based on screening data that are inadequate in quality and quantity. It is believed that the information gathered during an in-depth diagnostic assessment is necessary to develop a cohesive,

individualized, appropriate educational plan that reflects a child's strengths, remedial needs, and general developmental abilities (Gunnoe, 2017).

Accordingly, teachers' knowledge of diagnostic assessment of young learners has become one of the essential phases in crafting and managing kindergarten classroom lessons. Research has posited that young learners experience difficulty in many subjects at the kindergarten level (Wijaya 2017). Hence, teachers' understanding and awareness of these difficulties, through the use of diagnostic assessment, is an important first step for addressing learners learning needs (Wijaya 2016; Nuari, Prahmana, & Fatmawati 2019). To Identify, recognize and help learners overcome their learning difficulties are not only the prerequisite for successful teaching and learning, but form part of quality contemporary early education (Çiltas & Tatar 2011; Nor, Ismail, & Yusof 2016). Consequently, academics have been rigorous probing into effective ways to promote high-quality classroom diagnostic assessment practices in early childhood education settings. Critical discovery from this probe is that teachers are the primary agents in the implementation of diagnostic assessment strategies (Gani, 2015), as their knowledge and understanding of assessment techniques have been found to have some bearing on the success of their assessment practices and the overall quality of early education (National Research Council, 2001)

The study of Whitebook, McLean, Austin, and Edwards (2018) indicates that teachers' knowledge of and understanding of diagnostic assessment have a direct effect on their classroom provisions. Whitebook et al., established the need for teachers to have profound knowledge about the use of diagnostic assessment tools, to identify kindergarteners' needs. Nettles and Herrington (2007) further demonstrate how teachers' knowledge of diagnostic assessment contributes significantly to their

classroom practices. Nettles and Herrington (2007) revealed that knowledge about diagnostic assessment gives teachers the ability to employ level-appropriate diagnostic assessment tools to examine learners' self-related and classroom-level factors that serve as a hindrance to successful learning and help them to skillfully address these challenges. To Tolsdorf and Markic (2017), learners have dissimilar needs. ECE teachers, therefore, need to identify and recognize each learner's need and be able to describe and interpret the individual learner's abilities and difficulties, using diagnostic assessment tools.

The current state of assessment in Ghana is suggestive of the fact that Ghana's education system is losing out on all the possible advantages that assessment holds in contributing to the improvement in the instructional practices of teachers (Akyina and Oduro-Okyireh 2019). Recent studies indicate that for teachers to manage the normal heterogeneity of student population in inclusive classrooms (i.e., meet the diverse educational needs of their learners and schools), they need to demonstrate a high level of knowledge and understanding of diagnostic assessment approaches (Forlin, García, Romero-Contreras & Fletcher, 2010; Ryan & Gottfried, 2012).

While classroom diagnostic assessment practices are well-researched area in some developed countries, like other developing countries, there is a chronic dearth of research on it in Ghana. It is against this background that this study is carried out to examine early childhood teachers' level of knowledge about classroom assessment practices for diagnosing learners' cognitive needs at the early childhood centres within Kumasi Metropolis in the Ashanti Region of Ghana.

1.2 Statement of the Problem

Diagnostic assessments are collections of written questions that are used by teachers to gauge their learners' present understanding of the subject or lesson they will be covering in class (Antón, 2015). This is to allow the instructor to make rational and productive instructional decisions about how to teach new lesson content and which teaching approach to use (OECD/CERI, 2020). It allows the teacher and student to highlight and address knowledge gaps. As a result, when diagnostic assessment procedures are not used in determining the cognitive needs of children, teachers lack a clear understanding of a student's level of knowledge and are unable to restructure educational programmes to address significant issues faced by learners (Black & Wiliam, 2018).

Among early childhood education teachers, calls have been made to investigate their classroom assessment practices, knowledge and understanding of diagnostic assessment and the correlates of diagnostic assessment practices (Tookoian, 2018). On the level of knowledge of diagnostic assessment, predominantly, critical discovery from empirical studies shows a low level of teacher knowledge about classroom assessment techniques for diagnosing learner needs. Empirically, the study of Abel, Talan, and Masterson (2017) explored the level of knowledge and understanding of diagnostic assessment among kindergarten teachers. The authors reported that most of the pre-school teachers did not have sufficient knowledge and skills in assessing young children's needs in inclusive classrooms. The situation appears not to be different from kindergarten schools in the Kumasi Metropolis. It seems most kindergarten teachers in the metropolis do not seek to find out the current knowledge of learners before carrying out the day's work thus performing diagnostic assessment practices. Observations done by the researcher during a casual visit to kindergarten

centers in the metropolis appeared that some of the kindergarten teachers do not subject learners to assessment practices in diagnosing their cognitive needs. Informal discussions between the researcher and the metropolis early childhood coordinator suggested that most teachers in the metropolis do not have much knowledge on diagnostic assessment practices in finding out the cognitive needs of learners, though this has not been documented yet. Again, similar outcomes have been outlined in workshop reports by the Ministry of Education (MoE, 2013).

In developed countries with challenging socio-economic conditions, studies have reported on teacher diagnostic assessment practices, their level of knowledge and understanding of diagnostic assessment, and the influence of diagnostic assessment on learning outcomes (OECD, 2013). In this respect, to the best of the researcher's knowledge, limited studies have been done about the nature and antecedents of classroom assessment practices for diagnosing learners' needs in sub-Saharan Africa (SSA), especially Ghana. Accordingly, the key problem to be investigated by the current study is the ECE teachers' level of knowledge about classroom assessment for diagnosing learners' needs and the predominantly used assessment approach in ECE centers.

1.3 Purpose of the Study

The purpose of the study was to examine teacher knowledge about assessment practices for diagnosing kindergarteners' cognitive needs in kindergarten centres within Kumasi Metropolis.

1.4 Research Objectives

This study sought to find out about the following;

1. Kindergarten teachers' views on classroom assessment practices for diagnosing kindergarteners' cognitive needs within the Kumasi Metropolis.
2. Forms of diagnostic assessment kindergarten teachers use in diagnosing Kindergarteners' cognitive needs within the Kumasi Metropolis.
3. Available assessment tools kindergarten teachers use in diagnosing kindergarteners' cognitive needs with the Kumasi Metropolis.
4. Challenges Kindergarten teachers face in using diagnostic assessment in assessing kindergarteners' cognitive needs within the Kumasi Metropolis.

1.5 Research Questions

The study sought to address the following research questions;

1. What are the views of kindergarten teachers regarding classroom assessment practices for diagnosing kindergarteners' cognitive needs within the Kumasi Metropolis?
2. Which forms of diagnostic assessment do kindergarten teachers use in diagnosing Kindergarteners' cognitive needs within the Kumasi Metropolis?
3. What assessment tools do kindergarten teachers use in diagnosing kindergarteners' cognitive needs within the Kumasi Metropolis?
4. What challenges do Kindergarten teachers in Kumasi Metropolis face in assessing kindergarteners' cognitive needs within the Kumasi Metropolis?

1.6 Significance of the Study

The results of the study would inform policymakers, educational leaders, curriculum planners (NaCCA), private childcare providers and other early childhood education stakeholders on developing suitable methods and pragmatic policies to improve diagnostic assessment methods of kindergarten teachers. The result of the study would also sensitise government, private childcare providers and other stakeholders in developing appropriate and sustainable continuous professional development on assessment practices for kindergarten teachers. The study's results would contribute to assessment methods in early childhood education and serve as the foundation for future research on classroom assessment for diagnosing kindergarteners' cognitive needs in ECE.

1.7 Delimitations of the Study

There are many issues in the classrooms that could affect teaching and learning. Primarily, the current study was delimited to diagnostic assessment practices in early childhood centres in the Kumasi Metropolis based on the fact that it has been on contented issues in the classroom that have a direct and structural impact on teacher and their ability to teach. There are several domains of children's development but this study only focused on the cognitive domain. Again, the study was also delimited to teachers working in selected public and private kindergarten schools within the metropolis. Geographically, the research was delimited to pre-schools within the Kumasi Metropolis of the Ghana Education Service based on the fact that little is documented in the Kumasi Metropolis. The study was delimited to only kindergarten teachers and their knowledge about assessment practices for diagnosing learner needs within the Kumasi Metropolis.

1.8 Definition of Key Terms

Teacher Knowledge: The total knowledge that a teacher has at his /her disposal or possesses at a particular time or about a concept.

Diagnostic Assessment: A form of pre-assessment, where teachers can evaluate kindergarteners' strengths, weaknesses, knowledge and skills before instruction.

Cognitive Needs: They are brain-based skills learners need to carry out any task within their level of development.

1.9 Organisation of the Study

The study is organized into 5 chapters. The first chapter, which is the introduction, covers the background to the study, statement of the problem, purpose of the study, research objectives, and research questions. The rest include the significance of the study, delimitation of the study, and definition of terms. Chapter Two deals with the literature review. The chapter reviews related literature to provide theoretical and the conceptual framework for the current study.

Chapter Three describes the research methodology which covers the design of the study, population, sample and sampling procedure, research instruments and administration procedure and methods of data analysis. Chapter Four presents Analysis, presentation of results and discussion while Chapter Five provides a summary of the results, conclusions and recommendations and direction for future research.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter reviewed the relevant literature. It brings to light the already existing related works on the topic under study. Secondary information was collected from journals, conferences, abstracts, whitepapers, the internet and books on teachers' knowledge about diagnostic assessment. The chapter is discussed under the following subheadings:

1. Theoretical review
2. Concept of early childhood education
3. Overview of Assessment in the Early Childhood Education
4. Teachers' knowledge about diagnostic assessment in early childhood education,
5. Forms of diagnostic assessment diagnosing Kindergarteners' cognitive needs,
6. Assessment tools used by teachers in diagnosing kindergarteners' cognitive needs.
7. Challenges teachers face in using diagnostic assessment in assessing kindergarteners' cognitive needs.

2.1 Theoretical Framework

The study was guided by Vygotsky's social constructivist theory (Vygotsky 1978) which has been extremely significant in assisting to expound the processes of learning in early childhood education, specifically, the idea of the zone of proximal development (Vygotsky, 1986), which has provided the underpinning and prospect for most recent edges in the assessment of young children learning processes (Kemboi, Too, and Kafwa 2017). Berk and Winsler (1995) define Vygotsky's zone of proximal development as a dynamic zone of sensitivity in which learning and cognitive development occur. Tasks that children cannot do individually but they can do with

help from others (especially, their teachers) invoke mental functioning that is currently in the process of developing, rather than those that have already matured. It seems Vygotsky originally introduced the zone of proximal development in the context of arguing against intelligence testing which seeks to assess something static and did not reflect the dynamic and ever-changing. This is equally supported by early learning and development through formative assessment (Browne 2016). Adult-child collaboration within the zone of proximal development is critical for effective teaching and learning interactions because it is within such interactions that the teacher identifies how the child may be assisted in learning and what the child is capable of doing with appropriate support. The teacher also has the chance to assess the impact of such support on the child's progress. This approach to assessment effectively merges the teaching and assessment processes.

Feuerstein, Rand and Hoffman (1979) applied this theory and proposed this form of assessment, he was envisioning, in essence, a joint problem-solving situation during which the teacher assess or measure the nature and magnitude of assistance needed by the child to solve a problem. Children's responsiveness to appropriate instructional interactions is a key factor in classroom assessment activities and it is regarded to be a significant predictor of young learners learning potential (Winstone & Boud 2020). The concentration for diagnosing the need of learners through assessment is on the teachers' ability to ascertain the strength, weaknesses and abilities of the child to enhance the facilitation of learning of the child (Tigelaar & Sins 2020) Proper application of this theory on classroom assessment is useful for making visible, the learning constraints of young learners whose early experiences exclude proficiencies for learning.

From this perspective, the purpose of assessment is to identify the child's prior knowledge or skills so that the More Knowledgeable Other (teacher) can intervene appropriately to help the child advance. What the child is capable of at now becomes the pedagogical bridge to what a child can accomplish, given support by the teacher who is referred to as ‘more knowledgeable other’ in the theory.

The theory's connection to the study is that it appears in every educational environment, where it is noted that learning and collaboration among learners where discovery is aided by the teachers' assessment practice may have a structural impact on the learner's learning and knowledge construction. Employing this theory, the researcher aimed at showing and verifying how valid, relevant and presence of this generally acknowledged theory to cultural and environmental variances. This is the case in the Kumasi metropolis's kindergarten centers.

2.2 Conceptual Framework

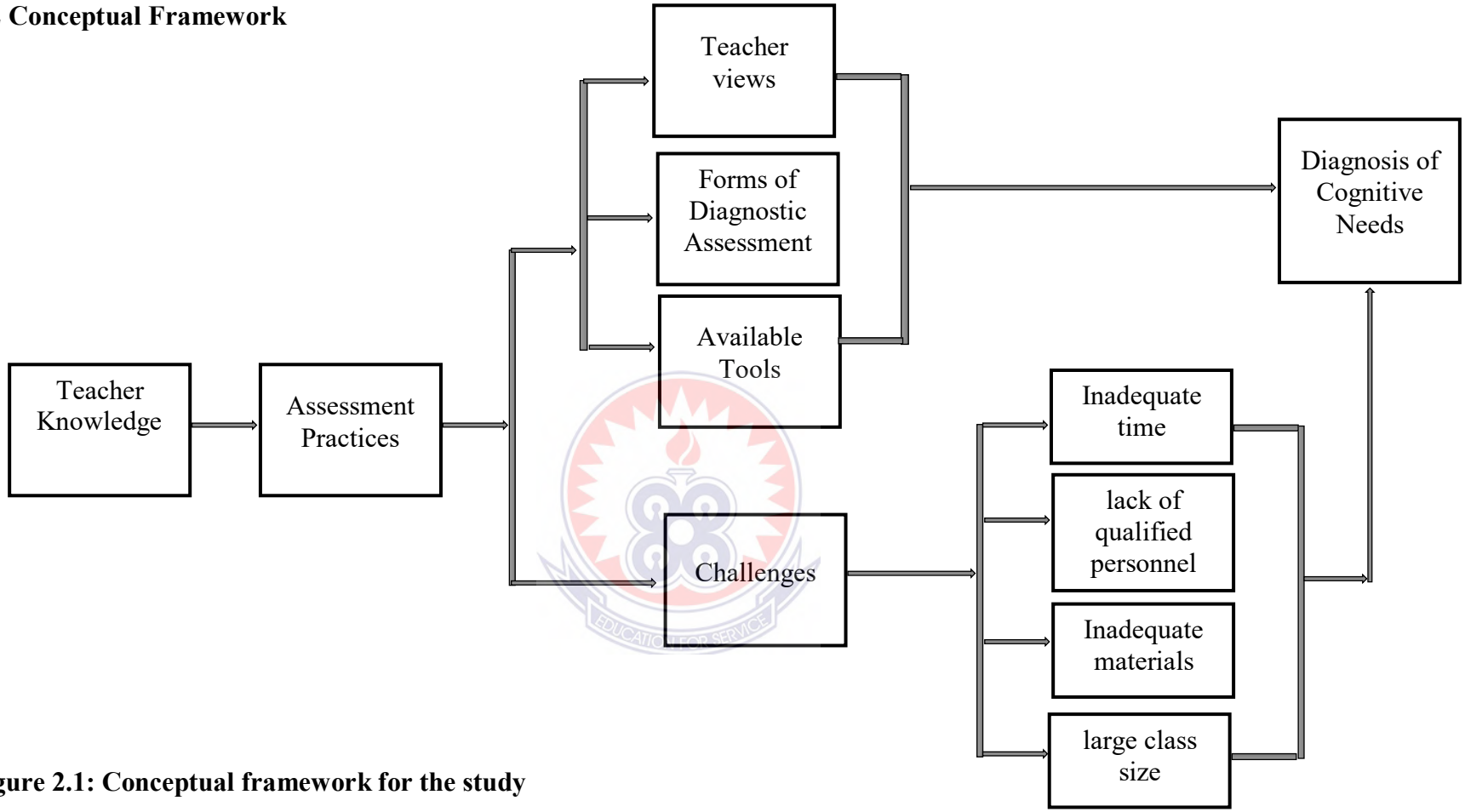

Figure 2.1: Conceptual framework for the study

Source: Researcher's construct (2022)

Teacher knowledge of assessment practices for diagnosing learners' cognitive needs in kindergarten plays a pivotal role in promoting the early learning and development of young children. High-quality diagnostic assessment practices inform teachers' instructional decisions – providing kindergarten teachers with the necessary information about the child's strengths and weaknesses.

Constituting the practices are the views the kindergarten teachers hold on diagnosing kindergarteners' cognitive needs, their knowledge of the forms of diagnostic assessment for diagnosing kindergarteners' cognitive needs, and the available tools used in diagnosing kindergarteners' cognitive needs. Even so, the teachers face some level of challenges in their practice. These challenges include; inadequate time for teaching and learning, lack of qualified personnel, inadequate equipment and materials, and large class size. But upending the challenges contributes to effective assessment practices.

It is worth noting that when kindergarten teachers have positive views on assessment practices for diagnosing learners' cognitive needs; they have appreciable knowledge of forms of diagnostic assessment, employ the appropriate available assessment tools and put in measures to address the challenges associated with assessment practices, it will yield a positive outcome by proving the right information in addressing the learners cognitive needs. Nonetheless**,** when kindergarten teachers have negative views on assessment practices for diagnosing learners' cognitive needs; have imperceptible knowledge on forms of diagnostic assessment, do not employ the appropriate available assessment tools and put in measures to address the challenges associated with assessment practices, it will yield a negative outcome, hence, learners cognitive needs will not be diagnosed.

2.3 Concept of Early Childhood Education

Early childhood development is seen to be important for children's physical and physiological development, cognitive stimulation, personality building, and instillation of good social behaviour (Report of the President's Committee on Review of Education Reforms in Ghana, 2002). Early childhood is defined as the time between birth and the age of eight years. It is a period of extraordinary brain growth during which the foundations for future learning are established (UNESCO, 2011).

It also refers to any kind of structured schooling outside of the home for children between the ages of 1 and 7 years old. Some more often used names include pre-school, early years, kindergarten, playgroup, nursery, preparatory year, 'zero year,' and a slew of other variations on the theme (International Bureau of Education, 2006). early childhood education describes a holistic and integrated approach to health, nutrition, protection, and education that includes health, nutrition, and protection as well as education requirements and services (Regional Bureau for Education in Africa, 2010).

According to the World Bank (2001), early child development includes services designed for the physical and intellectual growth of children in their early years (ages 0-6). These services incorporate daycare, pre-school, home visits by trained professionals, health and nutrition services, and parental education.

Early childhood education, according to Bowman (2010), does not relate to a single institution, but rather to a range of programmes for young children between the ages of birth and eight years. The programme occurs in children's homes, public schools, private pre-schools, and child care homes and centres, as well as child-care These varying features, especially as they pertain to the makeup of groups (such as the

adult/child ratio, group sizes, age ranges, cultural traditions, and the kind of instruction that is provided to children), all have a direct effect on what and how children learn.

2.4 Overview of Assessment in Early Childhood Education

Early childhood assessment analyses, investigate, and records children's perceptions and abilities to get a better understanding of how children think and learn, to monitor their development, and to further assist learning (Dunphy, 2008). It set the platform for social reflection and action, facilitated by reciprocal feedback and conversation (Fleer & Richardson, 2004). Assessment is described by Gullo and Hughes (2011) as a process that must be ongoing, utilise various sources of information and be linked with teaching and curriculum to effectively connect with others, including families.

Wood and Attfield (2005) identified formative (interpreting and planning for children's progress), impassive (assessing the child rather than external norms), diagnostic (observing specific contexts and planning interventions), summative (overview of a child's progress over a while), evaluative (reviewing the effectiveness of a curriculum) as the forms of assessment. Being able to view learners holistically necessitates the use of diagnostic, formative and summative assessment (Linfield, Warwick & Parker, 2008). This enables not just for the recognition of children's accomplishments, but also for the recognition of their learning potential (Nutbrown & Carter, 2010). The assessment process simultaneously has an evaluative function, helping educators to understand how their instructional interventions and assistance affect learners (Nutbrown & Carter, 2010; Wood & Attfield, 2005). Black (2013) asserts that diagnostic, formative and summative assessment methods are essential in teaching and learning, and that they must complement one another. As can be seen,

assessment serves both a knowledge and an auditing role, which are mutually exclusive (Wood & Attfield, 2005). The knowledge function aims at understanding children's needs, character traits, and identities, as well as using assessment to dig deeper into teaching and learning (Wood & Attfield, 2005).

Taras (2005) further categorises assessment follows: assessment of learning and development; assessment for learning and development; and assessment as learning. Assessment of learning and development is the most common form of assessment. This is assessment of a child's learning at a particular point in time, and that summarises all of the learning and development that has preceded it (Taras, 2005). This kind of assessment can be large-scale assessment in a particular field, such as the National Assessment Program – Literacy and Numeracy (NAPLAN), in which an entire population of children is assessed using a common assessment tool. For example, Transition Learning and Development Statements may be used as a small-scale assessment in an individual early childhood setting with the goal of clarifying a child's learning and reporting that learning to families (Earl, 2003). Assessment for learning and development refers to the formative assessment that takes place in order for decisions to be made to inform the next stage of learning (Earl, 2003). As assessment for learning informs programme planning decisions about individual children, assessments need to be taken on an on-going and individual basis. Assessment for learning assists early childhood professionals to make decisions about learning programmes for children every day and is identified in the literature as essential for improving outcomes for children.

Hattie (2009) opines that within the formative assessment process, early childhood professionals gather evidence of children's learning and development, based on what they write, draw, make, say and do. They also discuss their interpretation with the child and the child's family, as well as other professionals when appropriate, to develop a strong picture of the child's strengths, abilities and interests. Early childhood professionals then use this information to design effective programs for children that are responsive and evidence-based (Hattie, 2009). Assessment as learning and development occurs when the child is involved in the assessment process. Through this process the child has the opportunity to monitor what they are learning and use feedback to make adjustments to their understandings (Earl, 2003). Assessment as learning is linked to higher levels of self-efficacy in children as they see a reward for their learning effort (OECD & CERI, 2008).

Assessment practice can be both formal and informal. Formal assessments typically involve reliable and valid standardised testing (Brown & Rolfe, 2005). Informal assessments, on the other hand include non-standardised testing and the performance on these assessments is not compared with other children (Brown & Rolfe, 2005). They typically include interviews with children and work sampling, and observation techniques such as running records, anecdotal records, checklists, rating scales and event and time sampling (MacNaughton, Rolfe & Siraj-Blatchford, 2010; NAEYC, 2009). All of these assessment tools are designed to gather information about the progress of children's learning and development (Mindes, 2003).

Meanwhile, the auditing function is more summative in nature, presenting a child's competencies alongside curriculum objectives or goals. What is most important in early years assessment, Nah (2014) notes, is that it is utilized for the benefit of the

children, rather than for the purposes of ranking them. Standardized assessments, where examiners strictly follow instructions for test administration, pose dangers in restricting the expression of diversity, and undervaluing children's individual needs and learning styles in ECE settings (Gullo, 2005; Wortham, 2003). There are instances that might necessitate this type of assessment, but educators should not depend solely on it and must remain aware of its limitations (Gullo, 2005).

To illustrate, depending on children's ability and ease to communicate, examiners could be left with the task to infer answers from their behaviours or to gather information from parent reports (National Research Council, 2001). Also, elicited responses from children may not fully represent their capabilities, as differences may exist in language used in tests and what children use in their daily lives (Gullo, 2005). There is also the matter of validity and reliability in standardised instruments when considering the rapid development that young children undergo (Wortham, 2003). An emphasis on standardized assessment is also likely to narrow the curriculum, pushing educators to teach according to what skills are being assessed (Casbergue, 2010; Gullo, 2005). Furthermore, standardized assessments may hold biases that disadvantage children from different contexts (Gullo, 2005; National Research Council, 2001).

2.5 Historical Perspective of Diagnostic Assessment in ECE

Historical study has the command to irradiate the present assessment practices because that practices is for the greater part traditional practices, and it is a dominant mechanism to stimulate reflection on assessment (Ben, 1997). Nevertheless, a methodical historic treatment of the subject (assessment) is not readily available. Some researchers do came close, such as (Smallwood, 1935) in her research on the

history of examinations in the USA, Prahl (1974) in his exposition on the history of academic examinations in some Western Europe's schools, or Hanson (1993) who, from the viewpoint of anthropologist, treats analytically the place testing has in contemporary American society, finding its roots in witch trials and feudal education(Ben, 1997).

The historic facts of assessment have to be amassed from evidence, facts and data hidden in various dissimilar monographs, school antiquities, and educations on this or that phase or period of assessment practices, as will be unblemished from historic references. Assessment of learners is a crucial process in education. How do teachers/educators ascertain if teaching (instructions) and coaching has had an influence on learners learning and their academic needs? (Brink, 2011) This is one reason that learning public wants to identify if learners have learn and their needs met (William, 2010).

In early 1900s, the Government of France instructed psychologist Alfred Binet to assist in identifying learners who are mostly probable to experience difficulty in schools across France. The government passed laws demanding that all French born children attend school, hence it was vital to find a method to identify young learners who would need specific support to meet their needs (Kamin, 1974). Binet, and his team developed questions that fixated on things that already been taught in schools such as attention, remembrance/memory, and problem-solving skills. Through this, Binet determined which observed item(s) served as the superlative predictors of school success. Binet realized that some young learners were capable to answer questions that were more difficult than older learners were mostly able to answer, while other young learners of same age were only able to answer questions that

younger children could normally answer. Based on this observation, Binet suggested the concept of a mental age test or a measure of intelligence based on the average capabilities of children of a certain age group (Kamin 1974). This gave birth to what is referred to today as the Binet-Simon Scale (Brink 2011). (Lee 2010) recommended that there is the need for worry when assessing learners and school performance using a state tests method to group teachers/educators and learners. Lee established that state tests aimed to measure kindergarteners' accomplishment are not only fiddly and contentious, but each state different tests have resulted in varied outcomes.

Assessment practices must be premeditated in its historical context in order to comprehend how a specific practice was an answer to problems and tasks as supposed by historic players in Education (Kamin, 1974). The opposite circumstance is fascinating, the answers of the past still being thought valid in contemporary education even though the novel complications have long stopped to exist (Ben, 1997). It is fairly plausible that our indelible habit of checking and ranking learners is such an answer to a problem that no longer exists or possibly no longer an appropriate answer to original and still prevailing problem (Antón, 2015).

Early research on classroom interaction concentrated on surveillance and description of the functions and arrangement of teacher to student dialogue according to observation patterns (Flanders 1970; Sinclair & Coulthard, 1975). Base on the classroom dialogue, researchers were able to define the structure of classroom assessment, form groups, and measure the learners' assessment needs. Critical assessment analysis studies have revealed that classroom assessment and learners' needs are more complex than one would think. Arguing that the interactionist approach to classroom assessment can only yield a disjointed picture of classroom

reality (Antón, 2015) . Furthermore numerous earlier researches have established that considerable learning gains are likely when teachers/educators use assessment in their classroom practices(Vingsle, 2014).

In the context of Ghana, prior to 2003, early childhood education (ECE) was supervised by the Department of Social Welfare and was mostly privately operated. The Department of Social Welfare is responsible for all crèches/nurseries catering to children aged 0-2, but the Ghana Education Service is responsible for kindergarten education, which targets children aged 3-5. Since 2007, the two-year kindergarten education program has been considered part of the basic education sector. The United Nations 2030 Agenda for Sustainable Development Goal, demands that by 2030, all children should have "access to early childhood education, care, and preprimary education so that they are ready for primary education" (UNESCO, 2000) that means every country including Ghana has a compulsory responsibility to ensure that every child of school going age has access to education. In Ghana as a whole, ECE was previously taken as the sole obligation of parents and families and not the state (The White Paper, 1995) This made it problematic for find concrete document and proof on how ECE has progressed over the past years. Components of ECE interpolations in Ghana can, nonetheless, be found in the 1950s. The emphasis at that period was mostly on the provision of care to young kids before starting primary one.

2.6 Diagnostic Assessment in Early Education

According to Antón (2015) assessment is used to collect or solicit information on what learners already know about a subject. Diagnostic assessments are collections of written questions (it could be in the form of multiple choice or short answer) that is used by teacher to assess a kindergarteners current knowledge base or current views

on a subject or issue to be studied in the classroom. The objective is to get a fair idea of where learners currently stand logically, psychologically, ideologically and intellectually (OECD/CERI 2020) - allowing the teacher to make reasonable and productive instructional choices as to how to teach new lesson content and what teaching method to deploy. The ultimate goal of assessment is to identify learners needs by considering their weakness, strength, skills and capabilities in order to form a productive teaching approach (Marcy & Betsy 2004).

The immense empirical study on classroom assessment has been engrossed on upper-years learning, because the responsibility and standards-based measure in education has only lately begun to sway on young learners (kindergarten) learning process (Roach, Wixson, & Talapatra 2010; Jiban, 2013). In the current education framework, ECE teachers are deem to incorporate assessment data throughout classroom coaching and instruction to monitor kindergarteners accomplishment and identify their strength, weakness and skills in order to meet their needs (Gullo & Hughes 2011). For the past few years, there has been a rebirth of diagnostic assessments to guide teaching and learning (Pyle & DeLuca 2013). This rebirth of diagnostic assessment has been backed by empirical study that commendably validates the benefits of assessment of learners (Millar & Hames, 2003; Zhengdong et al., 2018; Humphry & Heldsinger, 2019; Prasanthi & Vas, 2019). Although the diagnostic structure of assessment has conventionally been used to configure learners assessment integration, additional present-day concepts of assessment have materialized as a set of approaches that encompass learners in utilizing and understanding assessment results to support and guide teaching and learning in ECEs (Abdi, Chabzari, Khankeh & Hosseini, 2018). Precisely, assessment of learners needs and it sub-elements assessment as learning, includes, energetically engaging learners in checking their learning through peers, self

and teacher-based response or advice (Assessment Reform Group, 2002) , with the purpose of not only developing or enhancing learners understanding of lesson content but also develop learner' meta cognitive and self-discipline capabilities (Amua-Sekyi, 2016).

This role of assessment is a vital benefit within ECEs, as one of the essential goals of kindergarten is to put young learners on a right pathway of academic independence and journey. Additional, foundation modern practices and uses of assessment is a view of assessment entrenched in socio-developmental model of learning, which recognizes the significance of classroom lesson context, collective interactions, and developmental learning scales as foundational to young learners education processes (Black & Wiliam, 2006). Researchers, such as Brookhart (2003) emphasizes the significance of assimilating assessment with developmentally applicable, personalized instruction to influence learners from their preliminary level of knowledge and understanding toward the accomplishment of academic standards; thus joining developmental and educationally oriented methodologies to teaching and learning (Brookhart, 2004). As learners guide to ECE teachers who are striving to balance development and academic oriented methodologies, Gullo and Hughes (2011) pinpoint the following values for kindergarten diagnostic assessment: (1) learners diagnostic assessment should be a nonstop practice, (2) assessment should be a broad process that embroils several formats that produce information on dissimilar learning, and (3) assessment must be an cohesive process with young learners learning objectives and instructional periods (That is assessment for learning and identification of learners weakness, strength, skills and abilities). However, across assessment and early childhood education collective literatures, there are diminutive empirical

research on how teachers traverse these assessment methodologies in connection with young learners' development and academic leaning positions.

2.7 Teacher's Knowledge about Diagnostic Assessment in ECE

A proper diagnostic assessment of young learners have a robust effect on the lives and careers of these young people (Nuffield Foundation, 2003). Resolutions taken within and by ECE schools in relation to young learners learning process impact significantly on academic journey (Azimi & Rahmani, 2013). For these young learner to smoothly sail through their academic goals, the burden is on teachers to be knowledgeable in assessing and understanding the needs of these young learners (Julie & Kay, 2018). In this regard it is important for teachers to have access to a well-designed tasks assessing skills and understanding, which can help them to make judgments across the full range of learning goals and needs of learners (Sun & Suzuki, 2013) Today's classrooms demands learner centered methods of teaching that support imaginative, creativity and ingenious skills in learners (Wiliam, Lee, Haririson & Black, 2004).

Teacher's knowledge contribution, skills and abilities are crucial for national development. These attributes are achieved through quality education (Taiwo, 2012) Teachers of today will have to teach all manner of pupil including those from diverse economic background, racial, linguistic, and academic backgrounds to the same high learning outcomes to help the nation compete in the global economy (Kemboi et al., 2017). Hence there is the need for teachers to possess certain level of knowledge in assessment in order to understand the needs of these learner for better guidance and instruction/teaching (Wylie, 2020).

Learners expressions provide indispensable evidence for ECE teachers/educators to understand their fundamental ideas about a lesson or instruction given by a teacher (Gropengießer & Marohn, 2018; Schecker & Duit, 2018). Teachers can organize lessons that address frequent young learners needs and conceptions (Kattmann, 2017). Likewise, to teach adaptively, teachers have to be able to extemporaneously and properly analyze what learners say in the classroom to diagnose the fundamental pre-existing and misguided conceptions that young learners may have, and that may hinder further learning (Morrison & Lederman, 2003; Chi, Siler, & Jeong, 2004; Shavelson et al. 2008). Diagnosing means "distinguishing" or "identifying exactly" and may include several practices of unremittingly gathering and assessing knowledge about young learners (Heitzmann et al. 2019;Chernikova et al. 2019). This could be describe as teachers classroom diagnosing assessment (Heitzmann et al. 2019). The methods and activities underlying the teacher's knowledge and practices are linked to what is considered to be "diagnosing" (Loibl, Leuders & Dörfler 2020; Chernikova et al. 2019; Glogger-Frey, Herppich, and Seidel 2018).

The diagnostic assessment processes and activities include, for example, educators// ECE teachers, picking suitable question to learn more about a young learners notions and conception (Chi et al. 2004) or teachers evaluating the responds from young learners in order to ascertain and gain understanding of this young learners conceptions (Chi et al. 2004) Budding research interest in diagnostic processes and activities is one reason the term "diagnosing" has become increasingly prevalent in the educational field and it is the responsibility of teachers to gain certain amount of diagnostic assessment knowledge to assist young learners (Chi et al. 2001; Loibl et al. 2020; (Heitzmann et al. 2019)

When teachers/educators diagnose young learners, they make assumptions, or propositions, about the young learners state of understanding on certain lessons or subjects and concept (Heitzmann et al. 2019). Such diagnostic judgments usually serve as a decision points for additional action (Schoenfeld 2011). Example, ECE teacher/ Educator may ask young learners to intricate on their thoughts so that the teacher can clarify his or her understanding of a young kindergarteners idea (Van de Pol et al. 2014) , or a teacher through diagnostic assessment may offer response which may move young learners thinking forward (Furtak et al. 2016).

In this respect, diagnoses assessment during instruction are ultimately needed to facilitate teachers to select suitable instruction, coaching and teaching tactics (Glogger-Frey et al. 2018; Tigelaar and Sins 2020) and thus support young learners' individual learning processes (Andersson and Palm 2018). Teachers or educators level of knowledge on classroom diagnostic assessment of young learners conceptions and the decision for a further pedagogical action (e.g., response to the young learners) are extremely intertwined, yet dissimilar from each other (Loibl et al. 2020; 39]. For example, an educator or teacher may well diagnose a young kindergarteners conception, but may not have the level of knowledge, experience, techniques, or confidence to adequately answer to a young learners needs (Herppich et al. 2017). In this study, the focus is on teachers' level of knowledge in classroom diagnostic assessment as one necessary precondition for proper education instructional action (Schoenfeld 2011; Heitzmann et al. 2019; Loibl et al. 2020).

Conditions that offer prospects and opportunities for ECE teachers to diagnose young learners' notions during instruction/teaching may be purposefully generated by the teacher, for example, when asking a particular question. Further diagnostic chances

may ascend at almost any time in a lesson or instruction (Shavelson et al. 2008). When opportunities for diagnosis assessment transpire extemporaneously during the lesson or instruction, the teacher needs to apply his knowledge and skill instantly and perform diagnostic assessment in real-time (Shavelson et al., 2008; Loewenberg Ball, Thames, & Phelps, 2008) Young learners strength, weakness, skills are not directly noticeable, instead, they are commonly needed to be inferred from young learners' expressions (Cambridge, 2013).

Accordingly, ECE teacher should show knowledge in cognitive processes which is essential for ECE teacher to spontaneously build assumption about a young kindergarteners needs; thus for noticing and interpreting their needs (Loibl et al. 2020; Heitzmann et al. 2019). Teachers need to identify or notice relevant needs of young learners' needs through their expressions among all other events taking place in the classroom (Blomberg, Stürmer & Seidel 2011). Interpreting of learners needs refers to the manner teachers make sense of young learners' expressions with regard to understanding young learners' strength, weakness and skills. Example, teachers' might do a diagnostic assessment only what young learners say as accurate or erroneous from academic standpoint, or attempt to further comprehend young learners' ways of thinking by identifying probable underlying weakness, strength or skills (Chi et al. 2004; Ruiz-Primo & Furtak 2007; Furtak et al. 2016).

Given this process, the burden of proof is on Administrator or stakeholder within ECEs to ensure that teacher are well educated on the subject of classroom diagnostic assessment in order to identify and interpret the needs of young learners, which will further ensure accurate pedagogical development and actions (Reutzel et al., 2011; Daryl et al., 2012; Valerie, 2020). Both diagnostic assessment processes should be

crucial for young learners learning (Gropengießer & Marohn, 2018; Kermad & Kang, 2018).

Diagnostic assessment processes of identifying and interpreting learners needs can be understood as the diagnostic skills which ECE teachers need to successfully diagnose young learners conceptions in the classroom (Blömeke, Gustafsson & Shavelson 2015). In this study, we focus on diagnostic assessment in the context of ECE. Teachers' diagnostic knowledge and skills can is seen as one element of a more encircling paradigm of diagnostic assessment competence that teachers must possess (Blömeke et al. 2015), and are usually presumed to be related to certain teacher individualities (Blömeke et al., 2015; Loibl et al., 2020).

It is therefore necessary for ECE teachers to possess knowledge or skills in characteristics such content knowledge, good attitudes and motivation e.g. teachers' interest in individual young learners' thinking and needs (Loibl et al. 2020). It has been established that New ECE teachers (pre-service) seem to struggle in the application of diagnostic assessment knowledge in classroom situations. That is, teaching experience with regard to diagnostic skills is of exceptional interest to researcher and educators (Klug et al., 2013; Jiban 2013; Heitzmann et al., 2019; Briggs, Chattergoon, & Burkhardt 2019). To make inferences about teachers' diagnostic knowledge and skills, one needs to refer to ECEs teachers' observable performance (Piwowar et al., 2017) (Loibl et al., 2020). Irrespective of the various actions that might be used by teachers educators to create a foundational knowledge for teaching, in the end it is innocuous to conclude, given the present state of research in the area of ECE teachers knowledge in assessment, that paper-and-pencil test, surveys, or records alone will not serve as satisfactory proof of the knowledge

teachers need to teach young learners effectively to satisfy the many and diverse stakeholders in EC education (Reutzel et al., 2011)

2.8 Types and nature of diagnostic evaluation in ECE

Although there are many emerging types of assessment, there are three (3) known types of diagnostic assessment which is generally accepted by educators all around the world. These are diagnostic evaluation (Martha et al., 1989; Nemzeti 2012; Sun & Suzuki 2013), formative assessment (Daryl et al., 2012; Browne, 2016; OECD & CERI, 2020), and summative assessment (Black et al., 2010; Black & Wiliam 2018). The definition, nature and types are discussed below:

2.8.1 Forms of Diagnostic Assessment for Diagnosing Kindergarteners' Cognitive Needs

Three types of diagnostic assessment have been identified by educators. These are diagnostic evaluation, summative assessment and formative assessment. These three methods suggest crucial information that may be used by teachers to determine phases of learning appropriate for any learner (Antón, 2015; Julie & Kay 2018).

2.8.2 Diagnostic evaluation

Diagnostic evaluation is used to define the present level of knowledge, ability and skill of a learner. Then the learning activities of the learner would be established and designed along those lines. Diagnostic evaluation is best used at the preliminary stage to get a preview into the learners learning stages (Bergeson et al., 2008). A diagnostic evaluation is performed to disclose weaknesses and strengths of learners. This evaluation helps the learners in knowing their personality, their weak points. This will further help them to understand what kind of a learner they are and how they should approach learning.

Diagnostic evaluation also prove very informative when a multidisciplinary position is involved, where diverse learners in the lesson have dissimilar levels of academic upbringings (Tan et al., 2017). The nature is of this assessment is designed that the assessment tasks are to ascertain learners' level of awareness, knowledge, skills and understandings at the commencement of a lesson, level and or unit (Zhao, 2013). Thus, it is designed to test the learner on what they already know or aware of. These tests allow the teacher to modify the course to meet the needs of the learners (Wijaya et al., 2019).

The priority for which diagnostic evaluation is performed is to get into the root cause of the problem and find an accurate remedy. It's a wrong assumption that repeatedly teaching the same lesson will make the student understand much better. Instead of focusing on making learners understand, teachers must understand and diagnose the cause of learners not grasping the information. For this teacher must carry out the said evaluation and take remedial actions. This type of assessment uses tools such as classroom diagnostic tools. Examples of Initial writing prompts, Informal Reading Assessments, Pre-tests (Zvia & Reut,cc 2008).

Longestreet & Shan (1993) opined that these diagnostic tests can be in the form of achievement tests, performance test, self-rating, interviews observations, etc. diagnostic evaluation or tests evaluate the pupils' learning difficulties during instruction. There are concerned with the pupils' persistent or recurring learning difficulties that are left unresolved by the standard corrective prescriptions of formative tests. These tests are very detailed or comprehensive covering the learners' particular problems that have been difficult to amend. The primary objective is to

study the problem in details do that the causes of the learning problem could be identified and then appropriate remediation procedure is setup. (Oliver, 2006).

2.9 Applicability of Diagnostic Evaluation

Researchers and some practitioners have identified situations where diagnostic evaluation is applicable. Some researchers posit that diagnostic evaluation is applicable where teachers seeks to shape learners strengths, simplify misapprehensions among learners modify the curriculum to meet learners' needs and introduce new or unknown concepts (Antón, 2015; Wylie, 2020; Bosson-Amedenu, Osei-asibey, & Otoo, 2020).

Any diagnostic procedure must be based on extensive research to determine what types of errors are made. Once the error is tested, it is necessary to devise test procedures to reveal. After diagnosing the weakness of the pupil, the teacher needs to give him remedial instruction (Khan, 2020).

According to Millar and Hames (2003), Zvia and Reut (2008), Tan et al., (2017) through diagnostic evaluation educator or teachers able to:

i. Categorize individual learner and classroom strengths and weaknesses.
ii. Recognize, ascertain, identify and correct misapprehensions.
iii. Expound, explain or clarify how classroom coaching and teaching has been modified or adjusted to meet the learners' needs.

2.10 Formative Assessment

For several years, there have been varying and often conflicting viewpoints and definitions of what formative assessment is; is it a product, is it a process, is it something that can be bought? One source of confusion about this issue has come from products and services sold by curriculum and assessment vendors, touted as

"formative assessment" Any exam that can be done more than once a year may be misinterpreted as formative, and several districts and states have acquired this term in substantial forms in recent years.

Most State Education Agencies (SEAs) also have begun the process of exploring or building a more "balanced assessment" approach to their state accountability models, incorporating "formative assessments" into their strategic design. With the call for a multiple-measures approach rather than a one-time, high-stakes test to determine learner achievement, and the compelling research behind formative assessment practices, the demand for formative assessments has increased. There has never been a stronger need to be explicit on what formative assessment is.

The research literature even offers multiple, sometimes conflicting, definitions of formative assessment that evoke a range of perspectives among teachers, school principals, and district leaders. For example, formative assessment has been referenced as a process for making instructional adjustments based on feedback about learner performance (Council of Chief State School Officers, 2007; Popham, 2006) as well as a set of tools to monitor learner progress during learning (Dunn & Mulvenon, 2009; Stiggins, 2002).

In addition, formative assessment is mostly described by its aim or utilisation, qualifying any range of activities or tools as "formative" when the information is used to inform instruction (Black & Wiliam, 1998a; Perie, Marion, Gong, & Wurtzel, 2007). The stance reflected in this policy brief is consistent with an emerging consensus that is building among most of the recognized researchers and experts in the field.

Heritage, Kim, Vendlinski, and Herman (2009) defined formative assessment as "a systematic process to continuously gather evidence and provide feedback about learning while instruction is under way" (p. 24). Popham (2008) added a critical clarification: Formative assessment is always a planned process; it does not happen accidentally. Other definitions extend the concept of formative assessment as a process by incorporating assessment tools when they can be seamlessly integrated into classroom activities for the explicit purpose of gathering feedback to inform instruction or learning (Heritage, 2007). Taken together, formative assessment is kind of assessment in which teachers employ various tools and strategies to ascertain what learners know, identify gaps in understanding, and plan future instruction to improve learning.

Formative assessment can come in many different ways including performance-based and multiple option. These may also include portfolio, checklists, rubrics, written papers, anecdotal records, Socratic questioning, and other evidence-eliciting techniques. Although differing in duration, a scoring guide is meant to be utilised by learners and teachers. Assessment elements should provide windows into learner's cognitive processes. Assessments that encourage learners to illustrate their reasoning and help teachers to obtain the best evidence of these cognitive processes are where the focus should be placed.

It could be realized from the discussion that formative assessments are the most instructionally sensitive types of assessment and are considered an ongoing activity or process. They are embedded within instructional activities and are linked directly to current teaching and learning activities in the classroom. The teacher determines the specific assessment given to each learner or group based on their particular areas of

need or the concepts being taught, and the data are used to differentiate or individualize instruction. The results help to diagnose learner progress, identify gaps in knowledge and understanding, and determine how to help teachers and learners improve learner learning (Perie et al., 2007).

Also, formative kind of assessment is part of the instructional process. When incorporated into classroom practice, it provides the information needed to adjust teaching and learning while they are happening. In this sense, formative assessment informs both teachers and learners about learner understanding at a point when timely adjustments can be made. These adjustments help to ensure learners achieve targeted standards-based learning goals within a set time frame. Although formative assessment strategies appear in a variety of formats, there are some distinct ways to distinguish them from summative assessments (Garrison & Ehringhaus, 2007, p.1).

One distinction is to think of formative assessment as "practice." Learners cannot be hold accountable in "grade book fashion" for skills and concepts they have just been introduced to or are learning. For this reason, they must be allowed for practice. Formative assessment helps teachers determine next steps during the learning process as the instruction approaches the summative assessment of learner learning.

A good analogy for this is the road test that is required to receive a driver's license. What if, before getting the driver's license, one receives a grade every time he/she sit behind the wheel to practice driving? What if the final grade for the driving test was the average of all of the grades one received while practicing? Because of the initial low grades, one received during the process of learning to drive, the final grade would not accurately reflect the ability to drive a car.

In the beginning of learning to drive, how confident or motivated to learn would one feel? Would any of the grades one received provide him/her with guidance on what one is needed to do next to improve his/her driving skills? One's final driving test, or summative assessment, would be the accountability measure that establishes whether or not he/she has the driving skills necessary for a driver's license; not a reflection of all the driving practice that leads to it. The same holds true for classroom instruction, learning and assessment.

Another distinction that underpins formative assessment is learner involvement. If learners are not involved in the assessment process, formative assessment is not practiced or implemented to its full effectiveness. Learners need to be involved both as assessors of their own learning and as resources to other learners. There are numerous strategies teachers can implement to engage learners. In fact, research shows that the involvement in and ownership of their work increases learners' motivation to learn. This does not mean the absence of teacher involvement. To the contrary, teachers are critical in identifying learning goals, setting clear criteria for success, and designing assessment tasks that provide evidence of learner learning.

One of the key components of engaging learners in the assessment of their own learning is by providing them with descriptive feedback as they learn. In fact, research shows descriptive feedback to be the most significant instructional strategy to move learners forward in their learning (Black, Harrison, Lee, Marshall & Wiliam, 2003). Descriptive feedback provides learners with an understanding of what they are doing well, links to classroom learning, and gives specific input on how to reach the next step in the learning progression. In other words, descriptive feedback is not a grade, a sticker, or "good job!" A significant body of research

indicates that such limited feedback does not lead to improved learner learning (Butler & Winnie, 1995; Black, Harrison, Lee, Marshall & Wiliam, 2003).

There are many classrooms instructional strategies that are part of the repertoire of good teaching. When teachers use sound instructional practice for the purpose of gathering information on learner learning, they are applying this information in a formative way. In this sense, formative assessment is pedagogy and clearly cannot be separated from instruction. It is what good teachers do. The distinction lies in what teachers actually do with the information they gather. How is it being used to inform instruction? How is it being shared with and engaging learners? It's not teachers just collecting information/data on learner learning; it is what they do with the information they collect. Some of the instructional strategies that can be used formatively include the following:

Criteria and goal setting with learners engages them in instruction and the learning process by creating clear expectations. In order to be successful, learners need to understand and know the learning target/goal and the criteria for reaching it. Establishing and defining quality work together, asking learners to participate in establishing norm behaviors for classroom culture, and determining what should be included in criteria for success are all examples of this strategy. Using learner work, classroom tests, or exemplars of what is expected helps learners understand where they are, where they need to be, and an effective process for getting there.

Observations go beyond walking around the room to see if learners are on task or need clarification. Observations assist teachers in gathering evidence of learner learning to inform instructional planning. This evidence can be recorded and used as

feedback for learners about their learning or as anecdotal data shared with them during conferences.

Questioning strategies should be embedded in lesson/unit planning. Asking better questions allows an opportunity for deeper thinking and provides teachers with significant insight into the degree and depth of understanding. Questions of this nature engage learners in classroom dialogue that both uncovers and expands learning. An "exit slip" at the end of a class period to determine learners' understanding of the day's lesson or quick checks during instruction such as "thumbs up/down" or "red/green" (stop/go) cards are also examples of questioning strategies that elicit immediate information about learner learning. Helping learners ask better questions is another aspect of this formative assessment strategy.

Self and peer assessment helps to create a learning community within a classroom. Learners who can reflect while engaged in metacognitive thinking are involved in their learning. When learners have been involved in criteria and goal setting, self-evaluation is a logical step in the learning process. With peer evaluation, learners see each other as resources for understanding and checking for quality work against previously established criteria.

Learner record keeping helps learners better understand their own learning as evidenced by their classroom work. This process of learners keeping ongoing records of their work not only engages learners, it also helps them, beyond a "grade," to see where they started and the progress they are making toward the learning goal. All of these strategies are integral to the formative assessment process, and they have been suggested by models of effective middle school instruction.

2.11 Balancing Assessment

As teachers gather information/data about learner learning, several categories may be included. In order to better understand learner learning, teachers need to consider information about the products (paper or otherwise) learners create and tests they take, observational notes, and reflections on the communication that occurs between teacher and learner or among learners.

When a comprehensive assessment program at the classroom level balances formative and summative learner learning/achievement information, a clear picture emerges of where a learner is relative to learning targets and standards. Learners should be able to articulate this shared information about their own learning. When this happens, learner-led conferences, a formative assessment strategy, are valid. The more we know about individual learners as they engage in the learning process, the better we can adjust instruction to ensure that all learners continue to achieve by moving forward in their learning.

Also, Heritage (2007) categorizes formative assessment into three broad strategies, as follows:

"On-the-fly," in the sense that the teacher changes course during a lesson to address misconceptions before proceeding with the designed instructional sequence.

"Planned-for interaction," where the teacher decides beforehand how he or she will draw out learners' thinking during the course of instruction.

"Curriculum-embedded," where tools and activities are embedded in the ongoing curriculum to garner feedback at key points in the learning process. Examples of curriculum-embedded assessments might include journaling on a particular scientific

topic or identifying real-life examples and none-examples of geometric shapes to demonstrate understanding.

All three assessment strategies share several characteristics that, when considered together, make them unique to other assessments. Specifically, these types of formative assessments are planned activities, purposefully implemented to gather evidence of learning. They are conducted unobtrusively as a natural part of the instructional activity, and "short-cycle," occurring during a lesson or unit of study and providing near-immediate feedback to the teacher.

2.12 Essential Elements of the Formative Assessment Process

The formative assessment process can be divided into four essential elements: (1) identifying the learning gap, (2) feedback, (3) learner involvement, and (4) learning progression (Heritage, 2007).

1. Identifying the gap, based on Royce Sadler's seminal work (1989), involves understanding the difference between what learners know and what they need to know, and where instruction will be most effective to meet desired learning goals. Once a teacher identifies the "just right gap," (Sadler, 1989) he or she can then provide the necessary instructional support to help learner progress toward the learning goal and engage in appropriate cognitive growth activities.
2. Feedback flows to and from the teacher and his or her learners. Feedback provides critical information that the teacher needs to pinpoint the current status of a learner's learning and informs next steps in the learning process. Feedback is then provided to the learner in the form of clear and descriptive information so that it can be used to improve learning. Feedback not designed and intended to close the

instructional gap does not meet the formative assessment definition of feedback (Sadler, 1989).

3. Learners must be actively involved in their own learning and the assessments they are engaged in. This happens best by collaboration between the teacher and fellow learners to develop a shared knowledge about their current learning status and what they need to do to progress in their learning. Doing so builds metacognitive skills, which learners need to monitor their learning and determine when they need assistance.
4. Learning progressions break down a larger learning goal into smaller sub-goals. It is necessary for helping teachers locate learners' current learning status in relation to a continuous set of skills needed to master the learning standard. Once a teacher has identified learner locations on the learning progression continuum, he or she can work with the learners to set short-term learning goals and clarify the criteria that learners must meet for success.

The purpose of using formative assessment is to offer support for the learners based on their distinctive learning level (Tigelaar & Sins 2020). Formative assessment utilizes practical simulations to support learners through a hands-on approach (OECD/CERI, 2020). Progressive activities are placed on the use of hands-on tools to develop the value of learning for the learners. Formative could be ceremonial and unceremonious assessments that are utilized throughout a unit or lesson to monitor learners' development so that teachers can modify their instructional practices to meet the learners' needs (Black & Wiliam 2018; Andersson & Palm 2018).

2.13 Applicability of Formative Assessment

It has been observe that formative assessment can be applied when teachers seeks to observe learners development, modify coaching and teaching to maximize learners accomplishment, provide effective and timely feedback, reveal learners who need remediation, predict performance on summative assessments (Browne, 2016; Andersson & Palm, 2018; Black & Wiliam, 2018; Akyina & Oduro-Okyireh, 2019) Example of Formative assessment include student self-assessments, written responses, questioning, observations and rubrics activities (Browne, 2016; Andersson & Palm, 2018; Black & Wiliam, 2018; Akyina & Oduro-Okyireh, 2019).

According to Browne (2016), Andersson and Palm (2018), Black and Wiliam (2018), teachers can consider formative evaluation to be effective when educator or teachers are able to:

1. state the types of formative assessments used frequently to estimate or ascertain progress.
2. clarify how they have reviewed instruction based on assessment outcomes.
3. delivers response to learners.
4. show illustrations of reviewed learners' work.
5. describe learners' strengths and next course of action.

2.14 Summative Assessment

Summative assessments are synonymous with most one-time, high-stakes tests. From No Child Left Behind (NCLB)-mandated exams to end-of-course tests, they most often are associated with accountability at the school, district, or state level. Although many times they are multiple-choice tests, there is no rule or requirement for this format because portfolios, written essays, or extended-response items can be

summative. The results typically are used to measure mastery of a prescribed set of standards or content and as part of an accountability system or to otherwise inform policy (Perie et al., 2007).

Besides, this kind of assessment is given periodically to determine at a particular point in time what learners know and do not know. Many associate summative assessments only with standardized tests such as state assessments, but they are also used at and are an important part of district and classroom programs. Summative assessment at the district and classroom level is an accountability measure that is generally used as part of the grading process.

The key is to think of summative assessment as a means to gauge, at a particular point in time, learner learning relative to content standards. Although the information gleaned from this type of assessment is important, it can only help in evaluating certain aspects of the learning process. Because they are spread out and occur after instruction every few weeks, months, or once a year, summative assessments are tools to help evaluate the effectiveness of programs, school improvement goals, alignment of curriculum, or learner placement in specific programs. Summative assessments happen too far down the learning path to provide information at the classroom level and to make instructional adjustments and interventions during the learning process. It takes formative assessment to accomplish this.

This suggests that assessments are almost always formally graded and often heavily weighted (though they do not need to be). Summative assessment can be used to great effect in conjunction and alignment with formative assessment, and instructors can consider a variety of ways to combine these approaches.

2.14.1 Advantages of summative assessment

To know if learners have understood: A summative evaluation follows certain strategies for evaluation by means of assignments, tests, projects and more. By these ways, the teacher can make out if the learners have learned and understood the subject. An assignment is said to be a summative one by the way it is utilized and not by the design of the test, assignment or by self-evaluation. By this way, the instructor can make out to what degree the learners have understood with the materials that have been taught.

They determine achievement: The usual procedure is that summative evaluations are done at the end of any instructional period. Thus, summative evaluation is considered to be evaluative in nature rather than being mentioned as diagnostic. The real meaning is that this evaluation is made used to find out the learning growth and attainment. They are also utilized to estimate the effectiveness of educational programs. Another key advantage is that they are utilized to measure the improvement towards objectives and goals. More over course-placement decisions are also made with summative evaluation.

They make academic records: The results of summative evaluations are ones that are recorded as scores or grades into the learners' academic records. They can be in the format of test scores, letter grades or report cards which can be used in college admission process. Many schools, districts, and courses consider summative evaluation as a major parameter in the grading system.

Provides opportunity: The presence of summative evaluation is a motivator as it assists the individuals and offers them an opportunity to develop a learning environment. This is an evaluation meant for learning and is based on the outcome.

Boosts individuals: The outcome of the summative evaluation is considered as a boosting factor when it's positive. With this type of evaluation, confidence is boosted and also, they act as a springboard to certain behavior change at workplace or institution.

Weak areas can be identified: with the help of summative evaluation results, trainers and instructors can find out weak areas where the results are steadily low. By this way, alternative methods can be utilized in order to improve the results. New training can be followed for future events focusing towards success.

Training success can be measured: This type of evaluation helps in determining the success of methods used for training programmes used. They are equated with others and evaluated.

Instructional design: The summative design is utilized as an evaluation technique in the course of instructional design. Depending on the intervention efficiency summative evaluation offers beneficial information. The value or worth of the intervention is judged by means of summative evaluation during the conclusion.

Summative assessment is used to grade/rank and judge the specific level of understanding of a learner with regard to movement of the learner from one level to another (Black et al., 2010). Summative assessments may also be used for accreditation and certification purposes (Brink 2011). A typical example of summative assessment is Examinations and quizzes which may be overseen and rated (Black et al. 2010; Brink 2011; Black & Wiliam, 2018). The examination is mostly administered under meticulously controlled environment using numerous added variables, including start time and end time for the quiz or examination. This is to

measure what learners have learnt at the end of a well-defined period of instruction (Kwadwo-Oteng & Oduro-Okyireh, 2019) .

2.15 Assessment Tools Used by Teachers in Diagnosing Kindergarteners' Cognitive Needs

Assessment is carried out employing various instruments and techniques in the educational environment. These techniques may yield similar, if not identical, outcomes. The method of assessment chosen is determined by what will be assessed, how it will be assessed, and why it will be assessed. In addition, it is based on the views and practice of classroom assessment by the instructors. Teachers must examine the variety of classroom settings that learners may encounter when selecting assessment methods and technologies. A wide range of tools and resources are available. These may include observation, anecdotal records, check list, rating scales and rubrics, conferences among others. A short description of these tools is given below.

2.15.1 Observation

Observation is an informal assessment method that involves watching pupils to determine their strengths and weaknesses, behavioural patterns, and cognitive skills. Kuranchie (2016), described observation as a data-gathering method that allows a teacher to study children in a natural setting. Observation allows the teacher to interact with children in their natural settings (Kusi, 2012). Observations assist in determining which learners need extra assistance and how to modify teaching to promote increased and improved learning. Without a doubt, observation is a powerful instrument for assessing different facets of human endeavours. The effectiveness of observation as a method of evaluation makes it essential in the educational field.

2.15.2 Anecdotal records

They are "informal observations" made by "teachers for future reference and to better comprehend some element of the child's personality or behaviour" (Sadler, 2009, p. 97). This is where you watch the pupils' performance and provide a description of what they accomplished. As noted by Pierce and O'Malley (2009), teacher observation serves as the basis for anecdotal records. They are a kind of continuous assessment that is based on observations of learners in the classroom. They usually include the date, time, events, setting, learners' name and teachers' name. "They're an excellent method to record student behaviour and academic achievement over time," adds Hempeck (2009). It involves a teacher taking brief notes on a student's interactions within the classroom with subject matter and peers.

Anecdotal records are systematically kept notes of specific observations of student behaviours, skills, and attitudes in the classroom that provide cumulative information regarding progress, skills acquired, and directions for further instruction (Hattie, 2012). Anecdotal notes are often made in reaction to continuous observations during a class, but they may also be produced in response to a product or performance done by a student. Systematic collection of anecdotal records on a particular learner provides excellent information for evaluating the learning patterns and the consistency of the learners' progress. Anecdotal records maintained in good order offer useful, practical, and particular information about a pupil.

Taking observational notes enables the teacher to document a broad variety of genuine experiences as well as unexpected consequences of literacy development (Boyd-Batstone, 2004). Furthermore, these notes are used to record objective and subjective information, as well as affective information, such as levels of engagement,

curiosity, and motivating factors. According to the American Association of School Administrators, “an anecdotal record is a written record kept in a positive tone of a child's social, emotional, physical, aesthetic, and cognitive development” (Airasian, 2000). Regular anecdotal recordings offer glimpses of progress and patterns of behaviour not necessarily captured by other means of assessment.

2.15.3 Checklists

Checklists are "any record that denotes the presence or absence of something" and used "to record the occurrence of specific behaviours in a given context" (Sadler, 2009, p. 106). A checklist, according to Nitko and Brookhart (2007), consists of a list of specific behaviours, characteristics or activities and a place for marking whether each is present or absent. Airasian and Russell (2008) however note some disadvantage -only two choices: criterion is performed or not, goal is met or not. There is no middle ground for scoring and no representation of extent. You may use a checklist for assessing a procedure a student uses, a product a student produces, or behaviours a student exhibit.

Checklists, rating scales, and rubrics are assessment tools that state specific criteria for teachers and learners to make judgments about developing competence. They list specific behaviours, knowledge, skills, attitudes, and strategies for assessment, and offer systematic ways of organizing information about individual learners or groups of learners (Swaffield, 2008). Checklists usually offer a yes/no format in relation to the specific criteria and may be directed toward observation of an individual, a group, or a whole class. Checklists may be single-use or multiple-use.

2.15.4 Rating scales

Rating scales are similar to checklists but differ in that they allow the observer to judge performance along a continuum rather than as a dichotomy (Airasian, 2000). Standards or criteria for evaluating a performance are created (Nitko & Brookhart, 2007). Each standard has levels of competence, and you rate learners according to how well they complete the task i.e. level of degree of quality rather than as simply being present or absent. For example, to assess the quality of a student's oral presentation to the class one would probably identify several dimensions of a "good oral presentation" and then judge the degree to which a student demonstrates each of them. Good rating scales are carefully constructed measures that typically assess behaviours across relative frequency rating dimensions e.g., never, sometimes, always (Brown-Chidsey, 2008).

Rating scales allow for an indication of the degree or frequency of the behaviours, skills and strategies, or attitudes displayed by the learner. They may be used to gather individual or group information, and are usually single-use. Multiple-use rating scales may be achieved by having learners or teacher complete the same rating scale at different times during the school year and making comparisons.

2.15.5 Rubrics

Papert (2004) defines a rubric as "a road map, telling learners and teachers where to begin, where they're going and how to get there" (p.1). Rubrics are scoring guides or sets of expectations or criteria used to assess student level of understanding and allow learners to know the expectations and what they need to do in order to be learning at a higher level. Some individuals believe rubrics help teachers and learners focus on what is valued in a subject, activity, topic etc., (Airasian, 2000).

Hempeck (2009) further adds that rubrics are a great way to assess a learners' progress with standards in a detailed manner. Hempeck gives the following purposes of rubrics, for providing answers to assignments that require more than a simple selection of the correct answer or filling in the blanks, Rubrics provide several focal points when grading subjective work, They also provide the teacher with a tool to ensure that grading is fair and consistent for all learners, Rubrics provide a primary focus for otherwise ambiguous assignments.

Rubrics are an expanded form of rating scale that list several specific criteria at each level of the scale (Hattie, 2012). They may be used to assess individuals or groups and, as with rating scales, may be compared over time. The quality of information acquired through the use of checklists, rating scales, and rubrics is highly dependent on the quality of the descriptors chosen for assessment. Their benefit is also dependent on learners' direct involvement in the assessment and interpretation of the feedback provided.

2.15.6 Conferences

Conferences provide opportunities for learners and the teacher to discuss learning strengths and areas for improvement, and to set learning goals (Jones, 2002). In conferences, it is possible to learn a great deal about learners' understanding of information, attitudes toward learning, and the skills and strategies learners employ during the learning process. Conferences provide opportunity for individualized teaching, for guiding learners to more challenging materials, and for determining future instructional needs. Conferences are usually short informal meetings held with individual learners, or a small group of learners, and involve diagnostic listening, questioning, and responding.

Interviews, on the other hand, are conferences that are conducted to gather specific information. They may involve a set of questions you ask for a specific purpose. For example, you may need information about the learners' reading patterns and difficulties and may use a formal conference or interview to ask questions directly related to a particular aspect of the learners' performance.

2.15.7 Portfolios

According to Stiggins (2005), "the desire to capture and communicate the depth of student learning has been at the heart of portfolio use for years. A report card grade summarizes the story of achievement in one word but a portfolio gets at the full story, to help learners, teachers, and others understand in depth one or more aspects of student learning. They are defined as files or binders which hold samples collection of individual student work (Hempeck, 2009, Papert, 2004). Nitko and Brookhart (2007) further add that for purposes of assessment, this collection is used either to present the student's best work(s) or to demonstrate the learners' educational growth over a given time.

There are assessment portfolios and professional or instructional working portfolios (Robert & Pruitt, 2003). A professional portfolio is a thoughtful document demonstrating a teacher's approach to teaching or an administrator's approach to leadership. It offers a portrait of the educators practice over time and reflections about it (Rowntree, 1997). Self-assessment and reflection are the most important functions of a portfolio in terms of an educator's professional growth (Bullock & Hawk, 2002).

Professional portfolios give candidates an edge in employment (Irby & Brown, 2000) as they may be used in lieu of the usual evaluation. Learners benefit from the use of professional portfolios through improved instruction. Results with learners should be

an important part of the portfolio as the ultimate purpose of professional portfolio is to inform instruction and increase learners' learning (Yi, 2012).

Paulson (2009) defines portfolio as "a purposeful collection of student work that exhibits the learners' efforts, progress, and achievements in one or more areas. The collection must include student participation in selecting the contents, the criteria for judging merit, and evidence of student self-reflection" (p. 60). The physical structure of a portfolio refers to the actual arrangement of the work samples and can be organized according to chronology, subject, types of student product, or goal area. The conceptual structure refers to the teachers' goals for student learning. For example, the teacher may have learners self-assess a work sample, then self-reflect, and then set a goal for future learning. The work-sample self-assessment and the goal sheet may be added to the portfolio. Learners generally choose the work samples to place in the portfolio. The teacher may also choose to have specific work samples placed in portfolio.

2.16 Challenges Teachers Face in Using Diagnostic Assessment in Assessing Kindergarteners' Cognitive Needs

In many respects, assessing young children is quite different from assessing older children and adults. The major distinction is that younger children learn in an entirely different way. They acquire information via practical, interactive, concrete, and hands-on techniques rather than abstract thinking and paper and pencil exercises alone, according to Lidz and Gindis (2003). In order to learn, young children need to touch and handle things, construct and create in a variety of mediums, listen and act out stories and daily roles, vocalise, sing, and move about in a range of environments.

As a result, expressing what young children know and can accomplish would be best served by techniques other than conventional paper and pencil assessments.

Early childhood assessment is particularly difficult since a child's growth is fast, uneven, episodic, and heavily affected by the environment (Lidz, 2001). A developing child exhibits periods of both rapid growth and frequent rest. Child development takes place in four different areas: physical, cognitive, social and emotional and not all at the same rate. There are no two children alike, and each kid develops at a different pace. No two children come from the same family, culture and experience. Clearly, these factors indicate that a one-size-fits-all assessment will fall short of meeting the developmental requirements of the majority of young children (Lidz, 2001).

Another assessment difficulty for young children is inadequacy of time. An effective assessment administration requires time. Assessments primarily should be administered in a one-on-one setting to each child by his or her teacher. Also, a child's attention span is typically limited, therefore the assessment should be given in small parts over days or weeks. Early childhood educators often express concerns with the amount of time it takes to administer assessments that are developmentally appropriate for their pupils. However, when quality tests mirror quality instruction, assessment and teaching become almost seamless, complementing and informing one another (Neuman, Copple & Bredekamp, 2000).

Despite the apparent benefits of conducting assessments in early childhood settings, educators face difficulties in putting these ideas into reality. For instance, a focus on ensuring a smooth transition from ECE to primary school, as well as demanding parental expectations, bring pressure to educators working in the sector (Mears, 2009)

Research has also revealed tensions arising from the different perspectives on children and children's learning (Nah, 2014).

According to Basford and Bath (2014), children's participation as agents in early childhood settings is difficult in the English environment, not least because of frameworks that emphasise learning outcomes. They examine the conflicts that occur for practitioners who are affected by opposing assessment paradigms, such as positivist or developmental assessment and sociocultural assessment. The authors suggest that issues surface from this in practice, particular in assessment translate to a wide range of practices as educators seek to track children's learning alongside their conceptions of development and academics (DeLuca & Hughes, 2014).

Payler (2009), for example, observes that settings that emphasise learning goals and employ scaffolding to accomplish them seem to reflect a negative view of children as less capable, which may have an impact on their emerging identities as learners. In contrast to settings that were more focused on caring and socialisation, the environment being described here was one that pushed for more collaboration between adults and children. Additionally, the author offers an alternate method, known in preschool environments, that utilises the teamwork and collaboration to encourage desired outcomes. Researchers have also shown that educators are able to negotiate among the demands and expectations they are confronted with, maintaining some autonomy and adjusting the demands and expectations to their curricular position and assessment practice (Pyle & DeLuca, 2013).

Pyle and DeLuca believe that although assessment profiles vary from educator to educator, based on their curricular objectives and approach, each has its own merits, and that there is promise in combining them together. A further obstacle has to do

with the words teachers use while discussing assessment. Chilvers (2002), for example, while seeking the views of early childhood practitioners in England on baseline assessment, observed the practitioners' hesitation to identify their activities as types of baseline assessment. A study revealed that most practitioners do some kind of baseline evaluation by generating profiles and interacting with parents or former instructors.

Furthermore, there are obstacles that may impede the adoption of collaborative and participatory assessment, such as appropriate professional training, a necessary paradigm changes in measuring and testing, and a reframe of expectations of families and the community (National Research Council, 2001). The requirement for competent and educated educators to conduct successful assessment in the early years is echoed in both research studies and literature (Basford & Bath, 2014; Bennett, 2011; Buldu, 2010; Payler, 2009). For Basford and Bath (2014), knowledge is essential for navigating through the field's conflicts and for deciding which of the different guiding methods and their consequences will be most effective in particular situations (Payler, 2009).

Aspects such as teacher structure, adult-child ratio, and group size were found to be associated with quality of early years' service provision, with the co-teacher structure, lower ratio, and smaller group size pointing to greater positive teacher behaviours and higher child care quality (Shim, Hestenes, & Cassidy, 2004). In the same research, the co-teacher structure is thought to be more collaborative and fosters a more constructive atmosphere for learning, creating a positive environment for educators.

Aside from that, additional structural elements such as equipment, material, and financial support, particularly from early childhood setting leadership, are seen to be critical to successfully implementing the practice of documenting (Buldu, 2010). However, despite its apparent effectiveness, the need for time and effort spent on the various elements of children's assessment has been pointed up as a possible barrier to its increasing popularity in kindergarten classes (Buldu, 2010; Nah, 2014). Assessments based on processes were regarded as labor-intensive, since they required a lot of observation and documentation (Chan & Wong, 2010). Timing was also a significant factor in the shift from traditional individualistic documentation to social documentation (Fleer & Richardson, 2004). While there was initial discomfort in using a sociocultural approach to documentation and uncertainty about what to record in the diary entries, Fleer and Richardson found that, over time, the value of such an approach was acknowledged and that participants began to consider socio-cultural context in their assessment process.

2.17 Empirical Findings Underpinning Diagnostic Assessment Practices in ECE

Needs assessments have transpired in numerous sets including community establishments, military, businesses (Torma, 1998; Rahtz & Sirgy, 2000), governmental Department/agencies (Noll & O'Dell, 1997; Holton, Bates, & Naquin, 2000) and health care settings(Thornton, 1995; Barry et al., 2000) as well as educational establishments such as ECEs, colleges and Universities (McCaslin & Lave, 1976; Stabb et al., 1995). In the area of EC education, needs assessment process appears in several contexts. The past decade has seen an increase in Empirical research documenting the significance of children learning. Spurred by (Black & Wiliam 1998b) review documenting assessment as a dominant classroom intervention, predominantly for low-achieving learners in the classroom, and

supported by researchers, educators, teachers, education practitioners and stakeholders from diverse theoretical perspectives (Shepard 2005; James et al., 2007; Herman, Osmundson & Silver, 2010).

Furthermore, results from empirical studies has aided policy-makers across the globe to consider assessment as a major approach to education and learning reform (OECD, 2005; CCSSO, 2008). Yet, at the same time, recent studies revealed challenges in implementing quality assessment practice (Heritage et al., 2009; Heritage, Jones, & White 2010; Herman et al., 2010) show non-robust results with regard to effects on student learning (Herman et al., 2006; Furtak et al., 2008; Wylie & Ciafalo, 2010) and raise questions about the research base underlying formative assessment (Bennett, 2011). In a recent quantitative meta-analysis, Kingston and Nash (2011) posit statistically, the significant impact of assessment, but the effect size was substantively lower than the observation from Black and Wiliam (1998) assessment review. Researchers, in fact, suggests that teachers who analyze student learning process and their needs, should consider potential obstacles or misconceptions limiting this learning and reflect on the effectiveness of prior and subsequent next steps, may well deepen their content and pedagogical knowledge, particularly if such activities occur in the context of professional learning environment (Little 2003; Stoll et al., 2006).

Some Empirical studies of assessment also speculated and establish a unswerving and a direct association between teachers' assessment knowledge and practices on learners learning process (Hill, Rowan & Ball, 2005). This give a clear picture that classroom prospects to learn and the quality of teachers' instructional and assessment practices is a key dominant variable between teacher knowledge and learning process and needs of pupil. That is, teachers' assessment knowledge and practices in the classroom is an

quality that impacts how and how well teaching, learning and assessment are executed in the classroom practice, and it is the quality of these practices that directly affects learners need and their learning process (Fennema & Franke 1992; Wilkins, 2008). Another study by Herman et al. (2015) posited that the influence of teachers' knowledge is the quality with which teachers enact assessment through the formulation of learning objectives, eliciting and inferring evidence of learning and providing targeted and specific feedback for learners. The outcome from these empirical studies indicates that the role of assessment in early childhood education cannot be under-estimated.

Assessment has extended history in the educational literature Scriven, (1967) before the recent rise to prominence of assessment for learning and diagnosing learners needs. Many empirical literatures have been carried out to affirm the stand of assessment in the educational and academic arena (Mcdowell, Sambell, & Davison, 1989). Yorke (2003) claims that there is a need for further theoretical development of the concept of assessment which 'needs to not only to take account of disciplinary epistemology, theories of intellectual and moral growth, learners phases of intellectual growth, but also the psychology of giving and receiving feedback to learners needs and should also be regarded as especially part of good classroom practices (Mcdowell et al., 1989), in this regard an empirical studies by Angelo and Cross, (1993) suggested that classroom assessment should be learner centered teacher-directed, mutually beneficial, formative, context-specific, ongoing and firmly rooted in good practice in education. Angelo and Cross (1993) proceeds to propose seven values of classroom assessment, which include the improvement of an active assessment study communal, clear coaching and teaching objectives, suitable and attentive feedback, department participation in the design of assessments and the development of

unpretentious and simple tools to assist teachers in the classroom. And finally, the assessment models should relate to the distribution of assessment experience both with learners and associates which can lead to mutually positive advantages that will aid and assist in the development of an improved learning process and need identification assessment. This assertion was further buttress by Black & Wiliam, (1998) and many other authors (Carol & Andrea, 2012; Ilona, 2014) who affirm that teachers and educators should clearly regard learners needs feedback as central point to the concept of assessment or assessment for learning and identifying learners needs.

Accordingly, Nicol and Macfarlane-Dick, (2006) offer an unconventional set of circumstances, in the form of a model of assessment and feedback that has learner self-regulation at its core. Self-discipline/regulation is construed as the degree to which learners can monitor and assess areas/aspects of their own learning behaviours and needs, and then take action on this information to advance their learning process which may also fulfill their academic needs. This ideal makes clearly, the development of learners' Self-discipline/regulation from the preliminary assessment task and review of present knowledge, to individual learners' interpretation and construction of learning tasks, to the generation of both internal and external objectives (Nicol & Macfarlane-Dick, 2006). Nicol and Macfarlane-Dick, (2006) submitted that the outcomes from assessment which are then used to formed internal feedback enables the learner to re-evaluate his purpose, goals, needs , benchmarks and standards, and this can be used to compare the current phase of their own learning/understanding to the external standards/goals/outcomes which they wish to achieve. Carless et al.,(2006; 2007) presents the diagnostic assessment which has a wider emphasis and is mainly about identifying the needs and developing the learning

components of assessment, rather than the measurement aspects, in addition to formative assessment and feedback.

Earl, (2003) regards assessment for learning and needs as more or less synonymous with formative assessment and sees the teachers/educator as 'the dominant characters' as they assess learners needs and performance, provide response and organize suitable learning activities grounded on their knowledge of the learners. Earl's clarification of assessment as learning is that, in disparity, it stresses the learners' role and in specific involves learners in self-assessment and as active contributors in directing their own learning. Assessment, either diagnostic, formative or summative for learning is viewed as a set of processes which provide learners with information about their progress and the outcomes required (Ilona, 2014). Assessment as Learning is viewed as learners being able to manage and take responsibility for their own learning and progress by means of reflection and review. As in the case of Earl, this view emphasizes the centrality of the learner (Ilona, 2014) These views of assessment as learning relates closely to ideas about authentic assessment in the classroom (Brown, Collins, &Duguid 1989) and to an aspect of assessment validity, that an assessment should be based on the needs, performance of the knowledge, skills and qualities that are genuinely valued and not a reduced version of them.

2.18 Summary of Review

AUTHOR	PURPOSE	FINDING	STATISTICAL METHOD
(Chawla-Duggan, Kafui, and Vrinda 2010)	To estimate the Quality of Early Childhood Care and Education in Ghana and Maharashtra	The finding from their analysis of country-level case study material on ECCE in Ghana and Maharashtra shows that in both locations maintaining the link between education and ECCE is proving problematic, although for different reasons but holds potential for the development of quality education provision through the tackling of wider inclusion issues.	Qualitative analysis
(Abdulai, 2014)	To provides an overview of challenges confronting early childhood education in the Effutu municipality of the central region of Ghana.	Findings revealed that challenges associated with early childhood education in the Effutu municipality include: public prejudice about the relevance of early childhood educational programs to the child's education and development, lack of parental involvement and commitment to early childhood education, lack of teaching staff and infrastructure, and institutional barriers.	Qualitative analysis
(Deluca, Hughes, and Hughes 2014)	The purpose of this qualitative study was to examine teachers' approaches to Early Child assessment within five different school contexts	Assessment themes was found to be the fundamental commitment of early-primary educators to whole-child teaching and assessment.	Ethnographic observations / Qualitative analysis
(Keary et al. 2020)	To illustrates how ECEC assessment approaches risk labelling young children in 'deficit' terms.	Findings showed that the children were positioned as vulnerable with the introduction of the new assessment tool, leading to a diagnosis of 'at risk' for many children and a subsequent referral to education consultants, and health professionals.	Qualitative analysis
(Martínez, José,	To investigate teacher	Results indicated that ECE teacher ratings	Longitudinal Survey

Stecher, and Borko 2009)	Assessment of learners in ECE achievement	correlate strongly with standardized test scores; however, the relation varies considerably across teachers, and this variation is linked to certain classroom assessment practices. Again, the evidence proposed that teachers evaluate learners performance not in absolute terms but relative to other learners in the school and that they may adjust their grading for some learners	/ Quantitative analysis
(Pyle and DeLuca 2013)	The purpose of this study was to provide an in-depth examination of three teachers' approaches to assessment within the current context of Early child Education in order to elucidate potential approaches to bridging developmental and academic demands.	Three profiles were constructed that link focal teachers' curricular stances with their approach to assessment.	Qualitative analysis
(Klug et al. 2013)	To give a new perspective in developing and testing a three-dimensional model that describes the process of diagnosing learning behavior.	The postulated model provides a good fit and following its steps leads to more accurate diagnoses	Qualitative analysis and Quantitative analysis – Descriptive, CFA, regression
(Mellati 2018)	The study investigated teachers' assessment literacy and its impact on their current assessment practices and learners' writing outcomes.	The results of the study indicated that teachers' assessment literacy has a statistically significant impact on learners' writing achievements and teachers' assessment awareness leads teaching environments into effective and motivated assessment design. These	Qualitative analysis and Quantitative analysis – Descriptive, ANCOVA
(Benzehaf 2017)	To investigate assessment practices, and identifying the	The findings point to use of a varied number of assessment strategies ranging from homework	Descriptive

	barriers that prevent thoughtful applications of formative assessment in classrooms	assignments to in-class written tests but mainly for summative purposes.	
(Zhang and Burry-stock 2003)	To investigate teachers' assessment practices across all teaching levels and content areas, as well as teachers' self-perceived assessment skills as a function of teaching experience and measurement training.	The finding showed that grade level increases, teachers rely more on objective tests in classroom assessment and show an increased concern for assessment quality. Again, across content areas, teachers' involvement in assessment activities reflects the nature and importance of the subjects they teach. Regardless of teaching experience, teachers with measurement training report a higher level of self-perceived assessment skills in using performance measures; in standardized testing, test revision, and instructional improvement; as well as in communicating assessment results than those without measurement training.	MANOVA
(Bosson-Amedenu et al. 2020)	Aimed at determining the predictive power with which use of Scaffolding, Differentiated techniques and Inclusion approaches predict diagnostic assessment.	Scaffolding, Differentiated approaches, and Inclusion pedagogical approaches were statistically significant and positively related to diagnostic assessment. Scaffolding, Differentiated approaches and Inclusion approaches were found to have predictive power of 91%, 87% and 82% respectively.	survey approach, Descriptive, Correlation, regression, KMO, ANOVA
(Zhao 2013)	Aimed at identifying the distinctive features of diagnostic testing and providing theoretical framework for the development of a diagnostic speaking test through a comprehensive literature review.	1. The finding shows that assessment for learning and formative assessment can provide both theoretical and practical guidance for the development of diagnostic tests. 2. That feedback provided by diagnostic tests can be used to improve language teaching and learning. And it is argued that	Qualitative analysis

		diagnostic testing is basically criterion-referenced because of its close relationship with classroom teaching and learning. Diagnostic	
(Zvia and Reut 2008)	To survey the present situation in Israel in to provide the best practical and research-based knowledge to help formulate effective policy for early childhood education	It was observed that standardized tools should be developed for diagnosing, assessing, and evaluating children's level of functioning	Qualitative analysis
(Amoako, Asamoah, and Bortey 2019)	The purpose of the study was to investigate teachers' knowledge of formative assessment	It was revealed that majority of teachers had low knowledge in formative assessment practices.	Quantitative Analysis-Correlation, SD, Mean
(Sofo, Asola, and Ocansey 2019)	The study was to assess the enacted kindergarten (KG) curriculum in Ghana.	Results showed that most teachers focused on the LN and ES subscales; while most neglected content areas being the PS and PD subscales.	Quantitative analysis-Descriptive, correlation, t-test
(Lemaire et al. 2013)	The purpose of the study was to determine the perceptions of the stakeholders in early childhood Education and their perceptions affect the performance of their roles in the implementation of early childhood education programmes.	It was revealed that Stakeholder in the Western Region of Ghana have low perception of early childhood education and this adversely affects the performance of their roles to ensure effective implementation of early childhood programmes and policies in the region.	Quantitative Analysis-Correlation, SD, Mean

(Abdulai 2017)	This study looked at activities at early childhood education centers in Ghana in the areas of; nature and use of curriculum, environmental conditions, pedagogical practices, and the nature and use of assessment.	The finding shows that participants were fairly satisfied with teaching and learning conditions at the different early childhood centers they visited, and that the curriculum used at the centers were relevant, meaningful, and based on kindergarteners prior experiences.	Quantitative analysis
(Saeed, Hafsa, and Latif 2018)	To analyze the perceptions of teachers about using classroom assessment techniques at elementary and secondary schools in district Lahore.	The results revealed that most of the public and private school teachers use summative assessment. They believe that formative and summative assessment can play more pivotal role in promoting learners' learning in the classroom.	Quantitative analysis

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter presents the methodology that was adopted in carrying out the study. This comprises the research paradigm, the research design, the population, sample size, sampling technique, the research instruments, data collection procedure, the reliability and validity of the quantitative instrument, trustworthiness of the qualitative data, and data analysis plan. It also discusses the ethical issues that were followed in conducting the study.

3.1 Research Paradigm

Research paradigm is the philosophical basis for undertaking a study (Cohen, Manion & Morrison, 2017). In essence, the study was situated in a pragmatic paradigm. A pragmatic approach is neutral in terms of whatever school of philosophy it follows, instead focusing on "what" and "how" of the research problem (Creswell, 2003). It promotes the use of more than one approach in research and focuses on determining the truth about the research topics (Cline, 2017). This paradigm holds that reality is constantly renegotiated, debated, interpreted and therefore the best method to use is the one that solves the problem (Scotland, 2012). Pragmatic paradigm is result-oriented and concerned with finding the meaning of things (Onwiegbuzie & Johnson, 2006) or focusing on the research product (Biesta, 2010). Pragmatism also addresses how our values and ethics, our politics and epistemologies, and our world-view as researchers directly influence our actions and methodologies (Morgan, 2007). Since the researcher aims to offer a more sophisticated knowledge of the phenomena that would otherwise not have been available by adopting one method, this study fits within this pragmatic paradigm. The researcher therefore combined both quantitative

and qualitative data to examine teacher knowledge on assessment practices for diagnosing kindergarteners' cognitive needs in kindergarten centres.

3.2 Research Approach

The study adopted mixed research method. Mixed methods research approach is a current progress in the research field and can make a significant impact on the understanding of individual learner academic needs (Wium & Louw, 2018). Research in the disciplines of Early Childhood Education continues to evolve as methodological advancement occur, which impact researchers and Education and teaching alike (Wium & Louw, 2018) Johnson, Onwuegbuzie, and Turner (2007) discuss numerous definitions for mixed method Research, nevertheless for the purpose of this study the explanation (Creswell, Klassen, Plano-Clark & Smith, 2011) was considered to be the most explanatory and appropriate. Mixed-methods research is a type of research approach or procedure centered on study questions that demands real life contextual comprehension, multi-level viewpoints and cultural influences; engaging rigorous quantitative research assessment that measures the magnitude and frequency of variables and rigorous qualitative research that explores the connotation and comprehension of variables; utilizing multiple approaches (e.g. intrusion/intervention trials and exhaustive interviews); deliberate integration or combination of these methods to draw on the strengths of each and frame the study within theoretical and hypothetical situations.

Yin (2006) termed mixed method as studies where the mixing transpires from framing the research questions right through to the interpretation and presentation of the results. Not all mixed method is reported as such, as many research may include only a trifling element from one of the methods (e.g. a few open-ended questions in a

largely closed-ended questionnaire to enrich the results). The assumption in mixed method is that the amalgamation of quantitative and qualitative methodologies in offers a better understanding of research problems than either of the approaches used alone (Creswell & Plano Clark 2007). Mixed methods research gathers and explores data, incorporates the results and draws interpretations using both qualitative and quantitative methods in a single study (Creswell et al., 2011). In short, mixed research recognizes meta-paradigmatic existence in research (Wium & Louw 2018)

3.3 Quantitative Research in Mixed Method Research

Quantitative research most repeatedly work from the positivist pattern or the post positivist pattern (Graff, 2009). A study conducted from positivism is anticipated to be objective, values-free, theory/hypothesis compelled, and quantifiable. Positivists use inferential reasoning and strive to find reasons that follows, or ensue at the same period as, effects (Graff, 2009). The post positivist model or paradigm has substituted positivism (Schwandt, 1997) or trails positivism as the (present) leading beliefs for (quantitative) study in the human sciences (Teddlie & Tashakkori, 2009) Research that is in unswerving with post positivism is predisposed by researchers' values and principles that is in line with their preferred theory or conceptual framework. According to post positivist model/paradigm, facts or evidence cannot necessarily prove a philosophy or theory and define it causes (Graff, 2009). Realism is socially built, and internal and external strength/validity are equally significant.

3.4 Qualitative Research in Mixed Method Research

Qualitative research work typically from the constructivist perspective also known as paradigm, which backs the conception that there are various realities (realism) that are formed as the researcher engages with respondents. Realities are fashioned or

constructed by respondents and researchers who strives to understand respondents' perspectives. Observations and interpretation of reality are predisposed by the researchers' values/principles. Manifold and compound realities are assumed to be in existence, and the researchers understanding of these realities is built independently and socially. Therefore, Constructivists trust that ascertaining or constructing an association between causes and effects are impossible, hence, description and narration of reality is imperative and significant. Qualitative research further engages in inductive and cognitive reasoning as they work from parts of data toward a defined theory, or from a particular data to the generalized theory. The statements about reality are restricted to the period and setting of the study, accordingly, generalization is narrow to transferability of findings from one study context to another (Teddlie & Tashakkori, 2009).

3.5 Research Design

Sequential explanatory mixed method design was employed in the study. As a result, quantitative and qualitative data were collected and analyzed in order, with quantitative data being collected and analyzed first and qualitative data being collected and analyzed afterwards. The aim of the sequential explanatory mixed method design was to employ qualitative data to complement, explain, or elaborate on quantitative results (Creswell & Creswell, 2017). The first phase of this research entailed gathering and analyzing quantitative data. The second phase used qualitative methods to expand on the quantitative data's findings. The researcher was able to generalize results from a sample to a population and acquire a better grasp of the phenomenon of interest by combining the two types of data (Patten & Newhart, 2017).

3.6 Population

The population of the study is the group of individuals about whom the researcher wants to collect data and make conclusions. Teshakkori and Teddie (1998) define population as the universe of occurrences from which the sample is taken. Bryman (2001) identifies population as a group of people who all have something in common. Additionally, Burns and Grove (2003) defined population as any components that satisfy the inclusion requirements for a research project. The target population of the study comprised of all kindergarten teachers in kindergarten schools within the Kumasi metropolis. The accessible population is made up 194 trained kindergarten teachers in kindergarten centres within the Kumasi metropolis.

3.7 Sample and Sampling Technique

The sample for the study consisted of 132 kindergarten teachers selected from public schools within the Kumasi Metropolis. This sample size was determined and calculated using Krejcie and Morgan (1970) sampling table at 95% confidence level and 5% margin of error. According to Krejcie and Morgan sampling table, a population of 194 gave a sample of 132. Therefore, a sample size of 132 for this study was considered large enough to produce the desired results and allow for generalisation of the findings over the entire population.

Simple random sampling technique was used to select the 132 teachers. Through the lottery approach, ‘Yes’ and ‘No’ was written and entered into a lucky-dipped so all the teachers that picked ‘Yes’ therefore qualified as participant in the study. The teachers who picked ‘Yes’ tag are believed to offer rich information to aid the objectives of the study.

Ten (10) teachers were selected for interview through opportunity sampling technique. This means that only the ten (10) kindergarten teachers who agreed to participate in the final phase of the study were selected for the interviews from the entire 132 sample size. To ensure anonymity, each teacher was given a pseudonym.

3.8 Instrumentation

Data collecting instruments are tools and techniques used to collect information for research. In research, a well-chosen instrument is critical to the quality of the data gathered (Kuranchie, 2016). According to Frankel and Wallen (2008), data collecting is essential to every research since the outcome of each study is reliant on what the data reveals. In addition, they noted the need of carefully evaluating the kind of data collected and the scoring of the data collected. As a result, the researcher used a Likert scale questionnaire and a semi-structured interview to gather data for this study.

3.8.1 Questionnaires

The researcher collected quantitative data using a self-developed questionnaire. The questionnaire was chosen as one of the instruments for this study because it provides the researcher with measurable data that can be analysed statistically. Furthermore, the questionnaire is the most often utilised method for eliciting data from participants. Questionnaires are designed to gather information and views about a phenomenon from individuals who are well-versed in the subject. The questionnaire was designed and structured in two parts and four sections based on the research objectives. The first part of the questionnaire were questions based on the demographic attribute of the respondents. The second part covered the objectives of the study. It was subdivided into four sections (Sections A, B, C and D). Section 'A' asked questions

'kindergarten teachers' views on classroom assessment practices for diagnosing kindergarteners' cognitive needs within the Kumasi metropolis. Section 'B' asked questions on 'forms of diagnostic assessment kindergarten teachers use in diagnosing Kindergarteners' cognitive needs within the Kumasi Metropolis'. Section 'C' asked questions on 'available assessment tools kindergarten teachers use in diagnosing kindergarteners' cognitive needs with the Kumasi Metropolis'. Section 'D' asked questions on 'challenges Kindergarten teachers face in using diagnostic assessment in assessing kindergarteners' cognitive needs within the Kumasi Metropolis'. The questionnaire is closed-ended type developed on using four-point Likert scale ranging from "Strongly Disagree to Strongly Agree".

2.8.2 Semi- structured interview guide

The semi-structured interview guide had one section had four sections (Section A, B, C and D). The sections have 8 open-ended items in all. Section 'A' was used to solicit information on the general "views of teachers on classroom assessment practices for diagnosing kindergarteners' cognitive needs". The section 'B' was on "forms of diagnostic assessment kindergarten teachers use in diagnosing Kindergarteners' cognitive needs". The section "C" sought information on "available assessment tools kindergarten teachers use in diagnosing kindergarteners' cognitive needs". The section "D" collected information on "challenges kindergarten teachers face in using diagnostic assessment in assessing kindergarteners' cognitive needs".

The semi-structured interview guide was used for data collection because it allowed the researcher to enter another teachers' viewpoint, to better understand their perspectives on the topic under investigation (Patton, 2002). Similarly, it allowed a wide range of participants' understanding to be explored and also revealed important

aspects of the phenomena under study. Furthermore, interview guide (semi-structured) helped the interviewer to focus on the research objectives, yet open up new avenues for further questions (Ary, Jacobs & Sorensen 2010). Correspondingly, the research approach used for the study required for interviewed to be used.

2.8.3 Pre-testing of the Questionnaire

Pre-testing is a means of testing the validity and reliability of the instrument. A pre-test, according to Gay (1992), may be used to modify items in the instrument that seem to be confusing or may elicit negative responses from participants. As a result, before to the main research, a pre-test is required. The questionnaire was pre-tested in a number of Kumasi Metropolis kindergartens. The research enlisted the participation of forty (40) kindergarten teachers from twenty (20) different kindergarten centres. These schools were not included in the main research.

The respondents were given draft copies of the questionnaire. The respondents were told to discuss verbally and frankly with the researcher any ambiguity, incoherence or incomprehension that they would experience about any aspect of the draught questionnaire. Following the testing, the required adjustments were made. Furthermore, extra sheets of paper were added to the questionnaire for respondents to pass comments on the clarity, weaknesses, inadequacies, ambiguities and problems on all aspects of the items in the instrument. As a consequence of these comments, statements that were deemed unclear, misleading, or repetitive were either deleted or changed for clarity prior to data collection. Pre-testing ensured that the final instruments had as little ambiguity, incoherence, or incomprehension as possible. Additionally, it helped to check the time needed to respond and to test the coding system. The pre-test was analysed using the procedure in SPSS, version 21.

3.9 Validity of the Questionnaire

In order to determine the validity of the questionnaire, face validity and content validity methods were used. Face validity of the questionnaire was checked by giving the prepared instrument to the researcher's colleague learners pursuing same programme (Master of Philosophy, Early Childhood Education). The questionnaire's content validity was verified by the research supervisor, who checked at the research questions alongside each item of the instrument to ensure whether the questionnaire really measured what it was intended to measure. Comments from the colleague learners and the research supervisor on the questionnaire were used to effect the necessary corrections before the questionnaire was administered on participants in the main study.

3.10 Reliability of the Questionnaire

Reliability of the instrument was checked by using Cronbach alpha reliability coefficient. The Cronbach alpha reliability coefficient was chosen since it is a far more reliable method of determining the instrument's internal consistency (Creswell, 2013). Following the pre-testing of the questionnaire, the Cronbach alpha reliability coefficient was computed, yielding a value of 0.88. This indicated that the questionnaire was reliable. This is because according to (Creswell, 2013), if a Cronbach alpha reliability coefficient value of 0.7 is obtained, then, the instrument is reliable.

3.11 Trustworthiness of the Interview Guide

Over the course of two weeks, the researcher engaged with the subjects in order to get to know the teachers. This was accomplished by paying unannounced visits to the teachers at their respective schools. As a result, the researcher was able to establish a

friendly relationship with the teachers. The researcher was able to establish confidence with the instructors in this manner. This trust encouraged participants to open up to conversations about all of the issues covered in the research. Also, in order to address the dependability issue for the study, the processes within the study were reported in detail, thereby enabling future researchers to repeat the work, if not necessarily to gain the same results. Again, for the purpose of confirmability, the researcher made measures to guarantee that the study's results were based on the experiences and thoughts of participants rather than the researcher's traits and preferences. To this aim, the study report recognised the assumptions that underlie the choices taken and the method used.

3.12 Data Collection Procedures

A letter of introduction was acquired from the Head of the Early Childhood Education Department. The letter outlined the study's objective, the necessity for individual involvement, as well as anonymity and confidentiality of respondents' response. After establishing the necessary contact with the head teachers of the selected schools, permission was sought for the administration of the instrument.

The researcher explained the purpose of the study and procedure for responding to the questionnaire to respondents. In order to ensure clarity of how the questionnaire would be completed, the researcher administered the questionnaire to respondents during regular school time. The researcher and assistants used three weeks to distribute and collect the answered questionnaire. The respondents were given a maximum of five (5) working days to respond to the questionnaire after which they were collected.

The second phase which lasted for three days was used for interview. The interview was conducted and ten (10) teachers were interviewed. Each participant was interviewed once for 30 minutes equivalent to a period lesson delivery. Responses of the participants to the interview questions were recorded and played back to them to verify their accuracy.

3.13 Data Analysis

3.13.1 Analysis of quantitative data

There was coding to ensure that the data collected was stored and to make them possible for analysis. Statistical Package for Social Sciences (SPSS) software version 21.0 was used to analyse the quantitative data. Quantitative data were entered into the SPSS software in a coded numeric form with each representing a particular variable such as gender, age, qualification and teaching experience. Furthermore, screening was carried out to ensure that errors that come as a result of data entering were corrected before the analysis. Frequencies, percentages, mean and standard deviation were used to analyse the data. Furthermore, research questions 1, 2, 3 and 4 were analysed using simple frequency counts, percentages, means and standard deviations. Data analysis were done to answer the research questions posed for the study. Results were presented in Tables in Chapter Four. In the interpretation of the quantitative data, the researcher merged the strongly agreed and agreed responses to represent agreement of items in the questionnaire whereas the strongly disagreed and disagreed responses represented disagreement to the items in the questionnaire.

3.13.2 Analysis of qualitative data

The qualitative data were analysed in themes. The interview data were first transcribed by focusing on the key elements in the narrative that was highlighted the

aims of this research. Personal and identifying details were left out which ensured anonymity of the participants. Additionally, direct quotes, grammatical nuances, idioms and figures of speech deemed necessary were included in the transcription of the interview data. This helped to create data that was as close to the recorded voice as possible. The audio taped proceedings of the interviews were further transcribed and subjected to thematic analysis.

According to Kusi (2012), thematic analysis is an analytical strategy which requires the researcher to organise or prepare data, immerse him or himself in and transcribe the data, generate themes, code the data, and describe them. In this sense, thematic analysis helped in revealing themes related to the interview questions. Axial and open coding which is used to organise themes into a coherent manner was used to align similar ideas into their corresponding themes. This helped to cluster the emerging ideas into coherent units, and that allowed the emerging themes to stand out clearly.

3.14 Ethical Consideration

Research ethics refers to the correct rules of conduct necessary to adhere to carrying out research. Researchers have moral responsibility to protect participants from harm (Mcleod, 2015). The researcher addressed all ethical concerns which include informed consent, anonymity and confidentiality. The researcher obtained informed verbal consent from respondents before commencement of the data collection. The respondents were made aware that their participation is voluntary, and that they are free to decline or accept or decline to engage in the research.

Anonymity of participants was also highly taken into consideration in this study. Research indicates that anonymity is a vital issue in research ethics because it gives the participants the opportunity to have their identity concealed (Bulmer, 2001). In

this research, pseudonym were used to identify participants which cannot be traced to the participants (Teacher A, B, C, D, E, F, G, H, I, J). In order not to unnecessarily invade the privacy of participants, the researcher made prior visits to schools before the data collection commenced. Neither names nor any identifiable information from interviewees were taken as a way of ensuring the anonymity of participants.

On the issue of confidentiality, efforts were made to maintain confidentiality of the responses of the participants. Participants were told that their responses would be kept confidentially and that no one known to them would have access to the information provided and none of the interviewee's names would be recorded in the study.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.0 Introduction

This chapter presents the results of the analysis of the questionnaire data based on the purpose of the study. The purpose of the study is to examine teacher knowledge on assessment practices for diagnosing kindergarteners' cognitive needs in kindergarten centres with Kumasi Metropolis. The analysis and interpretation of data were carried out based on the results of the four (4) research questions formulated for the study. The analysis was based on the 100% return rate data obtained from 132 teachers for the study. The quantitative data were analysed using means, standard deviations, frequencies, and percentages. The first part of this chapter describes the background information of the respondents. The obtained data on the demographics were analysed using frequencies, and percentages. In the second part, the research findings are presented based on the research questions formulated for the study.

4.1 Background Information of Respondents

This section is concerned with the examination of significant topics pertaining to the demographic characteristics of the respondents. These include distribution of respondents by gender, age distribution, area of specialisation, rank in GES, number of years serving as a Kindergarten teacher. The demographic data have been presented in Table 4.1.

Table 4.1: Background Profile of Respondents

		Frequency	Percent
Gender	Male	15	11.4
	Female	117	88.6
Total		**132**	**100**
Age	20 years and below	1	0.8
	21 - 30 years	110	83.3
	31 - 40 years	16	12.1
	41 - 50 years	4	3.0
	51 - 60 years	1	0.8
Total		**132**	**100.0**
Area of Specialization	Early Childhood Education	12	9.1
	Basic education	113	85.6
	Special education	1	0.8
	Other	6	4.5
	Certificate	2	1.5
Total		**132**	**100.0**
Qualification			
	Diploma	106	80.3
	First degree	10	7.6
	PGDE	3	2.3
	Master's degree	1	0.9
	Other	8	6.1
Total		**132**	**100.0**
Rank	Superintendent I	5	3.8
	Superintendent II	103	78.0
	Senior Superintendent II	5	3.8
	Senior Superintendent I	3	2.3
	Principal Superintendent	14	10.6
	Assistant Director II	1	0.8
	Assistant Director I	1	0.8
Total		**132**	**100.0**
Years at Present School	0 – 5 years	105	79.5
	6 – 10 years	18	13.6
	11 – 15 years	7	5.3
	16 – 20 years	1	0.8
	21 years and above	1	0.8
Total		**132**	**100.0**

Source: Field Survey, 2022

Table 4.1 shows the percentage of responses by gender, age, area of specialisation, GES rank, and number of years at current school. In the gender category, the results showed that male teachers made up 11.4% of the respondents, which meant that female teachers made up 88.6% of the respondents. This implies that females made up the overwhelming majority of the population. By extrapolating these statistics, it may

be concluded that the survey's conclusions were impacted by the perspectives of more female than male kindergarten teachers. Because no comparisons were done between male and female instructors, the result had no bearing on the research because the questionnaire was not gender specific.

In terms of age, the findings indicated that 0.8 % were under the age of 20; the majority of the respondents (83.3 %) were between the ages of 21 and 30. 12.1% of them were between 31 to 40 years; 3.0% were within the ages of 41 to 50 years, and a relative number of respondents (0.8%) were within the age group of 51 to 60 years. By implication, the findings indicate that the majority of teachers were members of the active working group. Although, since no comparison was done on the age distribution of the respondents, the substantial number of teachers between the ages of 21 and 30 did not alter the findings.

Also, the result showed that.9.1% respondents were specialized in early childhood education. 0.8% were specialized in special education. 4.5% of the respondents were specialized in basic education. It could further be observed that 1.5% of the respondents possess a certificate in education related programme; 80.3% of them had a diploma; 7.6% of them had a first degree; 2.3% had post graduate diploma in education; 0.9% of them had master of education degree; and finally, the rest 6.1% of them had master of philosophy degree. Furthermore, in relation to the rank in GES, the result showed that 3.8 of the respondents are ranked superintendent I; majority of the respondents (78.0%) of the respondents belonged to the superintendent II rank; 3.8% of them were Senior superintendent II; 2.3% of them were senior superintendent I; 10.6% of them were principal superintendent; 0.8% of them belonged to assistant director I and finally, 0.8% of them were assistant director I.

In addition, result based on the number of years spent at present school showed that most respondents (79.5%) served between 0 to 5 years at the present school; 13.6% of them served as kindergarten teachers for about 6 to 10 years at the present school; 5.3% of them served between 11 to 15 years at the present school; 0.8% of them served between 16 to 20 years and the present school and finally, the rest 0.8% of them served as kindergarten teachers for about 21 years and above at the present school. The results imply that most of the teachers had been in the service for a quite number of years and could provide the needed information for the study. Nevertheless, the large size of the teachers had taught for 1-5 years but did not affect the results there was no comparison on years in service.

4.2 Research Question 1

What are the views of kindergarten teachers regarding classroom assessment practices for diagnosing kindergarteners' cognitive needs within the Kumasi metropolis?

This section presents data on the views of kindergarten teachers concerning classroom assessment practices for diagnosing cognitive needs of kindergarteners in the Kumasi metropolis. Teachers provided responses to 13 items in the questionnaire and items in section A in the semi-structured interview guide. The data collected in answer to research question 1 have been presented in table 4.2.

Table 4.2: Teachers' views on classroom assessment practices in diagnosing kindergarteners' cognitive needs

Statement	SA (%)	A (%)	N (%)	D (%)	SD (%)	M/Std.
Diagnostic assessment is used by teachers to assess learners' current knowledge base on subject to be studied in the classroom.	75 (56.8)	47 (35.6)	6 (4.5)	2 (1.5)	2 (1.5)	3.55/0.78
Diagnostic assessment of young learners has a robust effect on their lives.	45 (34.1)	75 (56.8)	9 (6.8)	0 (0.0)	3 (2.3)	3.80/0.75
Diagnostic assessment is conducted to obtain fair idea of where learners currently stand logically.	54 (40.9)	53 (40.2)	14 (10.6)	11 (8.3)	0 (0.0)	3.86/0.91
Diagnostic assessment is conducted to obtain fair idea of where learners currently stand psychologically	73 (55.3)	42 (31.8)	15 (11.4)	2 (1.5)	0 (0.00)	3.59/0.75
Diagnostic assessment is conducted to obtain fair idea of where learners currently stand intellectually	62 (47.0)	47 (35.6)	15 (11.4)	7 (5.3)	1 (0.8)	3.77/0.90
Diagnostic assessment allows the teacher to make reasonable instructional choices.	76 (57.6)	41 (31.1)	9 (6.8)	6 (4.5)	0 (0.00)	3.58/0.81
Diagnostic assessment allows the teacher to make productive instructional choices.	38 (28.8)	78 (59.1)	8 (6.1)	8 (6.1)	0 (0.00)	3.89/0.76
Diagnostic assessment requires teachers to possess knowledge in assessment in order to understand the needs of these learners for better guidance and instruction.	58 (43.9)	57 (43.2)	13 (9.8)	2 (1.5)	2 (1.5)	3.73/0.81
The activities underlying the teacher's knowledge and practices are linked to whatever skill to be diagnosed	45 (34.1)	61 (46.2)	21 (15.9)	4 (3.0)	1 (0.8)	3.90/8.2
Diagnostic assessment offer response which improves the thinking ability of young learners.	56 (42.4)	49 (37.1)	17 (12.9)	4 (3.0)	6 (4.5)	3.90/1.04
Diagnostic assessment during instruction is ultimately needed to facilitate teachers select suitable instruction, coaching and teaching tactics.	50 (37.9)	55 (41.7)	25 (18.9)	0 (0.00)	2 (1.5)	3.86/0.83
Diagnostic assessment is best used at the preliminary stage to get a preview into the learners learning stages.	72 (54.5)	40 (30.3)	15 (11.4)	4 (3.0)	1 (0.8)	3.65/0.85
Diagnostic assessment proves very informative where diverse learners in the lesson have dissimilar levels of academic upbringings.	84 (63.6)	30 (22.7)	13 (9.8)	3 (2.3)	2 (1.5)	3.55/0.87

Source: Field Survey, 2022

Table 4.2 reveal that 122 respondents agreed to the statement that "diagnostic assessment is used by teachers to assess learners' current knowledge base on subject to be studied in the classroom," whiles 4 respondents disagreed with the statement. However, 6 of the respondents remained neutral in their responses to the statement. The statement recorded a mean value of 3.55 (Std= 0.78). Also, the result reveals that 120 of the respondents agreed to the statement "Diagnostic assessment of young learners has a robust effect on their lives". However, 9 respondents were neutral to the statement and 3 of them disagreed with the statement. The statement recorded a mean value of 3.80 (Std= 0.75). This could imply that teachers have positive view and understand the purpose of diagnosing learners' cognitive needs. It can further be deduced that the teachers believe adopting appropriate strategies in assessing learners' cognitive needs have positive effect on their learning.

Moreover, the analysis reveals that 107 of the respondents agreed to the statement that "Diagnostic assessment is conducted to obtain fair idea of where learners currently stand logically", however, 14 of them were neutral and 2 of them which were neutral to this statement with 11 disagreeing with the statement. The statement recorded a mean value of 3.86 (Std= 0.91). Furthermore, the analysis shows that 115 of the respondents agreed to the statement "Diagnostic assessment is conducted to obtain fair idea of where learners currently stand psychologically" whereas, 15 respondents were neutral and 2 of them disagreed to the statement. The statement recorded a mean value of 3.59 (Std= 0.75). the results also indicates that 109 of the respondents agreed that "diagnostic assessment is conducted to obtain fair idea of where learners currently stand intellectually", whereas 15 of them were neutral in their responses to this statement. However, 8 of them disagreed to the statement. The statement recorded a mean value of 3.77 (Std= 0.90). In addition, the analysis revealed that 117 of the

respondents rated the statement "Diagnostic assessment allows the teacher to make reasonable instructional choices" agreed whiles 6 of them rated it as disagreed, however, the result shows that 9 of the them were neutral in their agreement to this statement. The statement recorded a mean value of 3.58 (Std= 0.81). The inference is that the teachers believe that, it is not for any other reason diagnostic assessment is conducted but serve as a reference point for making an informed instructional decision about a leaner or group of learners.

Furthermore, the result reveals that 116 of the respondents agreed to the statement "Diagnostic assessment allows the teacher to make productive instructional choices" whiles 8 of them disagreed to this statement. However, it could be seen that 8 of the respondents were neutral in rating this statement. The statement recorded a mean value of 3.89 (Std= 0.76). Furthermore, it could be seen in Table 4.2 that 115 of the respondents agreed that "Diagnostic assessment requires teachers to possess knowledge in assessment in order to understand the needs of these learners for better guidance and instruction", however, 4 of them disagreed to the statement whereas 13 were neutral in their responses to the statement. The statement recorded a mean value of 3.73 (Std= 0.81). Besides, the analysis shows that 106 respondents agreed to the statement that "the activities underlying the teacher's knowledge and practices are linked to whatever skill to be diagnosed", whereas 5 of the respondents disagreed to this statement, whiles 21 were neutral in their response. The statement recorded a mean value of 3.90 (Std= 0.82). This could suggest that the understanding teachers have in about children needs and diagnostic assessment plays an in important role in their assessment drive.

Again, the analysis reveals that 105 respondents agreed to the statement "diagnostic assessment offer response which improves the thinking ability of young learners", however, 10 of the respondents disagreed to this statement and 17 of them remained neutral in their responses. The statement recorded a mean value of 3.90 (Std= 1.04). It could further be observed from Table 4.2 that 105 respondents agreed to the statement "diagnostic assessment during instruction is ultimately needed to facilitate teachers select suitable instruction, coaching and teaching tactics", however, 2 of them disagreed to the statement with 25 of them remaining neutral in their responses. The statement recorded a mean value of 3.86 (Std= 0.83). Again, the results show that 112 respondents agreed with the statement "Diagnostic assessment is best used at the preliminary stage to get a preview into the learners learning stages". Fifteen of them were neutral in their responses whiles 5 of the respondents indicated they disagreed with the statement. The statement recorded a mean value of 3.65 (Std= 0.85). Finally, the result reveals that 114 of the respondents agreed to the statement "Diagnostic assessment proves very informative where diverse learners in the lesson have dissimilar levels of academic upbringings", whiles 5 of the respondents disagreed with the statement and 13 of them were neutral. The statement recorded a mean value of 3.55 (Std= 0.87). The results connote most teachers in Kumasi metropolis understand the need for diagnosing learners' cognitive needs. The positive views they held could have a bearing on their practice when it comes to diagnosing learners' cognitive needs.

The researcher was informed by the responses given in the questionnaire to engage respondents in interview sessions using a semi-structured interview guide. This was to confirm the responses given and to ask further questions for proper understanding. Respondents were asked of their views on classroom assessment practices in

diagnosing kindergarteners' cognitive needs. Their responses are presented as follows.

Commenting on what constitutes the assessment practices in assessing kindergarteners' cognitive needs, participants had these to share;

> *My understanding of classroom assessment practices used for diagnosing of the cognitive needs of kindergarteners is the various means through which the learners are monitored to ascertain their readiness or their progress in response to activities they are taken through or how they cope with in and out of classroom activities* (Teacher A).

> *Assessment practices to my understanding are activities, exercises and test given to children to identify their capabilities, talents, strengths, weaknesses and to know if they have special needs so that the teacher can plan his or lesson to suit their developmental needs and assign the right task* (Teacher D)

> *In my estimation, these are all the practices employed by early childhood teachers to help identify the cognitive demands of learners. They are employed in determining an individual's holistic development even before they join the school or progress to a new class. However, in our case, much attention is paid to the cognitive needs of children. This could be in the form of conversation with the child, observing the child, or providing the child with some activities to complete* (Teacher F).

The researcher went ahead to ask the respondents whether or not they think diagnostic assessment is used by teachers to assess learners' current knowledge on a subject. The respondents provided the following answers;

> *One of the great relevance of diagnostic assessment practices is to identify the current level of understanding and knowledge of a learner most especially on each of the content areas for the level. Having a fair knowledge on what learners already know and can do helps the teacher to provide the necessary assistance* (Teacher B).

> *The learners' current knowledge is assessed through means of observation and the use of checklists to see if they meet a set criterion* (Teacher E).

The interviewees were asked of their opinions on how diagnostic assessment is responsible for making teachers make reasonable instructional choices.

The interviewees commented that;

> *It is very responsible for teachers to make reasonable instructional choices because these will help to improve the learning abilities of learners and set for them a good background or foundation for their future learning and general progress; academically and other aspects in their lives* (Teacher E)

> *When teachers become aware of the child's current knowledge and understanding of activities in the school, especially what is learnt in the classroom, the teacher becomes opportune to put measures in place to assist learners. This includes, selecting developmentally appropriate instructional practices to appeal to the needs of individual children* (Teacher J).

According to the results, most kindergarten teachers have a fair knowledge of what diagnostic assessment is and what it entails for one to seek to diagnose the needs of children especially the cognitive needs of kindergarteners. Teachers are aware that diagnostic assessment practices are employed to determine an individual's holistic development even before they join the school or progress to a new class and that their knowledge in what diagnostic assessment is benefits children. In line with this is the assertion of Nuffield Foundation (2003), which claims that a good diagnostic assessment of young learners has a significant impact on their lives and careers. Azimi and Rahmani (2013) further state that the decisions made within and by early childhood institutions in regards to young learners' learning processes have a substantial impact on their academic path. Teachers must be educated in assessing and understanding the needs of these young learners in order for them to successfully complete their academic goals (Julie & Kay 2018).

Also, teachers were aware of the numerous benefits of diagnostic assessment on the academic life of kindergarteners. These include, having a fair idea of where learners stand currently intellectually. The study reveals that in as much as diagnostic assessment is beneficial to learners, it is equally beneficial to teachers as well since it helps them to make appropriate instructional choices. A report from the OECD/CERI (2020) validates this finding. It states that in order to gain a good picture of where learners currently stand logically, psychologically, philosophically, and intellectually, teachers undertake diagnostic evaluation (OECD/CERI 2020). Marcy and Betsy (2004), further indicate that it enables teachers to make informed decisions about how to teach new lesson content and how to teach it. And that the ultimate goal is to discover learners' requirements by examining their weaknesses, strengths, skills, and capacities (Marcy & Betsy, 2004).

4.3 Research Question 2

Which forms of diagnostic assessment do kindergarten teachers use in diagnosing Kindergarteners' cognitive needs within the Kumasi Metropolis?

This section presents data on the forms of diagnostic assessment kindergarten teachers employ when diagnosing the cognitive needs of learners. Teachers provided responses to 13 items in the questionnaire and items in section B of the semi-structured interview guide.

Table 4.3: Forms of diagnostic assessment used by teachers in diagnosing cognitive needs of kindergarteners

Statement	SA (%)	A (%)	N (%)	D (%)	SD (%)	M/Std.
I use diagnostic evaluation in diagnosing learners' cognitive needs	3 (2.3)	1 (0.8)	6 (4.5)	79 (59.8)	43 (32.6)	1.52/0.75
The priority for which diagnostic evaluation is performed is to get into the root cause of problems and find accurate remedies	2 (1.5)	2 (1.5)	35 (26.5)	29 (22.0)	64 (48.5)	1.52/0.82
I use formative assessment in diagnosing learners' cognitive needs.	69 (52.3)	35 (26.5)	19 (14.4)	7 (5.3)	2 (1.5)	3.77/0.98
Formative assessment has been referenced as a process for making instructional adjustments based on feedback about learner performance.	49 (37.1)	54 (40.9)	26 (19.7)	1 (0.8)	2 (1.5)	3.89/0.85
Formative assessment help teachers to obtain the best evidence of learners' reasoning	75 (56.8)	43 (32.6)	9 (6.8)	5 (3.8)	0 (0.0)	3.58/0.78
I use summative assessment in diagnosing learners' cognitive needs	49 (37.1)	61 (46.2)	14 (10.6)	6 (4.5)	2 (1.5)	3.87/0.88
Summative assessment serves a means to gauge learners learning relative to content standards	78 (59.1)	35 (26.5)	13 (9.8)	5 (3.8)	1 (0.8)	3.61/0.87

Source: Field Survey, 2022

Table 4.3 revealed that 122 respondents disagreed to the statement that "I use diagnostic evaluation in diagnosing learners' cognitive needs" whiles 4 respondents agreed with the statement. However, 6 of the respondents remained neutral in their responses to the statement. The statement recorded a mean value of 1.52 (Std= 0.75). Also, the result reveals that 93 of the respondents disagreed to the statement "The priority for which diagnostic evaluation is performed is to get into the root cause of problems and find accurate remedies." However, 35 respondents were neutral to the statement and 4 of them agreed with the statement. The statement recorded a mean value of 1.52 (Std= 0.82).

Moreover, the result reveals that 104 of the respondents agreed to the statement "I use formative assessment in diagnosing learners' cognitive needs," whiles 9 of them disagreed to this statement. However, it could be seen that 19 of the respondents were neutral in rating this statement. The statement recorded a mean value of 3.77 (Std= 0.98). Furthermore, it could be seen in Table 4.3 that 103 of the respondents agreed that "Formative assessment has been referenced as a process for making instructional adjustments based on feedback about learner performance", however, 3 of them disagreed to the statement whereas 26 were neutral in their responses to the statement. The statement recorded a mean value of 3.89 (Std= 0.85).

Again, the results show that 118 respondents agreed with the statement "formative assessment help teachers to obtain the best evidence of learners' reasoning." Nine of them were neutral in their responses whiles 5 of the respondents indicated they disagreed with the statement. The statement recorded a mean value of 3.58 (Std= 0.78). The inference drawn is that, kindergarten teachers in the Kumasi metropolis understand what formative assessment is and they use it for diagnostic assessment practices.

Furthermore, it is evident in Table 4.3 that 110 of the respondents agreed that "I use summative assessment in diagnosing learners' cognitive needs," however, 8 of them disagreed to the statement whereas 14 were neutral in their responses to the statement. The statement recorded a mean value of 3.87 (Std= 0.88). Finally, the analysis shows that 113 respondents agreed to the statement that "summative assessment serves a means to gauge learners learning relative to content standards", whereas 6 of the respondents disagreed to this statement, whiles 13 were neutral in their response. The statement recorded a mean value of 3.61 (Std= 0.87). The inference is that majority of

the teachers do not have not much knowledge when it comes to the diagnostic evaluation as a form of diagnostic assessment, hence, they do not use it. However, teachers indicated that they are familiar with formative and summative assessment hence they use them for diagnostic purposes.

Right after analysing the quantitative data on the forms of diagnostic assessment for diagnosing kindergarteners' cognitive needs. The researcher sought to find out further the views of teachers and to give detail information on the same theme. Responses included;

> *I believe forms of diagnostic assessments include diagnostic evaluation, formative assessment, summative assessment but I use only the formative and summative assessment* (Teacher G).

Similarly, a respondent identified the following as the forms of diagnostic assessment;

> *Diagnostic assessment has many forms in which a teacher can adopt and use. The most important thing is to know how to use it among children. They are, summative assessment, diagnostic evaluation, and formative assessment. But I use the summative and formative forms of diagnostic assessment* (Teacher H).

The researcher was interested in finding out why respondents are not using diagnostic evaluation in assessing kindergarteners' cognitive needs. Responses gathered include;

> *I do not have the prerequisite knowledge on what diagnostic evaluation is and how to use it to perform diagnostic assessment practices. (Teacher C).*

> *There is not enough time to teach for children to understand not to talk of using all these forms of diagnostic assessment. Besides, I don't know a lot as far as diagnostic evaluation is concerned so I end up using only the formative and summative assessment* (Teacher F).

Commenting on how formative assessment as a form of diagnostic assessment is used in assessing cognitive needs of children, participants gave these remarks;

> *Through the use of open-ended questions during activities such a reading comprehension lesson, I am opportune to diagnose learners' cognitive needs* (Teacher B).

> *Formative assessment can be used to assess the cognitive needs of kindergarteners by asking them practical questions to see their response, giving them a task related to the topic taught to know if learners can apply the understanding gained from the topic* (Teacher H).

> *Through pre-assessment test learners' strength and weaknesses are put to display which helps the teacher to know what the learner knows and don't know in order to plan lessons, learning objectives and identify areas that needs more or less time* (Teacher I).

Summative assessment was identified by respondents as one of the forms of diagnostic assessment. In explaining how it is used by a teacher responded as;

> *Summative assessment is used to assess the cognitive development of the learners normally through termly exams or end of year exams. The teacher sets questions or activities to cover the lessons and activities learned over a period and gives them to children to evaluate their progress. The report is collated with the help of a performance history record* (Teacher C).

It is deduced from the study that kindergarten teachers adopt formative assessment as a form of diagnostic assessment in diagnosing the cognitive needs of learners at the kindergarten level. The study revealed that during lessons, they get the opportunity to pause and ask reflective questions to ascertain the progress of the teaching and learning process, whether or not it is positive. Formative assessment, as defined by Heritage, Kim, Vendlinski, and Herman (2009), is a systematic process for continuously gathering evidence and providing feedback about learning while instruction is in progress, with Popham (2008) adding a critical clarification that formative assessment is always a planned process and does not happen by accident. These definitions support the findings of the study by identifying that formative assessment practices do not happen out of blue and are always purposeful. Moreover, a number of researchers have posited that when teachers want to evaluate their learners' development, change their instruction to maximize their achievement, provide effective and timely feedback, identify learners who need remediation, and

forecast their performance on summative examinations, they use formative assessment (Browne 2016; Andersson and Palm 2018; Black and Wiliam 2018; Akyina and Oduro-Okyireh 2019). Also, Garrison and Ehringhaus (2007) supports by stating that when formative assessment is used in the classroom, it offers the information needed to adjust teaching and learning while it is still taking place. In this way, formative assessment informs both teachers and learners about their understanding at a time when improvements can be made quickly. These adjustments help to ensure learners achieve targeted standards-based learning goals within a set time frame (Garrison & Ehringhaus, 2007).

Also, it is established by the study that teachers through the usage of summative assessment practices, diagnose the cognitive needs of children. These include all assessment practices teachers take children through after a lesson, a day's work or after an academic term. This help teachers to track the progress of learners over a period of time, whether short or long. In line with the study's finding is the assertion of Perie, Marion, Gong, and Wurtzel (2007). They opine that summative assessment results are often used to assess mastery of standards or subject as part of an accountability system or to inform policy. Kwadwo-Oteng and Oduro-Okyireh (2019), add that summative assessment procedures are typically conducted in a rigorously controlled environment with multiple additional factors, such as the start and end time for the quiz or examination, and are used to assess what learners have learned at the end of a pre-determined period of instruction.

4.4 Research Question 3

What assessment tools do kindergarten teachers use in diagnosing kindergarteners' cognitive needs within the Kumasi Metropolis?

This section sought to find out the various assessment tools teachers use in diagnosing kindergartners cognitive needs within the Kumasi Metropolis. To answer the question, items 37 – 43 under section 'C' of the questionnaire and questions under section 'C' of the interview guide were used. Data in Table 4 present the results followed by interview results.

Table 4.4: Tools teachers use in diagnosing kindergartners cognitive needs

Statement	SA (%)	A (%)	N (%)	D (%)	SD (%)	M/Std.
I use observation as a tool in diagnosing learners' cognitive needs.	58 (43.9)	59 (44.7)	5 (3.8)	9 (6.8)	1 (0.8)	3.76/0.88
I use anecdotal record as a tool in diagnosing learners' cognitive needs.	2 (1.5)	0 (0.0)	19 (14.4)	64 (48.5)	47 (35.6)	1.69/0.77
I use running record as a tool in assessing learners' cognitive needs.	4 (3.0)	1 (0.8)	7 (5.3)	64 (48.5)	56 (42.4)	1.63/0.78
I use checklist as a tool in diagnosing learners' cognitive needs.	82 (62.1)	35 (26.5)	9 (6.8)	6 (4.5)	0 (0.0)	3.54/081
I use portfolios as a tool in diagnosing learners' cognitive needs.	1 (0.8)	0 (0.0)	9 (6.8)	74 (56.1)	48 (36.4)	1.52/0.66
I use conferences as a tool in diagnosing learners' cognitive needs.	15 (11.4)	5 (3.8)	2 (1.5)	69 (52.3)	41 (31.1)	1.83/1.15
I use rating scale as a tool in diagnosing learners' cognitive needs.	85 (64.4)	33 (25.0)	4 (3.0)	7 (5.3)	3 (2.3)	3.56/0.95

Source: Field Survey, 2022

Table 4.4 reveal that 117 respondents agreed to the statement that "I use observation as a tool in diagnosing learners' cognitive needs", whiles 10 respondents disagreed with the statement. However, 5 of the respondents remained neutral in their responses to the statement. The statement recorded a mean value of 3.76 (Std= 0.88). Also, the

result revealed that 111 of the respondents disagreed with the statement "I use anecdotal record as a tool in diagnosing learners' cognitive needs.". However, 19 respondents were neutral to the statement and 2 of them agreed with the statement. The statement recorded a mean value of 1.69 (Std= 0.77). In addition, the analysis revealed that 120 of the respondents rated the statement "I use running record as a tool in assessing learners' cognitive needs," as disagreed whiles 5 of them rated it as agreed, however, the result shows that 7 of the them were neutral in their agreement to this statement. The statement recorded a mean value of 1.63 (Std= 0.78).

Again, the analysis reveals that 117 respondents agreed to the statement "I use checklist as a tool in diagnosing learners' cognitive needs", however, 6 of the respondents disagreed to this statement and 9 of them remained neutral in their responses. The statement recorded a mean value of 3.54 (Std= 0.81). It could further be observed from Table 4.2 that 122 respondents disagreed to the statement "I use portfolios as a tool in diagnosing learners' cognitive needs.", however, 1 of them agreed to the statement with 9 of them remaining neutral in their responses. In addition, the analysis revealed that 110 of the respondents rated the statement "I use conferences as a tool in diagnosing learners' cognitive needs," as disagreed whiles 20 of them rated it as agreed, however, the result shows that 2 of the them were neutral in their agreement to this statement. The statement recorded a mean value of 1.83 (Std= 1.15). Finally, the analysis reveals that 118 of the respondents agreed to the statement "I use rating scale as a tool in diagnosing learners' cognitive needs.", however, 10 of the respondents disagreed to this statement and 4 of them remained neutral in their responses. The statement recorded a mean value of 3.56 (Std= 0.95). The results imply that out of the tools outlined, kindergarten teachers within Kumasi metropolis

adopt only observation, checklist, and rating scale as assessment tool in diagnosing kindergarteners' cognitive needs.

The researcher asked respondents of the assessment tools they use in diagnosing kindergarteners' cognitive needs during the interview session. Respondents identified the following;

> *Assessment tools I use to diagnose children's needs and most especially cognitive needs include, Observation, rating scale, and check list* (Teacher E).
>
> *I use the observational checklist and rating scale for diagnostic purposes* (Teacher G).

With how teachers use observation in diagnosing the cognitive needs of children, teachers had these to say;

> *Learners are watched as they engage in activities and the results is used to make informed decisions on learners* (Teacher B).
>
> *Observation involves using different tool such as checklist running records, work samples, anecdotal records to monitor the developmental progress of learners consistently. However, because of time and other factors, I will say I don't get the chance to have a fruitful observation* (Teacher D).

On how teachers use checklist, and rating scale in diagnosing learners' cognitive needs, respondents commented that;

> *I use checklists and rating scale in taking records of what learners have successfully accomplished in a given task* (Teacher F).
>
> *With checklist and rating scale, I use it alongside when observing children because they are observational tools. So, I either decide to tick or rate them* (Teacher I).

The researcher sought to find out why respondents did not use the anecdotal records, running records, portfolio, and conferences assessment tools such as. Respondents had these to say;

> *I often feel comfortable using the observation, checklist and rating scale because I have used it all this while. Same cannot be said about*

> *the anecdotal records, running records, portfolio, and conferences, I think it will waste much time if I try to use them* (Teacher B).
>
> *I am not familiar with the usage of the anecdotal records, running records, portfolio, and conferences. I think some form of training should be given to us on how to use it* (Teacher I).

The results from the study suggests that kindergarten teachers in the Kumasi metropolis employ some assessment tools when diagnosing the cognitive needs of kindergarteners at the expense of the others. They use observation, checklist, and rating scale. On the reason for which teachers in the metropolis do not use the portfolio, anecdotal record, running record, and conferences, it was established that teachers do not have much knowledge about it. Again, inadequate time for at schools were other reasons given by the respondents.

The findings indicated that, teachers in the metropolis use observation as a tool when learners are watched as they engage in activities and the results inform decisions. The assertion of Kuranchie (2016) corroborated the study finding. He defined observation as a data collection strategy that allows a teacher to observe youngsters in their natural environment. Similarly, Kusi (2012) points out that observation allows teachers to connect with learners in natural circumstances, which allows them to recognize what they already know and where they need to improve. From the study, it is realized that kindergarten teachers use checklist and rating scale as diagnostic assessment tools. They use them use them when observing children because they are observational tools. It assists teachers to establish a learners' current knowledge in a specific subject or content area. Agreeing to the study's findings, Swaffield, (2008), opines that checklists and rating scales are evaluation tools that provide precise criteria for teachers and learners to use when making judgments about competence development. Furthermore, according to Swaffield, these tools provide systematic means of

organizing information about individual learners or groups of learners by listing specific behaviors, knowledge, abilities, attitudes, and procedures for evaluation. On the other line, Airasian (2000) posit that Rating scales are similar to checklists, but they differ in that they allow the observer to rate performance on a continuum rather than as a binary. They all, however, offer standards or criteria for evaluating a performance (Nitko & Brookhart, 2007). Each standard includes several degrees of proficiency, and teachers are expected to grade learners based on how effectively they accomplish the assignment (Nitko & Brookhart, 2007).

4.5 Research Question 4

What challenges do Kindergarten teachers in Kumasi Metropolis face in assessing kindergarteners' cognitive needs within the Kumasi Metropolis?

This section presents data on the challenges teachers face when assessing kindergarteners' cognitive needs. Teachers provided responses to 3 items in the questionnaire and items in section D of the semi-structured interview guide.

Table 4.5: Responses to Challenges Teachers Face When Assessing Kindergarteners' Cognitive Needs

Statement	SA (%)	A (%)	N (%)	D (%)	SD (%)	M/Std.
Inadequate time affects assessment process of my learners	78 (59.1)	47 (35.6)	2 (1.5)	4 (3.0)	1 (0.8)	3.51/0.74
Lack of qualified personnel hinder the implementation of collaborative and participatory assessment	61 (46.2)	63 (47.7)	5 (3.8)	2 (1.5)	1 (0.8)	3.63/0.70
Inadequate equipment and materials in my school hinders the early learner's assessment process	80 (60.6)	49 (37.1)	2 (1.5)	0 (0.0)	1 (0.8)	3.43/0.60

Source: Field Survey, 2022

Table 4.5 reveal that 125 respondents agreed to the statement that "inadequate time affects assessment process of my learners" whiles 5 respondents disagreed with the statement. However, 2 of the respondents remained neutral in their responses to the statement. The statement recorded a mean value of 3.51 (Std= 0.74). The analysis reveals that 124 of the respondents agreed to the statement that "lack of qualified personnel hinder the implementation of collaborative and participatory assessment", however, 5 of them were neutral to this statement with 3 disagreeing with the statement. The statement recorded a mean value of 3.63 (Std= 0.70). The conclusion is that teachers believe they do not have enough time to assess diagnose their learners' cognitive needs. Again, they believe most personnel at the early grade level are unqualified and it affects the assessment practices.

It could further be observed from Table 4.5 that 129 respondents agreed to the statement "Inadequate equipment and materials in my school hinders the early learner's assessment process", however, 1 of them disagreed to the statement with 2 of them remaining neutral in their responses. The statement recorded a mean value of 3.43 (Std= 0.60). The inference is that the teachers believe there are inadequate assessment equipment and materials and it hinders the assessment process.

In analysing the quantitative data, participants agreed to a number of challenges they encounter when diagnosing the cognitive needs of children. The interview session was focused on probing more to get much understanding on how these challenges identified are actually seen as challenges;

On how inadequacy of time creates challenges, participants said;

> *It creates a challenge in that, activities scheduled for a kindergarten lesson might not be fully covered as lessons creates a lot of interruptions and hence mostly dictate the face of the lesson* (Teacher A)

> *Time is very important in everything we do, as teachers there should be enough instructional hours to engage learners and as well for the diagnostic assessment purposes. Once there is not enough time, it creates huge problems and undermine perhaps the quality of the assessment practice* (Teacher E)

On how the lack of qualified personnel is a challenge to diagnosing children cognitive needs, respondents had this to say;

> *Lack of qualified personnel pose a great deal of challenge as unqualified personnel lack the adequate knowledge and requisite skills to handle learners of such a stage* (Teacher F).

> *Lack of qualified personnel is a challenge because a person has to go through training in order to know how to conduct an assessment and how to go about the whole in getting the right information to be used at the end of the day* (Teacher H).

On how inadequate equipment and materials in the school is a challenge to diagnosing children cognitive needs, respondents commented that;

> *Inadequacy of materials and equipment pose a serious challenge as learners will have to compete for the limited ones available and at times wait long for their turns* (Teacher G).

> *Inadequate equipment and materials in schools is a challenge because good and accurate information* cannot be gathered for assessment (Teacher I).

Revealing other challenges to diagnosing children cognitive needs, respondents indicated the following;

> *Large class sized, less teacher motivation, misconception on the part of some teachers and parents about diagnostic assessment are some of the challenges* (Teacher C).

Kindergarten teachers within Kumasi metropolis do not find it all easy when employing diagnostic assessment practices in assessing the cognitive needs of kindergarteners within the metropolis. This is revealed by results from both the

quantitative and qualitative data. It has been found that inadequate instructional hours at the kindergarten level is a challenge to teachers in their duty of performing diagnostic assessments. The findings show that the practices and activities planned by the teacher for a diagnostic assessment either before or in between lesson time are not be fully covered as teachers have to do a lot within the shortest possible time. This undermines the quality of diagnostic assessment in kindergarten schools within the metropolis. This finding is supported by Neuman, Copple and Bredekamp (2000), who state that inadequate time is one of the challenges in assessing young children. Because children's attention spans are often short, assessments should be offered in little chunks over days or weeks and given one-on-one to each child by his or her instructor. In consequence, when quality assessments reflect excellent instruction, assessment and teaching become practically indistinguishable, complementing and informing one another. As a result, successful assessment administration necessitates time (Neuman, Copple & Bredekamp, 2000). Buldu (2010) and Nah (2014) also acknowledged the apparent effectiveness of diagnostic assessment of children's cognitive needs, but pointed out that the need for time and effort spent on the various elements of children's assessment has been cited as a potential barrier to its growing popularity in kindergarten classes.

The findings established that the lack of qualified personnel hinder the implementation of collaborative and participatory assessment because unqualified personnel lack the adequate knowledge and requisite skills to handle learners of such a stage since they have not received the prerequisite training and do not have knowledge on how children develop and learn. The National Research Council (2001), identified inappropriate professional training as an obstacle that impede assessment practices. For Basford & Bath (2014), knowledge is necessary for

navigating through the field's conflicts and determining which of the various guiding approaches and their outcomes will be most beneficial in specific scenarios (Payler, 2009). Early childhood evaluation is particularly challenging since a child's growth is rapid, inconsistent, episodic, and significantly influenced by the environment (Lidz, 2001). The most significant difference is that younger children learn in a completely different manner. Rather than abstract thinking and paper and pencil activities, they learn through practical, engaging, concrete, and hands-on methods, according to Lidz and Gindis (2003). When teachers lack professional knowledge about how children develop and learn, their approach to diagnostic evaluation is clear.

Moreover, inadequate equipment and materials, large class sizes, and insufficient financial support were identified as a challenge by the study's findings because teachers need the necessary materials and equipment to support them successfully implement diagnostic assessment. These findings are supported by Shim, Hestenes and Cassidy (2004). In their study they identified that teacher structure, adult-child ratio, and group size were all found to be linked to the quality of early childhood service provision, with the co-teacher structure, lower ratio, and smaller group size indicating more positive teacher behavior and higher child care quality. Also, Buldu (2010), mentioned that additional structural factors such as equipment, materials, and financial support, notably from early childhood setting leadership, are viewed as crucial to properly adopting the practice of documenting, therefore their absence offers problems to assessing kindergarteners' cognitive demands.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0 Overview

Entailed in this chapter is the summary of findings, key findings of the study, conclusion of the study, recommendations of the study and recommendations for further or future studies.

5.1 Summary

There cannot be a successful early childhood programme without diagnostic assessment practices. Diagnostic assessment includes all the practices employed by early childhood teachers to help identify the needs and demands of learners. They are employed in determining an individual's holistic development even before they join the school or progress to a new class. However, in this case, much attention was paid to the cognitive needs of children. The study's topic was on Teacher Knowledge on Assessment Practices for Diagnosing Kindergarteners' Cognitive Needs in Kindergarten Centres Within Kumasi Metropolis. The study narrowly looked at kindergarten teachers' views on classroom assessment practices for diagnosing kindergarteners' cognitive needs within the Kumasi metropolis, forms of diagnostic assessment kindergarten teachers use in diagnosing Kindergarteners' cognitive needs within the Kumasi Metropolis, the available assessment tools kindergarten teachers use in diagnosing kindergarteners' cognitive needs with the Kumasi Metropolis, and the challenges kindergarten teachers face in using diagnostic assessment in assessing kindergarteners' cognitive needs within the Kumasi Metropolis.

The research paradigm which was pragmatism, influenced the approach used and subsequently the research design. The mixed method study adopted the sequential explanatory mixed method. The target population was made up of all public kindergarten school teachers within the Kumasi metropolis and the accessible population included 194 trained public kindergarten school teachers. The Krejcie and Morgan (1970) table was used to determine the sample size and simple random technique was used to select 132 study participants for the quantitative aspect of the study. Opportunity sample technique was employed to select 10 kindergarten teachers for the interview sessions. A questionnaire and a semi-structured interview guide were the data collection instruments. Descriptive and Inferential statistics were used to analyse the data. Specifically, simple frequency counts and percentages and mean and standard deviation were used to analyse the quantitative data, whiles the qualitative data was analysed thematically.

It was identified by the study that most teachers had a fair knowledge of what diagnostic assessment is and the possible benefits to the learners and teachers however, teacher only adopted the observational checklist and rating scales in diagnosing learners. Teachers were again seen to be faced with a lot of challenges when diagnosing the cognitive needs of kindergarteners.

5.2 Key Findings

The main findings from the study are;

1. It was found that kindergarten teachers in the Kumasi metropolis have an appreciable knowledge of what diagnostic assessment is and how it is relevant in the teaching and learning process to both the teacher and the kindergartener. Majority of the teachers agreed that diagnostic assessment makes it possible for the teacher to realize the current knowledge state of the child in all subjects which assist teacher to reflect and make productive instructional choices which are appropriate to the level and interests of the learners.
2. It was identified that out of the three forms of diagnostic assessment outlined by the study, kindergarten teachers in the Kumasi metropolis made use of only two, namely, formative assessment and summative assessment. Most teachers identified that they do not know much about the third form of diagnostic assessment which is diagnostic evaluation and for that matter they do not make use of it. Others indicated that the time allocated for teaching at the kindergarten level is not adequate hence they will go in for the forms they are familiar with which is the formative and summative assessments.
3. The study found out that kindergarten teachers within the Kumasi metropolis only adopt observational checklist and rating scale as tools for diagnosing the cognitive needs of learners. They do not use anecdotal record, running record, portfolio, and conferences when diagnosing children's cognitive needs. This undermines the quality of diagnostic assessment of learners since the unused tools have unlimited importance to the diagnostic assessment practice.
4. It was established by the study that kindergarten teachers in the metropolis face numerous challenges when diagnosing the cognitive needs of learners at the

kindergarten level. These challenges include; inadequate time for teaching and learning, lack of qualified personnel, inadequate equipment and materials, large class size, less teacher motivation, and misconception on the part of some teachers and parents.

5.3 Conclusion

The study provides much evidence to conclude that kindergarten teachers understood diagnostic assessment among kindergarteners as a practice to identify what children know already or what they are learning so as to know how best to design instructional materials and practices to assist them. Teacher understood that children need to be diagnosed regularly to know their stands.

It can be concluded that though teachers have positive knowledge of what diagnostic assessment is and its possible importance to both children and teachers, teachers do not employ adequate tools in diagnosing the cognitive needs of children. They only adopt the observational checklist and rating scale leaving out the anecdotal record, running record, portfolio, and conferences. Making use of all these tools ensures a holistic diagnostic assessment on children. Not using them only suggest that teachers are not performing adequate diagnostic assessment in kindergarten schools in the Kumasi metropolis.

Finally, the study established that teachers do not find it all easy when diagnosing children's cognitive needs, rather they encounter challenges which demean the quality of diagnostic assessment performed. Among these challenges are inadequate time for teaching and learning, lack of qualified personnel, inadequate equipment and materials, insufficient in-service training, large class size, less teacher motivation, and misconception on the part of some teachers and parents.

5.4 Recommendations of the Study

The following recommendations are made by the study based on the findings revealed;

1. Since the study found out that kindergarten teachers in the Kumasi metropolis have an appreciable knowledge of what diagnostic assessment is and how it is relevant in the teaching and learning process to both the teacher and the kindergartener, the study recommended to the education directorate of the metropolis and the Ghana Education Service to put in efforts to motivate kindergarten teachers to hold unto their positive knowledge and understanding of assessment practices for diagnosing cognitive needs of kindergarteners and its importance to the teacher and the learner.
2. The study found out that teachers use two out of the three forms of diagnostic assessment outlined which are formative assessment and summative assessment. The study thus recommends that the Ministry of Education, Ghana Education Service and Heads of Kindergarten schools should organize in-service professional programmes and activities for kindergarten teachers to be abreast and conversant with the forms of diagnostic assessment especially the diagnostic evaluation.
3. Since the study found out that teachers only use the observational checklist and rating scale in diagnosing children's cognitive needs, it is recommended by the study that kindergarten teachers in the metropolis should endeavor to adopt and use all the possible assessment tools in diagnosing children's cognitive needs. This will facilitate an effective and quality and diagnostic assessment practices.
4. With inadequate instructional hours and insufficient learning materials as some of the key challenges, the study therefore recommends that the education directorate

for the metropolis, the Ghana Education Service and other stakeholders must provide kindergarten schools with the needed teaching and learning materials to assist teachers in their duties. Hours for interaction between teachers and learners should also be extended to help teachers get the ample time in performing diagnostic assessment practices.

5.5 Limitation of the Study

The limitation of the study was that some of the participants felt unsafe to avail themselves for the interviews since it was their first time. However, after they were assured of confidentiality and anonymity, they willingly opened up and gave every detail needed to address the research objectives. Hence, this limitation did not negatively affect the findings of the study.

5.6 Recommendation for Further Studies

The study solely focused on teachers' knowledge in diagnosing the cognitive needs of learners, hence the study recommends that, further or future studies focus on other developmental areas of children including the social, emotional, or physical needs of children.

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APPENDICES

APPENDIX A

Questionnaire for Kindergarten Teachers

UNIVERSITY OF EDUCATION, WINNEBA

FACULTY OF EDUCATIONAL STUDIES

DEPARTMENT OF EARLY CHILDHOOD EDUCATION

Dear Respondents,

I am a final year student, pursuing Master of Philosophy in Early Childhood Education at the University of Education, Winneba. researching on the topic "Teacher Knowledge About Assessment Practices for Diagnosing Kindergarteners' Cognitive Needs in Kindergarten Centres Within Kumasi Metropolis". Your candid and objective responses to the items in the questionnaire will go a long way in assisting the researcher to get the needed information. This questionnaire is strictly for an academic exercise, and you are humbly requested to provide accurate and frank information that will assist the researcher in obtaining the correct data for this exercise. Your responses will be treated in strict confidence. You are please requested to tick (√) a number that best describes your view and anywhere applicable. Thank you.

PART I

BIO-DATA OF PARTICIPANTS

1. Gender

a. Male [ ]

b. Female [ ]

2. Age Range

a. 20 and below [ ]
b. 21 – 30 [ ]
c. 31 – 40 [ ]
d. 41 – 50 [ ]
e. 51 – 60 [ ]

3. Area of Specialisation

a. Early Childhood Education [ ]
b. Basic Education [ ]
c. Special Education [ ]
d. Other (specify)……...

4. Professional Qualification

a. Certificate in ECE [ ]
b. Diploma in ECE [ ]
c. Degree in ECE [ ]
d. Post Graduate Diploma in Education [ ]
e. Masters in ECE [ ]
f. Other (specify)……

5. Rank in the Ghana Education Service

a. Superintendent I [ ]
b. Superintendent II [ ]
c. Senior Superintendent II [ ]
d. Senior Superintendent I [ ]
e. Principal Superintendent [ ]
f. Assistant Director II [ ]
g. Assistant Director I [ ]
h. Other (specify) …….

6. Number of years of teaching at present level

a. 0 – 5 years [ ]
b. 6 – 10 years [ ]
c. 11 – 15 years [ ]
d. 16 – 20 years [ ]
e. 21 years and above [ ]

PART II

DATA ON RESEARCH OBJECTIVES

SECTION A: Teachers' Knowledge About Diagnostic Assessment in Early Childhood Education

The table below presents data on teachers' knowledge about diagnostic assessment in early childhood education. Read each statement carefully and indicate the extent to which you agree or disagree with the statements by ticking (√) 5=Strongly Disagree (SD), 4=Disagree (D), 3=Neutral (N), 2=Agree (A) and 1=Strongly Agree (SA)

S/N	Statement	SA 5	A 4	N 3	D 2	SD 1
7	Diagnostic assessment is used by teachers to assess learners' current knowledge base on subject to be studied in the classroom.					
8	Diagnostic assessment of young learners has a robust effect on their lives.					
9	Diagnostic assessment is conducted to obtain fair idea of where learners currently stand logically.					
10	Diagnostic assessment is conducted to obtain fair idea of where learners currently stand psychologically					
11	Diagnostic assessment is conducted to obtain fair idea of where learners currently stand intellectually					
12	Diagnostic assessment allows the teacher to make reasonable instructional choices.					
13	Diagnostic assessment allows the teacher to make productive instructional choices.					
14	Diagnostic assessment requires teachers to possess knowledge in assessment in order to understand the needs of these learners for better guidance and instruction.					
15	The activities underlying the teacher's knowledge and practices are linked to whatever skill to be diagnosed					
16	Diagnostic assessment offer response which improves the thinking ability of young learners.					
17	Diagnostic assessment during instruction is ultimately needed to facilitate teachers select suitable instruction, coaching and teaching tactics.					
18	Diagnostic assessment is best used at the preliminary stage to get a preview into the learners learning stages.					
19	Diagnostic assessment proves very informative where diverse learners in the lesson have dissimilar levels of academic upbringings.					

SECTION B: Forms of Diagnostic Assessment for Diagnosing Kindergarteners' Cognitive Needs.

The table below presents data on forms of diagnostic assessment for diagnosing kindergarteners' cognitive needs. Please read each statement carefully and indicate the extent to which you agree or disagree with the statements by ticking (√) 5=Strongly Disagree (SD), 4=Disagree (D), 3=Neutral (N), 2=Agree (A) and 1=Strongly Agree (SA).

S/N	Statement	SA 5	A 4	N 3	D 2	SD 1
20	I use diagnostic evaluation in diagnosing learners' cognitive needs.					
21	Diagnostic evaluation is used to define the present level of knowledge, ability and skill of a learner.					
22	Diagnostic evaluation is best used at the preliminary stage to get a preview into the learners learning stages					
23	The priority for which diagnostic evaluation is performed is to get into the root cause of problems and find accurate remedies					
24	Diagnostic evaluation evaluates pupils' learning difficulties during instruction.					
25	Diagnostic evaluation is comprehensive covering the learners' particular problems that have to been difficult to amend.					
26	I use formative assessment in diagnosing learners' cognitive needs.					
27	Formative assessment has been referenced as a process for making instructional adjustments based on feedback about learner performance.					
28	Formative assessment is mostly aimed informing instructional decisions.					
29	Formative assessment is always a planned process; thus, it does not happen accidentally.					
30	Formative assessment encourages learners to illustrate their reasoning.					
31	Formative assessment help teachers to obtain the best evidence of learners' reasoning					
32	Formative assessment demand that teachers obtain specific data and are used to give differentiated or individualized instruction.					
33	Formative assessment as pedagogy is not separated from instruction.					
34	I use summative assessment in diagnosing learners' cognitive needs.					
35	Summative assessment is given periodically to determine at a particular point in time what learners know and do not know.					
36	Summative assessment serves a means to gauge learners learning relative to content standards.					

SECTION C: Assessment Tools Used by Teachers in Diagnosing Kindergarteners' Cognitive Needs.

The table below presents data on assessment tools used by teachers in diagnosing kindergarteners' cognitive needs. Please read each statement carefully and indicate the extent to which you agree or disagree with the statements by ticking (√) 5=Strongly Disagree (SD), 4=Disagree (D), 3=Neutral (N), 2=Agree (A) and 1=Strongly Agree (SA)

S/N	Statement	SA 5	A 4	N 3	D 2	SD 1
37	I use observation as a tool in diagnosing learners' cognitive needs.					
38	I use anecdotal record as a tool in diagnosing learners' cognitive needs.					
39	I use running record as a tool in assessing learners' cognitive needs.					
40	I use checklist as a tool in diagnosing learners' cognitive needs.					
41	I use portfolios as a tool in diagnosing learners' cognitive needs.					
42	I use conferences as a tool in diagnosing learners' cognitive needs.					
43	I use rating scale as a tool in diagnosing learners' cognitive needs.					

SECTION D: Challenges Teachers Face in Using Diagnostic Assessment in Assessing Kindergarteners' Cognitive Needs.

The table below presents data on challenges teachers face in using diagnostic assessment in assessing kindergarteners' cognitive needs**.** Please read each statement carefully and indicate the extent to which you agree or disagree with the statements by ticking (√) 5=Strongly Disagree (SD), 4=Disagree (D), 3=Neutral (N), 2=Agree (A) and 1=Strongly Agree (SA)

S/N	Statement	SA 5	A 4	N 3	D 2	SD 1
44	Inadequate time affects assessment process of my learners.					
45	Lack of qualified personnel hinder the implementation of collaborative and participatory assessment.					
46	Inadequate equipment and materials in my school hinders the early learner's assessment process.					

Thank You for Your Participation. I'm Very Grateful for Your Time

APPENDIX B

Semi-Structured Interview Guide for Kindergarten Teachers

UNIVERSITY OF EDUCATION, WINNEBA

FACULTY OF EDUCATIONAL STUDIES

DEPARTMENT OF EARLY CHILDHOOD EDUCATION

RESEARCH ON TEACHERS KNOWLEDGE ON ASSESSMENT PRACTICES FOR DIAGNOSING KINDERGARTENRES COGNITIVE NEEDS IN KINDERGARTENEN CENTRES WITHIN KUMASI METROPOLIS IN THE ASHANTI REGION OF GHANA

SEMI-STRUCTURED INTERVIEW SCHEDULE FOR KINDERGARTEN TEACHERS

Name of Interviewee (Pseudonym): …….

Interview Date: ……/……/……

Duration: ……...

Time: …….

SECTION A: Kindergarten Teachers' Views on Reading and Writing Skills Assessment Practices.

1. What is your understanding of the classroom assessment practices used for diagnosing the cognitive needs of kindergarteners?

   Prompts:

   a. Is it used by teachers to assess learners' current knowledge on a subject?
   b. Is it responsible for making teachers make reasonable instructional choices?
   c. Does it offer response which improves the thinking ability of young learners?
   d. Is it best used at the preliminary stage to get a preview into learners learning stages?

SECTION B: Forms of Diagnostic Assessment for Diagnosing Kindergarteners' Cognitive Needs.

2. What are the forms of diagnostic assessment used teachers in diagnosing the cognitive needs of kindergarteners?

   Prompts:

   a. Does it include formative assessment?
   b. Does it include summative assessment?
3. How do you use these forms of diagnostic assessment mentioned earlier in diagnosing kindergarteners' cognitive needs?

SECTION C: Assessment Tools Used by Teachers in Diagnosing Kindergarteners' Cognitive Needs.

4. What are the assessment tools you use in diagnosing kindergarteners' cognitive needs?

   Prompts:

   a. Do you use observation?
   b. Do you use anecdotal records?
   c. Do you use running records?
   d. Do you use checklist?
   e. Do you use portfolio?
   f. Do you use conferences?
   g. Do you use rating scale?
5. Why do you use these assessment tools in diagnosing kindergarteners' cognitive needs?

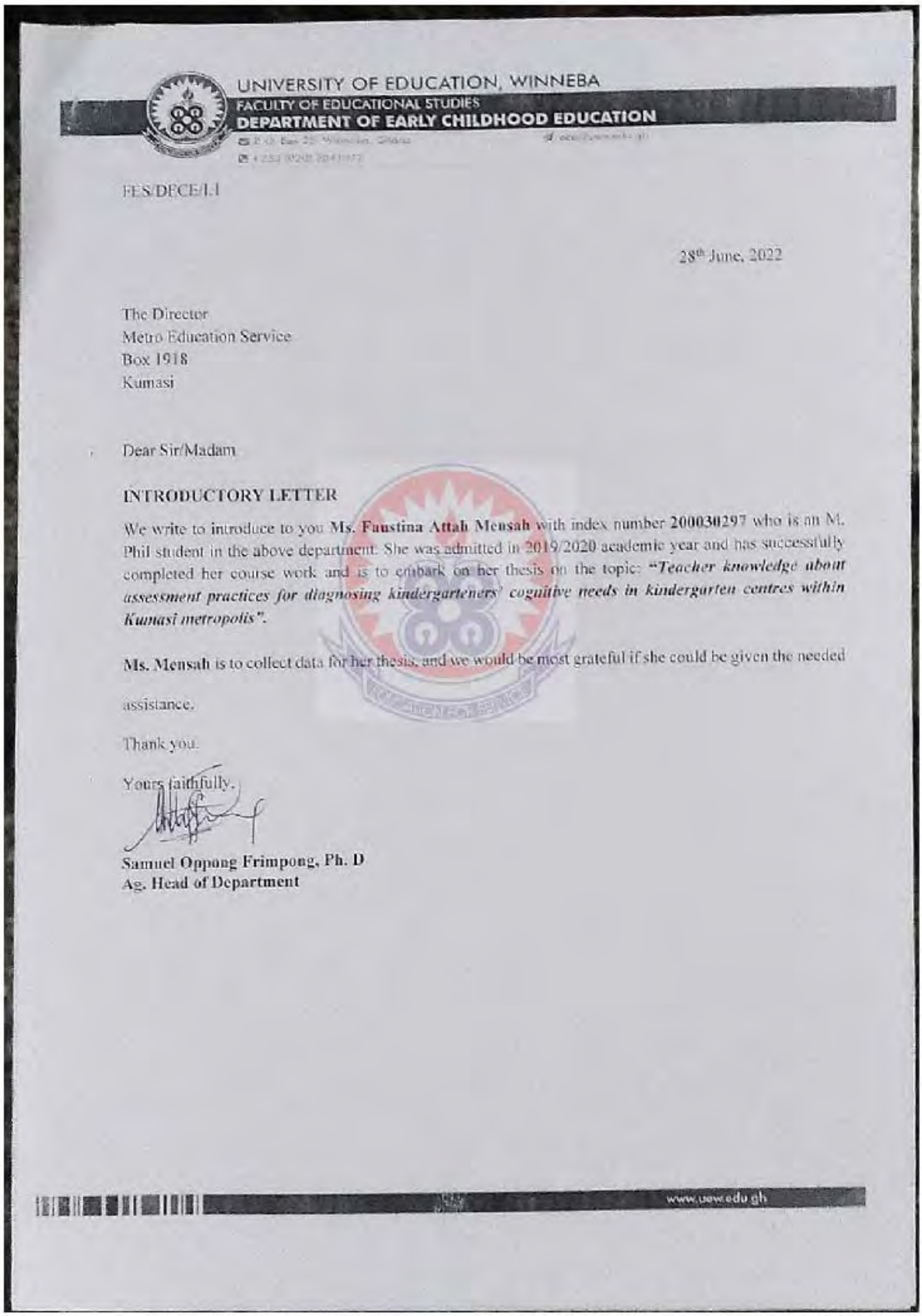
SECTION D: Challenges Teachers Face in Using Diagnostic Assessment in Assessing Kindergarteners' Cognitive Needs

6. What are the challenges you face in using diagnostic assessment in assessing kindergarteners' cognitive needs?
   Prompts:
   a. Is the inadequacy of time create challenges?
   b. Is the lack of qualified personnel a challenge?
   c. Is inadequate equipment and materials in the school a challenge?
7. Are there any other challenges you would like to share?
8. What are the measures you think should be put in place to help deal with the challenges?

Thank You for Your Participation.

APPENDIX B

Introductory Letter



UNIVERSITY OF EDUCATION, WINNEBA
FACULTY OF EDUCATIONAL STUDIES
DEPARTMENT OF EARLY CHILDHOOD EDUCATION

FES/DECE/L.1

28th June, 2022

The Director
Metro Education Service
Box 1918
Kumasi

Dear Sir/Madam

INTRODUCTORY LETTER

We write to introduce to you **Ms. Faustina Attah Mensah** with index number **200030297** who is an M. Phil student in the above department. She was admitted in 2019/2020 academic year and has successfully completed her course work and is to embark on her thesis on the topic: ***"Teacher knowledge about assessment practices for diagnosing kindergarteners' cognitive needs in kindergarten centres within Kumasi metropolis".***

Ms. Mensah is to collect data for her thesis, and we would be most grateful if she could be given the needed assistance.

Thank you.

Yours faithfully,

Samuel Oppong Frimpong, Ph. D
Ag. Head of Department

www.uew.edu.gh