

UNIVERSITY OF EDUCATION, WINNEBA

**ENVIRONMENTAL PRINTS AND LITERACY DEVELOPMENT OF
CHILDREN OF SISSALA EAST MUNICIPALITY IN UPPER WEST
REGION**



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UNIVERSITY OF EDUCATION, WINNEBA

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CHILDREN OF SISSALA EAST MUNICIPALITY IN UPPER WEST
REGION**



**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 requirements for the award of the degree of
Master of Philosophy
(Early Childhood Education)
in the University of Education, Winneba**

DECEMBER, 2020

DECLARATION

Student's Declaration

I, Jonas Boreh, 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 it has not been submitted, either in part or whole, for another degree elsewhere.

Signature

Date:

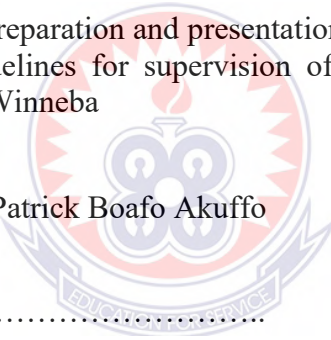
Supervisor's Declaration

I hereby declare that the preparation and presentation of this project work was done in accordance with the guidelines for supervision of project work laid down by the University of Education, Winneba

Supervisor's Name: Dr. Patrick Bofo Akuffo

Signature

Date:



DEDICATION

To my kids; Melinda and Melvin Boreh for their prayers and support.



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My sincere thanks and gratitude goes to my supervisor, Dr. Patrick Boafo Akuffo who sacrificed his time and energy guiding me from the start to completion of this thesis. I am grateful to him. He is a wonderful person whose broad knowledge, experience and ethics are worthy of emulation. He will always be gratefully remembered.

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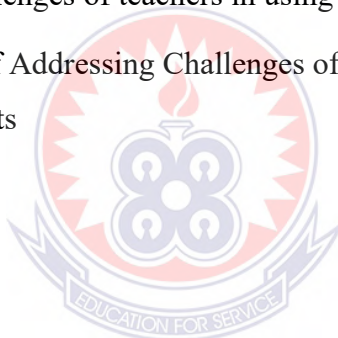


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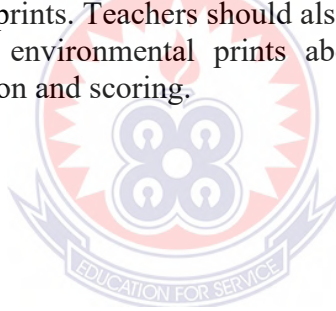


ABBREVIATIONS

ALSC	Association for Library Services to Children
BECE	Basic Education Certificate Examination
ECD	Early Childhood Development
ELL	English Language Learners
GES	Ghana Education Service
ICT	Information Communication Technology
IRA	International Reading Association
KPMG	Klynveld Peat Marwick Goerdeler
NAEYC	National Association for the Education of Young children
NALAP	National Literacy Acceleration Programme
NICHD	National Reading Panel (National Institute of Child Health & Human Development)
NRP	National Reading Panel
PLA	Public Library Association
TLM	Teaching Learning Materials
UK	United Kingdom
UNICEF	United Nations International Children's Emergency Fund
VAKT	Visual, Auditory, Kinaesthetic and Tactile
ZPD	Zone of Proximal Development

ABSTRACT

This study explored environmental prints and literacy development on children of Sissala East Municipality in the Upper West Region of Ghana. The study identified the types and designs of environmental prints that have the greatest potential to impact on the literacy development of children. The study employed the quantitative method of design to collect and analyse data in one single study. The study was undertaken in 168 schools with 230 respondents made up of teachers sampled from the Municipality. A questionnaire and observation checklist were developed and used to collect data for the study. The study found that most private and public early childhood teachers in the Sissala East had some basic knowledge and understanding of environmental prints. The findings indicated that teachers in the Municipality combine professional methods and techniques as well as literate rich environment suitable for children age and ability to ensure literacy development. It was also realised that most teachers encountered challenges including their inadequate professional knowledge, age differences of children, special needs problems of children, and inadequate prints in some activities of teaching. Findings indicated that environmental prints had great influence on children literacy development in the areas of digital literacy. The researcher recommended that the The Municipal Education Directorate of Sissala East should make it a point to equip the teachers with skills concerning the use of environmental prints to improve the teachers' understanding and the use of environmental prints. Teachers should also be sensitized on regular basis on the importance of their environmental prints about its practice that falls under construction, administration and scoring.



CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

According to United Nations International Children's Emergency Fund UNICEF (2008), varied researchers have emphasized the critical nature of children's early years of learning. It stated that most learning occurs during the period from birth to three years of life. It concluded that the first and most important pathway for human development is through education, beginning from on-time enrolment to higher levels of education (UNICEF, 2008). This piece explains the fact that early literacy development in children will take a positive effect when there is a sound foundation. The public outcry in the 1990s and early 2000s due to the poor academic performance of students at the basic education certification examination gave birth to the formation of the Anamuah Mensah-led committee in 2002. The report revealed among other things that, pupils did not perform well because of poor English background. It indicated that pupils could neither understand the questions nor write legibly and that contributed to their poor performances (Anamuah Mensah; Educational Reform Reports, 2002).

It is an undeniable fact that the English language is the gateway for understanding other subjects studied in our current Ghanaian schools at all levels. This is confirmed in the Chief examiner's report, 2017, which attributed the poor performance of pupils in the Basic Education Certificate Examination (BECE) to candidates' weaknesses in the English language. According to the report, it stated clearly, "candidates' knowledge of basic grammar, tense and sentence construction was poor. In some cases, you could not tell whether you were reading English or some other language". This is a clear indication that, if one has it wrong at the foundation, it will go a long

way to harm one's education. There is therefore the need to have a strong base of children's literacy development.

Lacking vital literacy skills holds a person back at every stage of their life. As a child they won't be able to succeed at school, as a young adult they will be locked out of the job market, and as a parent, they won't be able to support their own child's learning. This intergenerational cycle makes social mobility and a fairer society more difficult. People with low literacy skills may not be able to read a book or newspaper, understand road signs or price labels, make sense of a bus or train timetable, fill out a form, read instructions on medicines or use the internet. Low levels of literacy undermine the United Kingdom's (UK) economic competitiveness, costing the taxpayer £2.5 billion every year, Klynveld Peat Marwick Goerdeler (KPMG, 2009). A third of businesses are not satisfied with young people's literacy skills when they enter the workforce and a similar number have organised remedial training for young recruits to improve their basic skills, including literacy and communication. This assertion, in my opinion, is true as many if not all public sector jobs require some level of certification to enable one to qualify to apply in teaching, nursing, security, and even driving in some cases.

Likewise, an earlier study by Ampiah (2008) indicated that there is a general perception in Ghana that, educational standards were low in basic schools as manifests itself in the Basic Education Certificate Examination results and Sissala East Municipality is not an exception. Literacy development and acquisition greatly influence the performance of children during their academic achievements. One would therefore not be far from right to suggest that; one possible factor that could contribute to the poor performance of children in the municipality might be as a result

of poor literacy development in children at the very foundation. This is because once pupils are unable to neither read nor understand the texts or write clearly, the outcome was poor results. It is weighty to streak the way learning takes place most especially within our school environments.

This phenomenon has continued raising its ugly head to date and the researcher is aware that National Literacy Acceleration Programme (NALAP, 2010) conducted research within the Sissala East municipality with regards to literacy development but the district cannot boast much on environmental prints and that has given the researcher the concern to look into the topic; effects of environmental prints on literacy development in children of the Sissala East Municipality. This is because the print environment is another component of the physical literacy environment that research has shown to be related to child outcomes (Dynea et al., 2016). For instance, Vukelich (1994) found that the introduction of relevant environmental print (e.g. signs in the dramatic play area) and strategic placement of that print within the classroom was connected to children's ability to read words. Goodman (1986) identified environmental print as one of the "roots" of literacy.

Goodman and Altwerger (1981) studied the ability of children from ages three to five to read environmental print (p. 2). They concluded that reading print in the environment occurred before reading a printed book (Goodman & Altwerger, 1981). Goodman (1986) determined that 60 percent of 3-year-olds and 80 percent of 5-year-olds read environmental print when logos were included. For example, the children read a restaurant sign using the colours and logo, rather than focusing on the print when identifying a restaurant. For instance, Zhang et al. (2014) found that the number of writing materials in a classroom was positively connected to child growth in name

writing ability. Similarly, Guo et al. (2012) reported that within the context of high-quality classrooms children's growth in alphabet knowledge and name writing ability was associated with the presence of writing materials. Moreover, it is important to understand that in Ghana, environmental prints are seen almost everywhere in the form of obituary posters, political party posters and billboards, church crusade posters, musical and movie posters, product billboards, writings on vehicles and buildings, and many more. The environmental print found on signs, logos, food and restaurants (Goodman, 1986) have continued to be a source of text for young children, but there is still a dearth in the literature regarding the influence of environmental prints on early childhood literacy skills development, especially in children in the Sissala East Municipality. This research highlights how the use of environmental prints in classrooms leads to success in children's literacy skills development in the Sissala East Municipality.

1.2 Statement of the Problem

The development of effective language and literacy is crucial to the child's life in his or her entire learning. According to a report conducted by Ghana Education service (GES, 2014), all aspects of literacy play an integral part in a child's education. However, poor literacy skills development in early childhood education in Ghana has received attention in the literature recently (Agyeman, 2014; GES, 2017; NEA, 2013; NALAP, 2010). For instance, the 2013 National Education Assessment (NEA) report published by Agyeman (2014) in the Daily Graphic revealed that most pupils in basic schools cannot read with understanding whether it is English or any Ghanaian language. According to the report primary six pupils were assessed, and at least, 50 per cent of these pupils "could not pronounce a single English or Ghanaian word correctly" (NEA, 2013).

Likewise, a recent study by the Ghana Education Service on early grade reading assessment (EGRA) revealed that most pupils in basic schools in Ghana are not able to read with fluency and accuracy, which prevents them from reading with comprehension (GES, 2017). The report further indicated that these pupils generally lacked the pre-reading and early skills they will need to become strong, fluent readers who understand the text. Their report also indicated that, although there were some variations among the languages, this trend of pupils struggling with letter sounds, decoding and comprehending was apparent in all languages assessed. The apparent conclusion points to the fact that pupils will generally not do well in their final assessment in their BECE (GES, 2017), which is a great concern.

Similarly, the Ghana Education service (GES, 2014) revealed that reading stands tall among the aspects of literacy because it affects all other subjects as it enables children to access all areas of the curriculum. For instance, a child's inability to read and comprehend a mathematical word problem of, 2 of 3 will eventually get a wrong answer. Based on their findings, GES (2014) recommended that teachers especially at the kindergarten levels should inculcate developmentally appropriate environmental prints in their teaching to facilitate literacy development. The fact that environmental prints are seen in every corner of our environment and their inexpensive nature gives one the consoling feeling that the problem of inadequate teaching/learning materials in the language classroom can be solved, the reason being that, language teachers and parents/guardians do not need to do much (Babulweri, 2013). Bediako (2008) surveyed data for early childhood teachers in Bosofour, in the Sekyere West District of the Ashanti Region of Ghana to study the role of environmental print on early literacy acquisition and found that the use of environmental prints in the classroom helps learners "to read, write and speak English" effectively and efficiently. Although

environmental print is acknowledged as important for young children's literacy development, surprisingly there has been limited empirical investigation on the effects of environmental prints on the literacy development of children in the Sissala East Municipality and it is against this background this current study is conducted.

1.3 Purpose of the Study

The main purpose of this research was to examine the effects of the use of environmental prints on the literacy development of children in the Sissala East Municipality.

1.4 Objectives of the study

The study was guided by the following objectives:

1. To examine early childhood teachers' perceptions about the use of environmental prints in the Sissala East Municipality.
2. To examine strategies employed by early childhood teachers to engage children in the use of environmental prints in the Municipality.
3. To investigate the impacts of environmental prints on the literacy development of children in the Municipality.
4. To investigate the challenges of using environmental prints by early childhood teachers in the Municipality.

1.5 Research Questions

1. What is early childhood teachers' perception of the use of environmental prints in the Sissala East Municipality?
2. What are the strategies employed by early childhood teachers to engage children in the use of environmental prints in the?

3. What is the impact of environmental prints on the literacy development of children in the Municipality?
4. What are the challenges of using environmental print by early childhood teachers in the Municipality?

1.6 Significance of the Study

It is the believe of the researcher that the outcome of the study will provide documented literature to Municipal Education Directorate, teachers, parents and other organisations about the monumental role environmental prints play in the development of children's literacy skills. Also, the study will be of great significance to curriculum developers and other stakeholders on the educational front since it will help them appreciate the immense role environmental prints play in the development of children's literacy. Finally, the study will add up to the available knowledge and literature about environmental print and be a source of reference for other researchers who will like to conduct studies in a similar area.

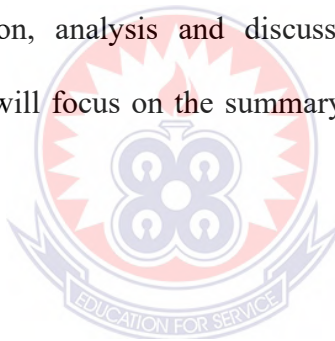
1.7 Delimitations of the Study

The study was delimited and conducted within the schools in the Sissala East Municipality in Ghana. This is because there is limited literature on the selected topic in this municipality. Also, the Sissala East Municipality is selected due to its proximity to the researcher. The academic performance of children in this municipality may be influenced by several factors. However, this study will only focus on the effect of environmental prints on the literacy development of children with regards to the knowledge of teachers about environmental print, the importance of environmental print on children's literacy development, the challenges faced by teachers in the usage of environmental prints and how these challenges can be

addressed. Again, only kindergarten teachers of the schools will be involved in the study.

1.8 Organization of the Work

The research work was organized into five chapters. Chapter One covers the background, problem statement, purpose, objectives, research questions, significance, delimitation and organization of the study. The second chapter dealt with reviewing existing related literature that primarily relates to the topic under study. Chapter Three presents the methodology and; thus, the research procedure. It will contain the research design, target population, accessible population, sample size, sampling method, instruments for data collection and the method of data analyses. Chapter Four will comprise compilation, analysis and discussion of data collected from the fieldwork. Chapter Five will focus on the summary of the findings, conclusions and recommendations.



CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter focused on reviewing the related literature to the study. It will extensively cover the following areas; conceptual review, theoretical review and empirical review.

2.1 Conceptual Review

This section presents review of the relevant literature on all the key concepts of the study. Based on the research objectives, the conceptual review covers the following key concepts:

- ❖ The concept of environmental prints,
- ❖ Concept of text-understanding that print relays a message,
- ❖ Factors affecting early childhood students' understanding of environmental prints,
- ❖ How a literacy-rich environment facilitates access and
- ❖ Literacy development

2.1.1 The Concept of Environmental Prints

Environmental print is defined as surrounding non-continuous print (e.g., words, letters, numerals, and symbols) that is encountered in a particular context and fulfills real-life functions (Adams, 1990). Environmental print is the print of everyday life. It's the name given to the print that appears in signs, labels, and logos. Street signs, candy wrappers, labels on peanut butter and the K in Kmart are other examples of environmental print. Environmental print differs from a continuous print found in books, newspapers, and magazines (Hall, 1987). It can also be considered as readable

prints, Horner (2005) classified environmental print into three categories: child logos (Barbie, Lego), community logos (signs such as STOP, McDonald's) and household logos (Froot Loops, Yoplait). Horner's categories show that a wide range of environmental print exists in a child's environment and, as a consequence, the potential this ubiquitous print has for fostering early print knowledge. In contrast to standard print in books, environmental print is visually attractive and personally meaningful to young children, stimulating their immediate interest and attention (Adams, 1990).

“It is shown that interactions with environmental print in the child's sociocultural context can develop their logographic reading skills. These skills, in turn, promote the development of emergent literacy skills that are the precursors to conventional reading skills. Environmental print may also be used more directly when parents and childhood educators use it to scaffold the learning of emergent literacy skills.” (Neumann et al., 2012, p. 231). Furthermore, through sociocultural experiences with environmental print, young children use it to fulfil real-life functions and achieve their individual goals and needs (knowing that a specific label on a box means that it contains their favourite food (Goodman, 1986). It is also a free literacy resource readily accessible to children across all social boundaries. Indeed, children from low or middle socioeconomic backgrounds have similar levels of environmental print knowledge (Dickinson & Snow, 1987).

However, the precise role that environmental print plays in a child's literacy development requires further clarification and debate. The mere exposure to environmental print may not be sufficient for it to benefit literacy development in young children. As noted by Harste, Woodward, and Burke (1984), not all encounters

with environmental print are of equal worth because “time on task” (p. 48) and the quality of the encounter are important variables in literacy learning. The value of environmental print in promoting literacy development has also been questioned due to its highly context-specific nature (Masonheimer, Drum & Ehri, 1984). Conversely, it is through environmental print that children may learn that print communicates meaning even if they cannot explicitly read the print (Goodman & Altwerger, 1981). In addition, it has been argued that environmental print can help children learn early literacy skills (PrVera, 2007) and this learning can be extended through scaffolding with an adult (Neumann, Hood & Neumann, 2009; Vera, 2007).

In this review, the role of environmental print in emergent literacy and later reading acquisition is examined. Studies for the review were selected if they had examined the reading of environmental print or used environmental print in the home or an educational setting to teach literacy skills in young children. The literature selected included observational, correlational, case study, and experimental methodologies. The review aims to examine the question of whether environmental print has value as a literacy learning resource, and if so, the mechanisms by which it promotes literacy development. A socio-cultural perspective is taken in which it is recognised that environmental print has two potential implications for literacy development in young children. Not only is environmental print an everyday resource that children can use independently as they explore their environment, but also it is a resource that parents and teachers can use to promote early literacy skills in children. Moreover, environmental print is seen as more relevant for the development of context-based (logographic) reading and emergent literacy skills in young children than for conventional reading skills in older children. The child’s experiences with environmental print are embedded within a socio-cultural context and are dependent

on the development of visual skills from birth. The review will follow the structure outlined in Figure 1, starting with the development of visual skills. It will conclude with a discussion of the implications for literacy learning in the home and educational setting and areas in need of future research.

The awareness of how print works including emerging knowledge about books, print, and written language, and how we use them; concepts of print can be described as a "set of rules" that is followed by readers and writers so that the text can be understood in an intended way. Concepts of print demonstrate to children the logistics of reading and writing, which allow the processes of literacy to take place. For example understanding that print relays a message, knowledge about book orientation and directionality of print, book handling (e.g. holding a book right way up, turning pages), emerging knowledge of the alphabet, awareness of books, pages, words and letters. Children who are learning about books and reading need to know these concepts; so that they can understand the rules and begin to understand the message.

The main understandings or elements of concepts of print for English include the concept of text, the concept of the book, the idea of directionality, mechanical features, and alphabet knowledge. Concepts of print are important for emergent reading and writing (Clay, 2013). From a very young age, children engage in writing and drawing to represent real things (Bradford and Wyse, 2010). Children can distinguish between drawing, writing, and numbers based on their understanding of the concepts they represent (Lancaster, 2007). Using verbal and non-verbal cues to direct children's attention during reading affects their later print knowledge and literacy skills (Justice & Ezell, 2004). Similarly, calling children's attention to the sound structure of words during reading promotes their phonological awareness;

shared reading with embedded vocabulary instruction also helps children to make meaning from print, especially when reading is coupled with extension activities (Piasta, 2016).

2.1.2 Concept of text-understanding that print relays a message

Concept of the book: Book handling - holding the book the right way up. Front cover, back cover (Hudson et al., 2017; Page & Tayler, 2016).

Directionality: Beginning at the front of the book, ending at the back-Turning pages left to right, Concept of top and bottom of a page - beginning at the top of the page and ending at the bottom of the page; Reading pages from left to right. Reading words from left to right, *Return sweep* - reading left to right then sweep back to the beginning of the following line of text (Hudson et al., 2017; Page & Tayler, 2016).
Recognising the difference between symbols including, alphabetic letters vs. numerals vs. Punctuation- The purpose of punctuation and capital letters, understanding that most printed words are read the same way each time (e.g. the letters w-o-u-l-d will always say 'would') (Hudson et al., 2017; Page & Tayler, 2016).

Alphabet knowledge: Alphabet knowledge is also considered a concept of a print component. This includes: knowledge of the names of each letter, knowing the order of the alphabet recognition of each upper and lower case letter, and knowing the difference between letters and words (Hudson et al., 2017; Page & Tayler, 2016). The metalinguistic awareness of knowing the difference between a "word" and a "letter" is also important for alphabet knowledge. This is because children need these metalinguistic terms to talk about the concepts they are grasping, as they begin to recognise familiar words and letters. It should be noted that children are not required to have extensive knowledge of the sounds that letters make (phonics) before the

transition to primary school. However, being able to recognise and name letters (alphabet knowledge) is a very useful emergent literacy skill, encouraged in Language and Emergent Literacy Learners. The development of alphabet knowledge before school (along with phonological awareness and oral language) is an important predictor of early reading success (Hudson et al., 2017; Page & Taylor, 2016).

2.1.3 Factors affecting early childhood students' understanding of

Environmental Prints

2.1.3.1 Early visual perception of environmental print

From birth, a child's ability to understand environmental print is influenced by the development of the visual processing system that describes the visual processing of environmental print cues along the pathway from the retinal image to the brain at different levels of sophistication. For example, young children use visual cues such as discriminating a sign's outline configuration, limited text, letter style, geometric logo designs, and coloured patterns to gain meaning from environmental print. Likewise, visual perception plays a critical role in early reading development (Gibson, Gibson, Pick, & Osser, 1962). Visual perceptual skills such as the ability to attend to, process, discriminate and recognize letters (Glass, 2002) and learn that they hold a symbolic and communicative function (DeLoache, 2004) is fundamental to reading development (Ferguson, 1975).

Normally developing infants appear to possess the basic ability to visually perceive and process fine patterns and symbolic shapes seen in environmental print very early in life. By one month, infants can voluntarily move their heads and eyes toward a peripheral pattern, focus sharply at a very short distance, resolve, and attend to striped stimuli. Their ability to detect colour, orientation, motion, and disparity of stimuli is

evident between 1-2 months and cortical-mediated visual behaviour is readily observed as they attend to faces, objects, and fine patterns as their vision increases in acuity (Glass, 2002). At 2-3 months, infants show preferences towards objects, for example, preferring to view an image of a face first, followed by patterns (newspaper print).

This early visual ability is relevant to the perspective that reading is extracting meaning from the symbolic environment (e.g., when a child knows that a red, blue, and white Pepsi logo says “Pepsi” or golden arches say “McDonalds”). Thus, during toddlerhood this ability to differentiate between symbolic systems of pictures, letters, and numbers and understand that they hold a communicative function paves the way for early literacy development (Yamagata, 2007). For example, Baghban (1984) reported that her daughter Giti clearly distinguished print at 20 months, such as consistently recognising the M-shaped arches as *McDonalds* when it appeared as a sign or on a cup. By 24 months, Giti began to point out individual letters in environmental print such as the K in *Special K* and the M in *K-Mart*. Likewise, Lass (1982) described how at two weeks of age her son Jed began to stare with great interest at the letters on his parents’ T-shirts. At 17 months Jed enjoyed locating letters on signs and saying “B” or “D” for any of the 26 alphabet letters.

2.1.3.2 Socio-cultural experiences with environmental print

The further development of children’s ability to visually explore and analyse print is influenced by their socio-cultural experiences with it (Baghban, 1984). Goodman (1986) states that “literacy is a cultural phenomenon” (p. 1) as society needs to communicate across time and space and that children grow up interacting with these literate environments. Harste, Burke, and Woodward (1981) concur that written

language is sociologically rooted and describes how sociocultural encounters with environmental print begin on the day an infant's mother pulls a diaper out of a Pampers box, feeds them from jars with a Gerber's logo, and exposes them to their first encounter with the golden arches of McDonald's. These initial encounters provide children with the flexibility and confidence in using their accumulating knowledge of environmental print to form and test their hypotheses about print (Harste, 1981).

Descriptive reports of young children's interactions with the environmental print show that they are embedded within a sociocultural context (Baghban, 1984) described an example based on 3-year-old Alison while driving to the zoo with her family. Her father pointed to a road sign "West 465" and asked Alison, "What do you think that says?" Alison responded by saying "It says Daddy turn right here to go to the zoo" (p. 325). Although Alison was not reading the sign conventionally, the child was gaining meaning from the print in a way relevant to her socio-cultural environment. Thus, once a child recognises that environmental print conveys meaning, they may begin to read what it says even if their interpretation does not correspond to the actual words in the print (Goodman & Altwerger, 1981).

Once children begin to identify that environmental print conveys meaning, parents or adults around the child may begin to interact with the child in ways that aid their learning. Neumann and Neumann (in press) described how 2-year-old James pointed to the print on a mail box (BEWARE OF THE DOG). His mother initially read the print for him and pointed out the D for Dog. In later encounters with this mail box sign, James pointed out the D for Dog himself. In Lass' (1982) description of Jed, it was reported that his mother would begin to correct him when he misidentified letters

(e.g., by saying “no that’s a G”). Jed then began to ask his mother what each letter he encountered was during walks along a commercial street, on signs, store names, numbers in store addresses, and sale signs. Through his exploration and his mother’s help, Jed learnt how to visually distinguish and identify all the uppercase and most lowercase letters by 2 years of age.

In a case study of 2-year-old Luc, Sinclair and Golan (2002) reported how his parents used his interest in environmental print to informally teach letters and words. Luc was observed spontaneously reading product labels such as “GLACES” (ice-cream) and signs such as “STOP” that had been previously named by an adult. In another example when Luc was 2 years and 2 months, he said “Two Ms!” while pointing to a large orange MM supermarket logo. The adults around Luc focussed his attention on upper case letters and after the adults named the letter a few times, it was reported that Luc could identify them correctly. Luc subsequently built on his increasing knowledge of letters by exploring other print materials such as books, magazines, and toy catalogues, and initiating interactions with letters as he named them.

2.1.3.3 Multicultural implications

The research indicates the importance of culture in understanding students' home literacy environments as well as the influence cultural values have on literacy development. Mason and Allen (1986) note that cultural context and perspective or purpose influence how students with disabilities interact with literacy environments. They cite several cultures and indicate how the purpose of literacy influences students' access to the development of skills. "What families and communities believe and value about literacy is reflected in the level of preparation children bring to formal instruction and affects the role of schools in providing literacy experiences and

instruction" (Gunn, Simmons & Kameenui, 1995). Therefore, when considering the design of a literacy-rich environment for students from diverse cultures or assessing their interactions with the environment, teachers must consider the different frameworks and backgrounds regarding literacy in the culture of these children. Students who have not been exposed to specific vocabulary or literature will need additional support with learning concepts from new material. Teachers can discuss the literacy goals for each student with parents to gain support at home. Literacy-rich environments support English Language Learners (ELL) as well. Many students come to school without understanding and speaking English. Therefore, a classroom that incorporates the elements of literacy-rich environments can help ELLs access the general education curriculum (Reading is Fundamental).

Strategies for Children from Multicultural Backgrounds

1. Read aloud frequently.
2. Include children's primary language in print around the classroom.
3. Allow children to make mistakes when attempting to use a second language.
4. Encourage children to read the same books repeatedly to become familiar with the text.
5. Plan activities that involve using language.

2.1.4 How a literacy-rich environment facilitates access

Some students begin elementary school struggling with literacy experiences. Creating a literacy-rich environment in school enriches literacy experiences of students who may have limited exposure to literacy due to delays or disorders in their development. Making literacy a part of the environment and ensuring that all children have access to the general education curriculum (e.g., Braille for children with visual impairments,

assistive technology for children with physical, communication, or cognitive delays) occurs in many ways. Teachers assess the abilities and challenges of students, then problem-solve to determine what opportunities will best meet the needs of these students. Specific recommendations for alterations in the environment are best made on an individual basis and with the consultation of special educators and related service providers.

As teachers design their learning environment, they must consider the diverse needs and skills of the students they teach. As they integrate the skills and backgrounds of their diverse students, teachers should ensure that each student is represented in their classroom design and instruction. They can individualize the environment to meet the needs of students with disabilities and ensure appropriate opportunities to participate in literacy activities are consistently available. "Children with diverse literacy experiences have difficulty making connections between old and new information" (Gunn, Simmons, & Kameenui, 1995). Structuring the classroom in a planned manner that immerses students with disabilities in accessible literacy activities provides them with opportunities to create connections between oral and written language, thereby gaining access to the general education curriculum.

Student Activity Examples;

- a. Word/letter games like Pictionary, Scrabble, BINGO, and Boggle
- b. Play with alphabet letter cookie cutters or stamps
- c. Discuss the daily schedule
- d. Interact with magnetic letters
- e. Label photos of students, teachers, important school staff and class activities
- f. Explore a variety of books, magazines, books on tape, books on computer

- g. Complete daily communication notebooks

2.1.5 Literacy Development

Literacy development is the process of learning words, sounds, and language. The acquisition of early literacy skills begins in a child's first year when infants begin to discriminate, encode, and manipulate the sound structures of language, an ability called phonological awareness. It's important to assess a child's language skills at an early age because delays in literacy development could indicate a language or reading disorder. Research has shown that languages with consistent sound-to-letter correspondences, or orthographic consistency, are easier for children to learn. Languages with regular orthographies, such as Spanish and Czech, tend to be easier for young children to learn than languages with inconsistent orthographies, such as English, Danish, and French (Majorano, 2021).

Early literacy acquisition which is a key part of early childhood literacy development entails the development of the ability to discriminate, encode, and manipulate the language sound structures i.e., phonological awareness (Bar-Kochav & Nevo, 2019; Daffern, 2018); the ability to store them in memory (i.e., phonological memory (Gray et al., 2019); the ability to manipulate and combine meaningful language units (Binci-Booher, & James, 2018); the ability to quickly retrieve and produce words (Araujo et al., 2015); the ability to produce language and express ideas (Quinn et al., 2015); and the ability to coordinate visual and motor processes (Binci-Booher, & James, 2018). Majorano (2021) recently averred that it is always significant to adequately assess school-aged children's literacy skills at an early stage of the child's life because a delay in their development may be an early sign of a language delay or a reading disorder.

Reading is a fundamental skill that defines the academic success or failure of students. As noted by Barbara Foorman from the University of Texas, Houston Medical School, "88 percent of students who were poor readers in first grade were poor readers in fourth grade" (National Institute of Child Health and Human Development [NICHD], 2000, 9). Once students reach fourth grade, most of the information they need is given to them in a textual format where the focus changes from learning to read, to reading to learn. Therefore, those poor readers may have difficulty interacting with content in the curriculum (Higgins, Boone & Lovitt, 2002).

Identification of delays or disorders in literacy development typically occurs in the upper elementary grades, but research also indicates that this may be too late for remediation (NICHD, 2000). Language acquisition and literacy experiences begin at birth. Students lacking previous experiences with skills such as print awareness, alphabetic principle, and phonemic awareness need supplementary instruction to ensure they do not lag behind their peers. Therefore, elementary school teachers must provide an environment that allows students with disabilities to have access to experiences they may have missed in their preschool years.

Research conducted by the National Reading Panel (NRP) found that skills in phonemic awareness, phonics, fluency, vocabulary, and comprehension are essential to literacy development (NRP, 2001). Before students with disabilities can begin to develop these five skills, they need to understand the functions and uses of literacy (Ehri & Sweet, 199). The literacy-rich environment emphasizes the importance of speaking, reading, and writing in the learning of all students. A literacy-rich environment is a setting that stimulates students with disabilities to participate in language and literacy activities in their daily lives thereby giving them a beginning

understanding of the utility and function of oral and written language. This involves the selection of materials that will facilitate language and literacy opportunities; reflection and thought regarding classroom design; and intentional instruction and facilitation by teachers and staff.

2.2 Theoretical Review

The research used constructivists' theories such as the Zone of Proximal Development (ZPD) theory (Vygotsky, 1978) and Noam Chomsky's Language Acquisition Theory (Chomsky, 1965) as the theoretical foundation to analyse the effects of environmental prints on early childhood literacy development. Constructivism is 'an approach to learning that holds that people actively construct or make their knowledge and that reality is determined by the experiences of the learner' (Elliott, 2000). In elaborating on constructivists' ideas Beck & Kosnik (2012), states that constructivism believes in the personal construction of meaning by the learner through experience and that meaning is influenced by the interaction of prior knowledge and new events. In this case, Chomsky's (1972) Language Acquisition Theory was used to explain the relevance of the theory to the study.

In 1965 the linguist Noam Chomsky put forward the idea that language was innate, and suggested that children's language acquisition was supported by a Language Acquisition Device (LAD). Other linguists and psychologists, however, have their theories of child language acquisition, three of which base the development of language on interaction with caregivers, cognitive development, and on imitation and reinforcement respectively. This theory posits that infants teach themselves and that language learning is genetically programmed. The view is known as *nativism* and was advocated by Noam Chomsky, who suggested that infants are equipped with a

neurological construct referred to as the language acquisition device (LAD), which makes infants ready for language.

The LAD allows children, as their brains develop, to derive the rules of grammar quickly and effectively from the speech they hear every day. Therefore, language develops as long as the infant is exposed to it. No teaching, training, or reinforcement is required for language to develop. Instead, language learning comes from a particular gene, brain maturation, and the overall human impulse to imitate. At first glance, it seems that the different theories of child language acquisition contradict each other, that it would be impossible for all five theories to have an element of truth in them. When, however, you look at the theories in more detail, you realise that how children acquire language is likely to be a result of the five different theories working together (Aljoundi, 2014).

By describing language as innate, Chomsky was suggesting that children are born with an internal knowledge of the language that the rules of language are inside their brains from birth so that when they begin to speak, they will have a pre-existing knowledge of grammatical rules. This essay will demonstrate that while Chomsky's LAD is undoubtedly present in children, the other theories of child language acquisition also play a role in the development of children's language; none can be disregarded as being untrue (Aljoundi, 2014).

In 1986, Chomsky added to his theory of language innateness by putting forward the idea that the Language Acquisition Device contained a Universal Grammar, a set of basic rules of grammar that characterise all languages. This explains the fact that children from all over the world pass through similar stages, at similar ages, in the acquisition of language, despite vast cultural differences. By 5 years of age, most

children have a good grasp of the basic rules of their language. This provides strong evidence for the existence of a LAD if language were not innate, children from different countries and backgrounds would surely pick up different aspects of language in different orders, and all children, even those from the same backgrounds, would acquire language at different rates.

Further evidence for the existence of a Language Acquisition Device comes from what was termed s-structures (surface structures) and d-structures (deep structures) (Chomsky, 1957, 1982). Different languages have different surface structures (the actual phrases used in a sentence), but they all share the same deep structures, reflecting the sentence's meaning. The fact that children understand deep structures without having to be actively taught about them suggests that language is innate: children have an inborn understanding of grammatical concepts, understanding that the order of words within a sentence is important.

The grammatical errors that children make during the process of acquiring language, known as overgeneralisation, also suggest that language is an innate module, thereby providing evidence for the existence of a Language Acquisition Device. Overgeneralisation occurs, for example, when children apply the past tense -ed inflexion to irregular verbs such as 'go'. Children obviously wouldn't hear an adult saying 'goed', which suggests that children have an inbuilt knowledge of grammatical rules: they know that to form the past tense they have to use the -ed suffix, but they aren't yet aware of irregular verbs.

Evidence for grammatical overgeneralisation by children comes from an experiment carried out by Brown and Bellugi in 1964, in which the early speech of two children was analysed. The -ed past tense inflexion was used for irregular verbs such as 'come'

(‘comed’) and ‘grow’ (‘grewed’). Further overgeneralisation occurred when forming plurals: nouns such as ‘sheep’ and ‘tooth’ were made plural by adding the -s inflexion (‘sheeps’ and ‘tooths’). Again, the two children had learnt that to make a noun plural you used the -s inflexion, but they were not yet aware of nouns which didn’t follow the normal grammatical rule.

The fact that not all children are exposed to Child Directed Speech provides further evidence for the innate nature of language. The cultures of the islands which lie in the South Pacific Ocean, for example, believe that such ways of speaking interfere with a child’s language development. Infants in countries such as Samoa and Papua New Guinea, therefore, do not hear modified forms of language: all they hear is their native language in all its complexity. Although the only language they are exposed to is the standard, unaltered form of their native language, infants in such countries pick up the language at much the same rate and just as quickly as infants who are exposed to simplified forms of language, who are exposed to Child Directed Speech.

These points clearly to the fact that language is innate if it was not, children in such countries would arguably acquire language at a later age, as a result of them not being exposed to simplified forms of language. A final piece of evidence for the existence of a Language Acquisition Device is the fact that language is specific only to humans. No other species spontaneously develop language in the way that humans do. This fact, coupled with the relative speed and ease with which children acquire their first language, provides substantial evidence for the existence of a LAD, especially as language is far too complex to be taught completely from scratch.

Despite all of this evidence supporting the existence of a Language Acquisition Device, there are some factors which would throw the existence of the LAD into doubt. One such factor is the fact that feral children, along with children who have suffered extreme cases of abuse and neglect fail to master language, beyond the basics, even when taught by specialists. One such case is that of Genie (Curtiss, 1977). Up to the age of 13, from the age of approximately 20 months, Genie was kept in an isolated room with practically no human contact. Upon being rescued, Genie successfully learnt vocabulary, although she failed to understand the rules behind grammar, and as a result was only able to master three-word utterances as a result of the lack of attention and interaction she received throughout her infancy and childhood.

This situation is the case with feral children, and with other victims of extreme child abuse. The inability to master grammatical rules, and therefore to speak in grammatically correct and complete sentences, can be explained by the Critical Period Hypothesis (Lenneberg, 1967), which theorises that language learning is easiest before a certain age. Combining the fact that feral children and abused children fail to master anything but the basics of the language with the Critical Period Hypothesis provides evidence against the existence of a LAD. If language were innate, as Chomsky suggested, such children would be able to acquire language, however old they were when rescued, as it would simply be a matter of learning the vocabulary; they would have the grammatical rules already in place. The fact that they are unable to suggest that something else is required: is where the other theorists of child language acquisition come in.

Chomsky's critics

Those linguists who do not agree with Chomsky point to several problems, of which I shall mention just four.

1. Chomsky differentiates between competence and performance. Performance is what people say, which is often ungrammatical, whereas competence is what they instinctively know about the syntax of their language - and this is more or less equated with Universal Grammar. Chomsky concentrates upon this aspect of language - he thus ignores the things that people say. The problem here is that he relies upon people's intuitions as to what is right or wrong - but it is not at all clear that people will all make the same judgements, or that their judgements reflect the way people do use the language.
2. Chomsky distinguishes between the 'core' or central grammar of a language, which is essentially founded on the UG, and peripheral grammar. Thus, in English, the fact that 'We were' is considered correct, and 'We was ' incorrect is a historical accident, rather than an integral part of the core grammar - as late as the 18th Century, recognised writers, such as Dean Swift, could write 'We was ...' without feeling that they had committed a terrible error. Similarly, the outlawing of the double negation in English is peripheral, due to social and historical circumstances rather than anything specific to the language itself. To Chomsky, the real object of linguistic science is the core grammar. But how do we determine what belongs to the core, and what belongs to the periphery? To some observers, all grammar is conventional, and there is no particular reason to make the Chomskian distinction.
3. Chomsky also appears to reduce language to its grammar. He seems to regard meaning as secondary - a sentence such as 'Colourless green ideas sleep

furiously' may be considered as part of the English language, for it is grammatically correct, and therefore worthy of study by Transformational Grammarians. A sentence such as 'My mother, he no like bananas', on the other hand, is of no interest to the Chomskian linguist. Nor would he be particularly interested in most of the utterances heard in the course of a normal lecture.

4. Because he disregards meaning, and the social situation in which language is normally produced, he disregards in particular the situation in which the child learns his first language.

2.3 Empirical Review

2.3.1 Early childhood teachers' perceptual of the use of environmental prints

2.3.1.1 Using environmental print to scaffold literacy skills

Clay (1991) states that not all children will inevitably go from logographic reading (visual recognition and interpretation of environmental print) to conventional reading by themselves, but require meaningful interactions with an expert to extend upon what they are already attending to in environmental print. From an emergent literacy perspective, this essential "expert" fits well within a Vygotskian (1978) framework in which young children can construct their knowledge about print through real-life and meaningful interactions with an adult, parent, or teacher. Lass (1982) argued that reading skills can develop early in life by helping children identify letters and words and by following the child's lead and answering questions about the print they discover. Adults may thus help children make sense of environmental print and use it to promote emergent literacy skills by guiding and scaffolding their interactions with it.

Scaffolding refers to the process of teachers using tools or techniques to allow a child to master a skill that would be beyond his or her unassisted efforts (Wood, Bruner, & Ross, 1976). Hartsel (1984) uses the term “tracking” to refer to the socio-linguistic processes or strategies both children and adult use to actively structure an event and to emphasise the importance of child-led interactions. These scaffolding tools are gradually removed as children gain mastery of a task. Adult-guided interactions may facilitate the child’s movement within their zone of proximal development, which is the space between a child’s level of mastery with and without assistance (Vygotsky, 1978). For example, by adults pointing out an environmental print and individual letters embedded within the print, the child may gradually learn to identify letters themselves without adult assistance (Adams, 1990). In this way, environmental print scaffolding might be an important tool to foster emergent literacy skills.

The use of environmental print to scaffold emergent literacy development in children has been investigated within a variety of settings. However, relatively little research has specifically explored the parent-child use of environmental print in the home setting during the preschool years. The majority of research has been conducted in preschool classrooms. Some researchers have examined the use of environmental print to scaffold literacy development (Kuby & Aldridge, 2004) whereas others have embedded environmental print in play settings in the classroom (Neuman & Roskos, 1993).

2.3.2.3 Teachers using environmental print in an educational setting

Nurss (1988) suggested that environmental print can be used within print-rich play settings (e.g., grocery shops) in the classroom so that children can engage in meaningful activities with logos and signs. In this way, young children can learn that

print represents oral speech, has value, and can be “figured out” from its context as is consistent with the logographic reading perspective. She further suggested that environmental print can be used to teach other literacy skills and is better than using isolated letters and sounds (e.g., flashcards) because environmental print adds meaning to the learning experience. Subsequent research on the use of environmental print within a preschool educational setting has provided some evidence of its benefits as a scaffolding tool in enhancing emergent literacy skills.

Vukelich’s (1994) study differed in that it used 5- to 6-year-olds, with a shorter 15-week intervention period and used a range of play settings and signs. Examples of environmental print and signs included those in a Restaurant (e.g., No Pets, We’re Closed), Post Office (e.g., Mail Box, Tax forms), Shoe Store (e.g., Master Card, Store Hours), Veterinary Hospital (e.g., Quiet Zone, Waiting Area), and Campsite (e.g., No Swimming, Tent Area). The results showed that guided environmental print interactions with a more knowledgeable adult were the most beneficial condition for increasing a child’s ability to read environmental print words in and out of context.

Kuby and Aldridge (2004) extended these studies by directly comparing a play-based approach to a direct instruction approach. They assigned 106 kindergarten-aged children (5- to 6 years old) to receive either no instruction with environmental print, direct instruction, or indirect instruction. Children in the direct instruction groups brought logos from home and the teacher asked them what it was, talked about it, wrote it in standard print, wrote it in a sentence, and finally asked the children to write the logo. For the indirect instruction group, the teacher discussed the meaning of logos that the children brought from home for environmental print-rich play settings then left the children to construct their understanding via unguided play. At the end of

the 8-month intervention, children in the indirect instruction play-based group performed significantly better on environmental print reading tasks (e.g., reading McDonalds, Kmart, Pepsi). Kuby and Aldridge concluded that an indirect play-based approach with environmental print allowed children's learning to be more natural and enjoyable.

In the play-based studies discussed so far, only environmental print reading ability was assessed. Although environmental print reading may promote conventional reading skills via the development of emergent literacy skills, future research is required to provide a broader picture of what effect play-based interactions with print may have on emergent literacy skills. This would require researchers to measure a more comprehensive and wider set of skills, such as print concepts, alphabet knowledge, phonological awareness, and print motivation.

Wepner (1985) investigated the use of environmental print logos as tools for beginning reading instruction in preschool children (3 ½ - and 4 ½ -year-olds). The children were randomly assigned to either an intervention or control group and were pre- and post-tested on print awareness, book handling, logo identification, reading attitudes, and word/sentence identification (e.g., Jessica [child's name] loves Mommy and Daddy). During each 15- to 20-minute session over 8 weeks, the intervention group was introduced to a new logo (e.g., Burger King) and participated in a logo book-making activity. In this activity, children pasted the logos into their books and the instructor wrote and read aloud each child's dictated sentence beside the logo (e.g., Jessica loves Burger King). At post-test, children in the intervention group scored higher on logo identification (20 environmental print items were tested, e.g., Sunmaid Raisins, Dunkin Donuts, Toys R Us, Mobil), print awareness, word/sentence

identification, and print motivation than at pre-test and higher than the control group. However, no tests of statistical significance were applied to this data, which makes it unclear whether the improvement was more than would be expected by chance alone.

Salewski (1995) conducted a similar study in which kindergarten children were assigned to a control and experimental group. These groups were pre- and post-tested on a 20-item logo test (each logo was presented in full and partial contexts and context-free. During eight 30-minute sessions (two sessions/week over 4 weeks) the experimental group was presented with two logos per session and participated in a pocket chart activity (children created sentences related to each logo that were scribed and read aloud by the researcher, and the letters within them were identified) and a journal activity (children glued logos, drew pictures, and wrote sentences). The control group participated in storytelling and related journal activities.

Significantly higher post-test scores were found for the environmental print group across all contexts of logo presentation when compared to the control group. Salewski concluded that environmental print instruction helps children develop from being context readers to deciphering print to being graphic-reliant readers (mainly reliant on letters). However, there was no significant difference between groups on the gains made on Clay's Word Reading Test. This suggested that intervention with logos alone was not enough to move children to conventional word reading. Rather, additional skills such as letter-sound knowledge and the ability to combine and blend phonemes might be required to help a child read conventionally. Nevertheless, Salewski suggested that "while environmental print reading might not naturally lead to conventional reading, it could provide educators with a valuable tool for learning" (p. 33).

Recent studies by Vera (2007) have provided evidence that environmental print interventions can have a positive effect on emergent literacy. Vera (2007) examined the effects of a 9-week environmental print intervention within a pre-kindergarten literacy curriculum. Environmental print might also have the potential to be used during the first years of formal schooling. Rule (2006) study examined the effect of using environmental print in helping enhance emergent literacy skills in school-aged children at risk of reading failure. They combined environmental print with multisensory activities (visual, kinaesthetic and tactile) to teach phonological awareness and knowledge of letter sounds. Children in Grades 1 to 3 who were at risk of reading failure were assigned to either a verbal/kinaesthetic, tactile/object box, or control group (no intervention). The children in the experimental groups participated in 18 hours of their specific literacy activities over 4 months.

Children in the verbal/kinaesthetic group participated in games such as word bingo or tapping out syllables in words. Children in the tactile/object box group sorted environmental print words (e.g., BUY, THROUGH and FRUIT) according to the number of phonemes, identified letter/vowel combinations, and sorted words by manipulation of small objects. Rule et al. observed that children enjoyed using the environmental print labels to practice discriminating between letters and linking the words to real-world products, which made the activity more meaningful. The experimental groups did not differ on phonological awareness at the pre-test, although both were lower than the control group. At post-test, the two experimental groups showed significantly larger gains than the control group (although they were then at a similar level to the control group). These results indicated that environmental print materials plus multisensory methods might be effective early literacy tools to support

the teaching of phonological skills in school-aged children in regular and special education classrooms.

Studies conducted within educational settings have suggested that adult-guided print interactions within environmental print-rich play-based settings can enhance environmental print knowledge (Neuman & Roskos, 1993). Furthermore, it has been shown that environmental print resources that involve direct instruction can improve several aspects of emergent literacy skills like print concepts, phonological awareness, alphabet knowledge, and print motivation not only in pre-schoolers (Salewski, 1995) but also in children who struggle with learning to read in their first years of formal schooling (Rule, 2006). The positive findings that have emerged from these studies suggest that teachers should be encouraged to use environmental print as a scaffolding tool to help develop emergent literacy skills.

Furthermore, the more interested a child is in environmental print the more likely they may ask what it means and initiate literacy interactions in both the home and preschool setting (Stanovich & West, 1989). Although print motivation might not be directly linked to formal decoding, encoding or comprehension skills, it might reveal how a child approaches literacy activity in the preschool years, which, in turn, might influence their future acquisition of conventional literacy skills. In addition, an important influence on a child's print motivation is the nature and type of interactions children have with their parents and teachers during print encounters (Deci, Nezlek, & Sheinman, 1981). These extrinsic factors can encourage or hinder children's emergent literacy learning and motivation Burns & Casbergue, (1992) argued that early adult-child encounters and interactions with print greatly influence a child's intrinsic motivation to participate in print-related activities.

2.3.2 Instructional Strategies Employed by Early Childhood Teachers to Engage Children in the Use of Environmental Prints

From the atmosphere and decor of the room to interactions with peers and teachers, every element of the classroom is designed to allow students with disabilities to explore the elements of literacy. The literacy-rich environment emphasizes the importance of speaking, reading, and writing in the learning of all students. This involves the selection of materials that will facilitate language and literacy opportunities; reflection and thought regarding classroom design; and intentional instruction and facilitation by teachers and staff (Snow, Burns, & Griffin, 1999). Because literacy-rich environments can be individualized to meet students' needs, teachers can create both independent and directed activities to enhance understanding of the concept of print and word, linguistic and phonemic awareness, and vocabulary development. All of this occurs in a concrete setting giving students with disabilities multiple opportunities to gain the skills necessary to participate in the general education curriculum. For example, books, technology, manipulative materials, art projects, and explorative activities can be used around a central theme.

2.3.2.1 Classroom materials for literacy-rich environments

The intentional selection and use of materials are central to the development of a literacy-rich environment. Teachers ensure that students have access to a variety of resources by providing many choices. Teaching staff connect literacy to all elements of classroom life. Teaching staff alternate books in the classroom library to maintain students' interest and expose them to various genres and ideas (International Reading Association [IRA] & the National Association for the Education of Young children [NAEYC], 1998). For example, teachers should include both fiction and nonfiction literature. Classrooms include miscellaneous literacy materials that are used in

everyday life further demonstrating how literacy is used (Goodman, Bird, & Goodman, 1991).

Examples of Materials

- Phone books
- Dictionaries
- Menus
- Recipes
- Labels
- Signs
- Printed directions
- Student work
- Alphabet displays

Taking dictation for students not yet fluent in writing allows students to see how oral language is translated into written language. Written words let students see what they say. Therefore, writing makes thoughts visible. As students make attempts to write, allowing for diverse materials (pens, pencils, markers, and crayons of varying shapes and sizes, typewriters, computers, keyboards, magnetic writing boards, etc.) increases students' choice and motivation. Adapted materials such as tactile books, manipulatives, slant boards, and pencil grips for diverse learners as it offers accessibility and motivation. Home-school connections are made through lending materials that ensure that students with diverse abilities have literacy opportunities at home as well as at school. Parents are made aware of the materials and shown how students can use them at home.

Adaptable Materials

- i. Tactile Books — textured print or pictures within books for students to touch and sniff
- ii. Manipulatives — hands-on skill-building materials such as pattern blocks, colour tiles, and reading rods
- iii. Slant boards — boards propped up on angled book stands to assist students with their writing
- iv. Pencil grips — a pre-shaped grip that is placed over a pencil to assist students with proper grip and letter formation

2.3.2.2 Classroom design for literacy-rich environments

The room arrangement should encourage repeated opportunities to interact with literacy materials and activities to practice skills that students are learning (Gunn, Simmons, & Kameenui, 1995). Through repeated practice with materials and activities, skills become more automatic and students with disabilities are given ample opportunities to integrate new and old information. Combining opportunities for independent exploration and peer interaction with teacher instruction enhances and builds upon skills. "Their everyday, playful experiences by themselves do not make most children readers. Rather they expose children to a variety of print experiences and the processes of reading for real purposes" (IRA & NAEYC, 1998, 4).

2.3.2.3 The role of the teacher in literacy-rich environments

The role of the teacher is to encourage all attempts at reading, writing, and speaking, allowing students of varying abilities to experience the different functions and use of literacy activities. Teacher interactions with students with disabilities build on students' knowledge as they develop literacy skills. Teachers use a variety of methods

of communicating with students by asking questions, labelling objects and experiences with new vocabulary, and offering practice to help students remember and generalize new concepts and skills (Whitehurst, 2003). Teaching staff plan activities so that students "have opportunities to integrate and extend their literacy knowledge by reading aloud, listening to other students read aloud, and listening to tape recordings and videotapes in reading corners" (Gunn, Simmons, & Kameenui, 1995,). Also, the staff teaches students how to use the materials in their environment to promote interest and use of literacy materials throughout the classroom (Gunn, Simmons, & Kameenui, 1995). Another strategy involves staff members intentionally making mistakes to demonstrate editing and revising (Goodman, Bird, & Goodman, 1991), modelling for children the importance of making mistakes while demonstrating the writing process.

Evidence of effectiveness

This section provides research evidence on the following areas:

- The classroom materials.
- The classroom design and layout.
- The role of the teacher.

a) Evidence on classroom materials

Numerous classroom materials help build a literacy-rich environment. By integrating phone books, menus, and other written materials into student play, children can see the connections between the written word and spoken language, as well as understand how written language is used in real-world situations. By creating a literacy-rich environment for students with disabilities, teachers are giving students the opportunities and skills necessary for growth in literacy development. "Through

exposure to written language (e.g., storybook reading and daily living routines) many children develop an awareness of print, letter naming, and phonemic awareness. Additionally, through exposure to oral language, preschool children develop listening comprehension, vocabulary, and language facility" (Gunn, Simmons, & Kameenui, 1995). Also, Lomax and McGee suggest that awareness of print is the precursor to phonemic awareness, grapheme-phoneme correspondence knowledge, and word reading (Ibid.).

b) Evidence on the role of the teacher

The literacy-rich environment also provides students with opportunities to engage with and see adults interact with print allowing students to build their skills in understanding the conventions, purposes, and functions of print. "Children learn how to attend to language and apply this knowledge to literacy situations by interacting with others who model language functions" (Gunn, Simmons, & Kameenui, 1995, 11). Furthermore, findings from a study conducted by Morrow (1990) indicate that classrooms with greater teacher facilitation enhance literacy behaviours. Therefore, teachers that provide literacy-rich activities within the classroom improve reading skills. "In adult-guided classrooms, teachers provided scaffolding by introducing literacy materials in the play centres and discussing with children how to use materials (e.g., reading to dolls, writing notes to friends, making shopping lists, and taking telephone messages). The students in those classrooms, in turn, used more printed materials with attention to their printed aspects and produced more printed materials than students in classrooms with no specific teacher guidance" (Gunn, Simmons, & Kameenui, 1995, 3).

c) Evidence on the classroom design and layout

The physical environment of the classroom is also crucial to developing literacy growth for children. "Studies suggest that the physical arrangement of the classroom can promote time with books" (Morrow & Weinstein, 1986). Studies also indicate that the written language used for labels and signs in the natural environment enhances reading strategies for students with disabilities. These signs and labels also referred to as environmental print, help students with disabilities to make connections between the information they know and the new information given to them in the form of writing. Finally, literacy-rich environments allow students with disabilities to see the connection literacy has to the real world. "In environments rich with print, children incorporate literacy into their dramatic play using these communication tools to enhance drama and realism of the pretend situation" (Gunn, Simmons, & Kameenui, 1995).

2.3.3 Environmental Prints and Literacy Development of Kindergarten Children

2.3.1.1 Links between concepts of prints, phonological awareness and phonics

Part of the mechanics of concepts of the print includes the recognition of letters. Once children have a grasp of the concept of letters and their names, then the letter shapes can be associated with their sounds. Phonological awareness is the knowledge of how the sound system (phonology) works (e.g. syllables, rhyming, individual speech sounds in words). While alphabet knowledge (part of concepts of print) is the ability to recognize and name upper and lowercase letters, phonics is the knowledge of sound-letter patterns: what sounds letters make.

Children engage with a range of texts and get meaning from these texts view and listen to printed, visual and multimedia texts and respond with relevant gestures, actions, comments and/or questions explore texts from a range of different perspectives and begin to analyse the meanings actively use, engage with and share the enjoyment of language and texts in a range of ways recognise and engage with written and oral culturally constructed texts. Children begin to understand how symbols and pattern systems work view and listen to printed, visual and multimedia texts and respond with relevant gestures, actions, comments and/or questions develop an understanding that symbols are a powerful means of communication and that ideas, thoughts and concepts can be represented through them begin to be aware of the relationships between oral, written and visual representations begin to recognise patterns and relationships and the connections between them.

2.3.3.2 Environmental Prints and Reading Acquisition Models

As noted above, prior research has suggested that children can extract meaning from environmental print (Goodman & Altwerger, 1981) and that their literacy knowledge can be extended through social interactions with adults in their sociocultural environment. However, some researchers have found that children are only reading the actual words contained in environmental print when they can decode the print both in context and in standard black-and-white print with contextual cues removed (Cloer, Aldridge & Dean, 1981/1982). The print identification scores of the 3- to 5-year-old children ($N = 102$) progressively decreased as the contextual cues were removed. Most (94%) could not read the environmental print word when presented in standard print form. Importantly, letter name knowledge differentiated those who could read the word in standard print from those who could not.

Children who can only read environmental print in context have been named *logographic readers* (Frith, 1985) because they gain meaning from environmental print using salient visual, graphic and contextual cues. Logographic readers are unable to decode words due to a lack of letter-sound analysis skills. Instead, they rely on visual contextual cues such as the colours and pictures in which the print is embedded to read it (Blair & Savage, 2006). Logographic readers may attend more to the surrounding cues than to the print itself when reading environmental print. Most children develop the ability to extract meaning from environmental print using logographic skills before using alphabetic decoding skills (Beech, 2005). However, the value of logographic reading as a precursor skill in supporting the development of emergent literacy skills may have been underestimated.

In one of the earliest reading acquisition models, Mason (1980) highlighted the role of logographic reading in the development of conventional reading skills. Further, Mason proposed that children's early experiences with environmental print facilitate their exploration of print and allows them to experiment and refine their print decoding strategies as their word-reading skills emerge. Mason described a 3-stage hierarchical sequence of word reading acquisition using observations of preschool children. In Level 1 Context Dependent, children could only read environmental print signs or labels in context (e.g., Stop, Exit, and cereal names) and knew some letters. These children are thus logographic readers. In Level 2 Visual Recognition, children could, in addition to reading environmental print in context, read some simple book words, like *no* and *dog* and had mastered letter names. In Level 3 Letter-sound Analysis, children could read most 3- to 5letter words presented in standard print by sounding out words. Only at this level did children show an ability to read environmental print in and out of context using letter-sound analysis skills.

Ehri's (1995) later reading model contains four phases and shares some characteristics with Mason's (1980) model. Ehri's first phase is labelled Pre-alphabetic in which children make connections between visual features/contextual cues and their pronunciation or semantic representation. This phase corresponds to Mason's (1980) Context Dependency (logographic reading) and Visual Recognition stages in that it acknowledges the lack of application of a letter-sound analysis during environmental print reading. Ehri and McCormick (1998) suggested that the Pre-alphabetic phase is not part of the reading system because children do not decode the words, but rely on visual contextual cues to extract meaning. In the next phase, Partial-alphabetic, children can identify names and major consonant sounds, with increasing use of letter-sound associations and decreasing use of non-alphabetic contextual cues. In the Full-alphabetic phase, children have mastered letter names and sounds, have an increasing sight-word bank and use letter-sound analysis (phonetic) strategies to decode words. Finally, in the consolidated phase, children's word reading increases in fluency and spelling ability become increasingly sophisticated with continuing practice.

To more clearly highlight the role of environmental print in literacy development in this review, a simplified model of reading development is used. The model contains three phases that combine elements of Mason's (1980) and Ehri's (1995) models (see text in boxes in Figure 1). The first phase of Logographic skills corresponds to Mason's Context Dependent phase and a component of Ehri's Pre-alphabetic phase. The second phase of Emergent literacy skills corresponds to Mason's Visual Recognition and Ehri's Partial alphabetic phases. Emergent literacy skills include alphabet knowledge, concepts about print (e.g., the concept of word and letter), emergent writing, and phonological awareness. Emergent literacy skills are acquired

during the preschool and early school years and are significantly related to future reading and writing ability and long-term academic outcomes (Adams, 1990). The final phase of Conventional reading skills corresponds to Mason's Letter-sound Analysis and Ehri's Full Alphabetic and Consolidated Reading phases.

Both Mason's (1980) and Ehri's (1995) reading models describe environmental print reading behaviours as occurring before letter-sound analysis. As such, one role that environmental print plays in literacy development is to promote the acquisition of logographic skills. The relationship between environmental print experiences and the development of logographic skills has been supported by observations made in several studies. As noted earlier, these experiences are embedded within a socio-cultural context. However, what is less well established is how logographic reading skills developed through experiences with environmental print impact emergent literacy skills that subsequently form the foundation of conventional reading ability.

2.3.3.3 The Relationship between Environmental Print and Reading and Emergent Literacy Skills

Children may use different pathways to construct the same knowledge (Bastien-Toniazzo & Jullien, 2001). The reading models Ehri (1995) suggest that environmental print can be read in two ways - logographic reading (using graphic and contextual cues) and conventional reading (using letter-sound decoding skills). The models differ in their view on the significance of environmental print in reading development. Mason emphasised the possible benefits of environmental print on subsequent reading development. In contrast, Ehri suggested that environmental print may not play a significant role in reading because children pay little attention to the

print or individual letters and cannot read the environmental print words when transformed into standard print (1995).

Children could only read environmental print words out of context if they had already developed conventional reading skills such as mastered letter-name knowledge. However, it may be argued that this study presents only a snapshot of a child's ability at one moment in time. Learning to read is a developmental process. Environmental print knowledge may promote the learning of skills that are precursors to later conventional reading skills. In support of this notion, Cronin, Farrell, Cronin, Farrell and Delaney (1999) investigated whether environmental print knowledge (e.g., logographic reading of McDonald's, Stop, Dairy Queen) affects later word learning ability. They showed that non-reading 4- to 5-year-olds could learn environmental print words when presented in a standard print form more quickly if they could already recognize the environmental print word in context. While the mechanism behind this effect remains to be determined, it does suggest that environmental print knowledge can play a role in early reading development. Other research has also revealed that environmental print knowledge is positively related to emergent literacy skills, which in turn predict conventional reading (Lomax & McGee, 1987).

The emergent literacy skills were, in turn, related to word reading. They described a five-component model of word reading acquisition that included print concepts, graphic awareness, phonemic awareness, grapheme-phoneme correspondence, and word reading. They found that environmental print reading ability (a sub-component of print concepts) was related to graphic awareness (letter discrimination, letter orientation and word discrimination). Graphic awareness was, in turn, related to phonemic awareness skills, grapheme-phoneme correspondence (letter name/sound

analysis skills), and finally word reading skills. The print concepts component was also directly related to letter-sound knowledge. Thus, Lomax and McGee showed that environmental print reading is related to emergent literacy skills that develop before formal literacy instruction and that are directly or indirectly related to word reading.

Further evidence supporting the importance of environmental print in emergent literacy was reported. They showed that 3- and 4-year-old non-readers who could read environmental print in context were aware that it consisted of letters by being able to identify those letters. This contrasts with the results of Masonheimer (1984), which suggests that non-readers are insensitive to letter details in environmental print. Furthermore, McGee (1988) showed that although non-readers and conventional readers may have similar letter knowledge, what differs is that the readers know how to use that letter knowledge to decode words. Thus, pointing out letter names and sounds within environmental print words (Neumann & Neumann, in press; Sinclair & Golan, 2002) and showing children how to use this alphabetic knowledge may help children move from context-dependency towards using letter-sound analysis strategies to decode words.

Reutzel (2003) also provided evidence that reading environmental print in context might constitute an initial stage of reading. They demonstrated that a range of print and phoneme knowledge including print concepts (Concepts About Print; Clay, 1993), letter recognition, phonemic awareness, and word reading play an important role in environmental print reading, both in and out of context (e.g., McDonalds, Cheerios, Crest, Kentucky Fried Chicken, Jello, Snickers, Stop, Coca Cola). They classified 97 children aged 4 to 7 years into environmental print reading ability groups: non-responders, novices, experimenting, and conventional environmental

print readers. As expected, the conventional readers had greater print and phoneme knowledge than experimental readers whom themselves had greater knowledge than novices. Word recognition and Concepts.

About Print were the most important discriminators of the ability to read environmental print in and out of context as well as with altered spelling. Reutzal et al. argued that the visual skills used in environmental print reading are not unlike skills used in conventional word reading and should, therefore, be fostered very early in literacy development by encouraging children to attend to letters and sounds within the environmental print. In addition, environmental print knowledge was assessed using coloured pictures of logos, signs, and products (e.g., McDonalds, Burger King, Taco Bell, Kroger, Blockbuster, Target, restroom and school crossing). The gains made by the children were lower than expected for letter knowledge, although gains in letter knowledge were significantly and positively correlated with reading environmental print in context.

Taken together, there is some evidence that logographic reading of environmental print plays an important role in developing emergent literacy skills, which, in turn, contributes to conventional word reading skills. Such evidence supports researchers who propose that logographic reading forms an early and legitimate component of reading development (Cronin, 1999). The role of environmental print in promoting conventional reading thus appears to follow a pathway leading from socio-cultural experiences that expose the child to environmental print and its meaning, to the development of logographic skills, followed by the development of emergent literacy skills, and finally the development of conventional reading skills. The extent to which experiences with specific types of environmental print (child logos vs. community

signs vs. household logos) contribute most to literacy learning along this pathway is not known and requires further research. Moreover, environmental print may play another role in literacy development through more explicit scaffolding of learning experiences within a sociocultural context.

2.3.4 Challenges regarding the use of Environmental Prints at the Kindergarten Level

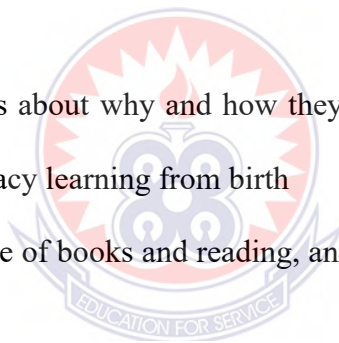
One of the challenges faced by early childhood educators is that, in resourcing the children's classrooms, collections and libraries – like early childhood education settings – there is the temptation for educators to meet popular demand for new technologies and the resources that children can access through these, and base their decisions on research evidence of the educational value of these resources. For example, pre-packaged and expensive, commercial phonics programs are heavily advertised as building knowledge of sound-letter correspondences and thus supporting children in learning to read and write. These claims, however, would not be supported by independent research on how preschool-aged children learn to read and write, which shows that this is best achieved through individualised, child-driven, play-based and authentic experiences with print (Campbell, Torr & Cologon, 2012). The benefits and drawbacks of online and technology-based programs in which presenters read picture books to the audience and interactive picture books must also be carefully weighed (Moody, Justice & Cabell, 2010).

Another challenge in the provision of resources and usage is the inability to provide incentives for families with young children to borrow and use these resources and limit disincentives such as financial penalties for overdue loans or for borrowed materials that have been lost or damaged (Hyde, 2017, December 21).

Schools and Public libraries also provide sessions for young children aged from birth to the year they start school and their families and are expected to offer activities for infants and toddlers as well as for preschool-aged children (IFLA: Libraries for Children and Young Adults Section, 2003, 2007). This includes children with disabilities and their families (Kaeding et al., 2017; Prendergast, 2016).

Sessions such as Baby Rhyme Time and Preschool Story time aim to “entertain, educate, and make [children] lifelong learners” (Albright, 2009, p.13) and especially to promote early literacy in three main ways:

1. Enhancing children’s language and literacy development by engaging them in activities such as reading picture books, singing, talking, writing/craft and playing
2. Educating families about why and how they should support young children’s language and literacy learning from birth
3. Encouraging a love of books and reading, and building a community of library users.



These sessions are a suitable vehicle for reaching these goals. They are free for all children, which is particularly valuable for those without access to a language- and literacy-rich environment at home or in their early childhood settings. Early literacy sessions are a key avenue for making the library a language- and literacy-rich environment for young children and their families: they not only feature reading of picture books and singing of songs and nursery rhymes, but create a context for talking about these texts and interacting with other people, and thereby connecting books and the library to other aspects of everyday life.

Numerous publications offer ‘ready-to-go’ story time programs as well as many that guide designing and delivering story times. An example from Australia is *Enjoying library story time: A guide for practitioners* by children’s librarian Jo Potter (2007). Many well-known recent ones are published by the American Library Association and based on the first or second edition of its *Every Child Ready to Read (ECCR)* framework (Public Library Association (PLA) & Association for Library Services to Children (ALSC), 2004, 2011), which follow the recommendations of scientific reports by the National Reading Panel (National Institute of Child Health & Human Development (NICHD), 2000) and the National Early Literacy Panel (2008) respectively. Books based on ECCR1 (Ghoting & Martin-Díaz, 2006), are organised around the six early literacy components that the panel has recommended children must be given opportunities to develop before starting school: phonological awareness, vocabulary, print awareness/conventions, letter knowledge, narrative skills and background knowledge.

While early language and literacy are the key focus of these sessions, and they are referred to as ‘early literacy sessions’ they also offer children and their families other learning opportunities: to become familiar with the library, to build knowledge across different fields (e.g. about the numbers, seasons, colours), to transition to school more easily, to socialise with other children and families and to learn about other services available in the local community. All these opportunities are highly regarded by the communities public libraries serve. Recent studies from the United States suggest that caregivers evaluate early literacy sessions very positively for supporting children in developing social, physical motor and cognitive skills, which include but are not limited to language and literacy (Clark, 2017); and 85% of 2,004 Americans aged 16 and over surveyed by the PEW Research Centre in 2015 “say that libraries should

“definitely” offer free early literacy programs to help young children prepare for school” (Horrigan, 2015, p. 3).

A distinctive potential advantage of early literacy sessions at public libraries is that children can only attend with their caregivers (Nichols, 2011). Caregivers, especially parents as every child’s first teachers, are an invaluable resource that libraries must harness to successfully promote early literacy not only at the library but also in children’s homes and communities. The strength of public libraries is their deep knowledge of the communities they serve. This powers their ability to be ‘active connectors’, connecting:

- a. Organisations operating in the early childhood sector
- b. Parents/caregivers with resources

For early literacy sessions, strong familiarity with the local community can support efforts to select topics and materials that children and their families can relate to, as well as present them in appropriate ways, identify places outside the library (early childhood centres, shopping centres, parks) where such sessions can be presented to attract ‘hard-to-reach’ families, and connect families with speech and language pathology or other services that can support them in addressing difficulties in their children’s development, including disabilities (Prendergast, 2016).

Even when making the most of these strengths, public libraries face significant challenges not just in conducting early literacy sessions but also in evaluating and improving the extent to which they promote early literacy. One challenge concerns the ways children and carers participate in early literacy sessions. Inappropriate behaviour may be difficult to control in the context of the library as an informal, community-based education setting. As Nichols (2011) explains, in these sessions

“maintaining children’s attention and active participation [is] an achievement coproduced by the presenter, carers, and the children themselves” (p. 181), and carers are expected to prevent children’s inappropriate behaviours (for example, wriggling, uninvited or prolonged interaction with the presenter and attempts to take books or other materials being used by the presenter) and do that unobtrusively, which may be at odds with the ways they control their children’s behaviour at home. Carers must also avoid engaging in certain behaviours themselves, such as socialising with other parents while the presenter is talking or reading to the group, and in contemporary practice are expected to actively engage in early literacy sessions with their children (Albright, 2009).

Efforts to evaluate the success of early literacy sessions are also hampered by “variability in ages, inconsistencies in group size, individual attendance, and the fact that children may visit the library with someone other than their primary caregiver” (Campana, 2016, p. 372). A session may be designed and advertised for 3-5-year-olds, yet libraries rarely exclude children outside the target age range from participating. A single session may include children who attend these sessions regularly but also children who attend only occasionally and even ones who have never before been in a library. Differences in the language, literacy, cultural background, knowledge and experiences among the participants also make it difficult to assess whether and how early literacy sessions contribute to children’s learning.

Finally, session presenters are expected not just to engage children and their careers in language- and literacy-rich activities, but also to act as a ‘teacher and coach’, teaching and modelling for families how they can foster language and literacy learning beyond the library (Albright, 2009; Campana, 2016). This is a role many presenters are not

comfortable with, partly because most lack qualifications in early childhood or language and literacy education, and partly because evidence-based recommendations on how to support early literacy draw on large-scale experimental and quasi-experimental studies and/or research conducted in formal educational settings or home environments. Uncritically adopting such recommendations runs the risk of making early literacy sessions more didactic and school-like and unable to promote reading for pleasure, restricting the opportunities librarians have to provide a personalised service or address the early literacy needs of the diverse communities they serve, and undermining their professional judgement (McKenzie &Stooke, 2009).

2.4 Conceptualising the Role of Environmental print in Literacy Learning

The role of environmental print in emergent literacy and reading development that has emerged from the review of the literature, the potential impact of environmental print begins from birth and is dependent upon normal visual development (Glass, 2002). Children can construct their knowledge and increasingly discriminate between visual symbols, colours, and cues in their environment such as the logo of their favourite baby food and learn the meaning of the logo when they hear their mother say, “+its Gerber time”. Over time, children will develop a knowledge bank of environmental print. For example, Harste (1981a) asked 68 children aged 3 to 6 years to identify environmental print items such as Kroger, Milk, Crest Toothpaste, Puffs, JELLO, US Mail and Wendy’s. At 3 years of age, children were able to recognise environmental print items in context and provide a meaningful response. For example, a child would say “water” or “Burger King” in response to a “Wendy’s” logo on a paper cup. The extraction of meaning from print can become even more refined over time as shown

by reports in which children begin to identify individual letters in environmental print (Lass, 1982).

The child's early environmental print experiences are embedded within their daily socio-cultural context and the people around them (Goodman, 1986). This has been shown by descriptive reports of young children's interaction with environmental print. In some cases, the child's reading of environmental print is only rudimentary in the sense that it does not correspond to the actual words in the print (e.g., Harste, 1981a). Nevertheless, the child is still reading the print for meaning in a way that is relevant to their socio-cultural context. This, in turn, can foster interactions between the child and those around them (Lass, 1982).

The role of socio-cultural experiences with environmental print in promoting logographic skills is not generally a debated issue (Adams, 1990); what is questioned is whether logographic reading can be considered part of the reading system and whether logographic skills play a significant role in developing more conventional reading skills. In logographic reading, we see a child reading environmental print for meaning, even though their ability to extract this meaning greatly diminishes as contextual cues are removed from the text. A deficit model of reading would see the poorer reading following the removal of contextual cues as reflecting what the child does not know. An alternative view would highlight that the child is beginning to read by using cues to extract meaning from environmental print and that this knowledge can benefit the future acquisition of literacy skills.

The role of environmental print in promoting a transition from logographic skills to emergent literacy skills, and ultimately conventional reading skills, is an area in need of future research. There is some evidence that logographic reading ability is related

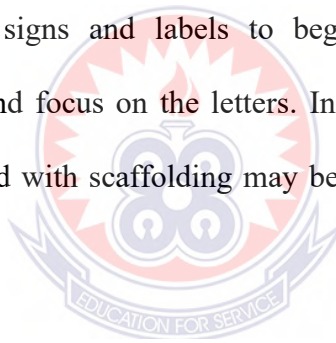
to the ability to subsequently learn how to read words out of context and some researchers have reported a relationship between logographic reading and various emergent literacy skills (Lomax & McGee, (1987).

Emergent literacy skills (e.g., alphabet knowledge) then lead to conventional reading ability. Most research in the area has been observational or correlational in nature and future longitudinal research could complement these approaches by being able to trace the role of environmental print in the development of logographic reading skills to emergent literacy skills and conventional reading skills. The use of eye tracker technology may also reveal what young children are attending to within the graphic displays of environmental print and help determine whether children's early ability to attend to and focus on letter shapes and features within environmental print relates to later reading ability.

The role of environmental print in literacy development may flow through a second parallel pathway in which the learning of emergent literacy skills is scaffolded through socio-cultural experiences. The scaffolding can be done by parents in a home environment or by teachers in an educational context. Moreover, it does not necessarily require the development of specialised play-based environmental print settings because there exists abundant environmental print already in the home (e.g., toy labels, food packaging) and the classroom (e.g., BOYS, GIRLS, EXIT). Mother-child interactions around environmental print may contribute towards some emergent literacy skills, although it may not necessarily lead to conventional reading (Purcell-Gates, 1996). However, evidence from case studies suggests that applying a multisensory strategy to scaffold learning with environmental print will promote emergent literacy skills (Neumann & Neumann, 2010). Moving this work beyond a

case study design to a large sample of parents and children would help to further validate this approach. More research has been done on using environmental print to teach literacy skills in an educational context. Environmental print may be used to promote the reading of the print in and perhaps out of context and to promote emergent literacy skills (Wepner, 1985). Findings such as these support the use of environmental print as a literacy learning resource by parents and teachers.

The scaffolding pathway explains how a child's development of emergent literacy skills may be facilitated by someone more expert than them, who can provide them with positive feedback and guide their learning within their Zone of Proximal Development (Vygotsky, 1978). For example, this might help a child who is logographically reading signs and labels to begin to de-contextualise the print embedded in the signs and focus on the letters. In other words, the child's existing logographic skills coupled with scaffolding may be used to support their letter name and sound knowledge.



Further investigation is needed to determine what types of environmental print scaffolding may be the most effective in normally developing children and in children with learning difficulties. For example, Vera (2007) incorporated tactile elements when the children formed letters using play dough, and used a more comprehensive multisensory approach by including simultaneous visual, auditory, tactile, and kinaesthetic elements. Adult scaffolding of a young child's literacy learning through multisensory interactions with environmental print (by visually pointing out a letter, saying the letter name, tracing the letter shape with a finger and forming the letter shape in the air) might provide an active and meaningful way to learn about letters and words. This simple strategy may be used in the home or the classroom through a

child's spontaneous encounters with environmental print or could be used in more guided literacy activities. The extent to which this multisensory approach (as opposed to the use of environmental print alone) affects the growth of emergent literacy skills is an important factor to investigate.

Reading acquisition may be conceptualised as existing along a developmental continuum (Mason & Allen, 1986). The process can be cyclic, where experience transacts with print settings and leads to new levels of literacy growth with prior experiences continually influencing future experiences. The idea that emergent literacy skills and logographic skills cycle back to socio-cultural experiences is in keeping with this perspective. The cycle continues during a child's natural discovery of environmental print and subsequent acquisition of more sophisticated understandings of socio-culturally determined concepts of print. For example, Lass (1982) described how during walks along a commercial street, her son at 20 months of age explored and pointed out letters in surrounding signs asking his mother what they were. Through the positive feedback from his mother, Jed's knowledge of alphabet letters and words gradually increased. For this review, most focus has been placed on logographic and emergent literacy skills. However, the process will continue even when children master conventional reading as socio-cultural experiences will continue to shape literacy learning throughout our adult lives. Harste (1984) puts this into perspective by saying "Because this process is cyclic and ongoing throughout life, the nature of literacy itself is forever changing, creating new personal and societal potentials for all of us" (p. 30).

2.5 Conceptual Framework

Based on the thorough review of the related literature of the study and Zone of Proximal Development (ZPD) theory (Vygotsky, 1978) and Noam Chomsky's Language Acquisition Theory (Chomsky, 1965), the following conceptual framework was developed to show the relationship between the use of environmental prints and literacy skills development. The conceptual framework presents the illustration of the relationship between the independent (the use of environmental prints) and dependent variable (literacy skills development of children in Sissala East Municipality). The independent variables are lined up at the extreme left of the diagram, there are; drawing of teaching-learning materials on the wall, books, newspapers, logos, toys, drawing of fruits, leaves, trees, animals, inscriptions on clothing and wares, vehicles, motor bikes, bicycles, prints in shops and supermarkets.

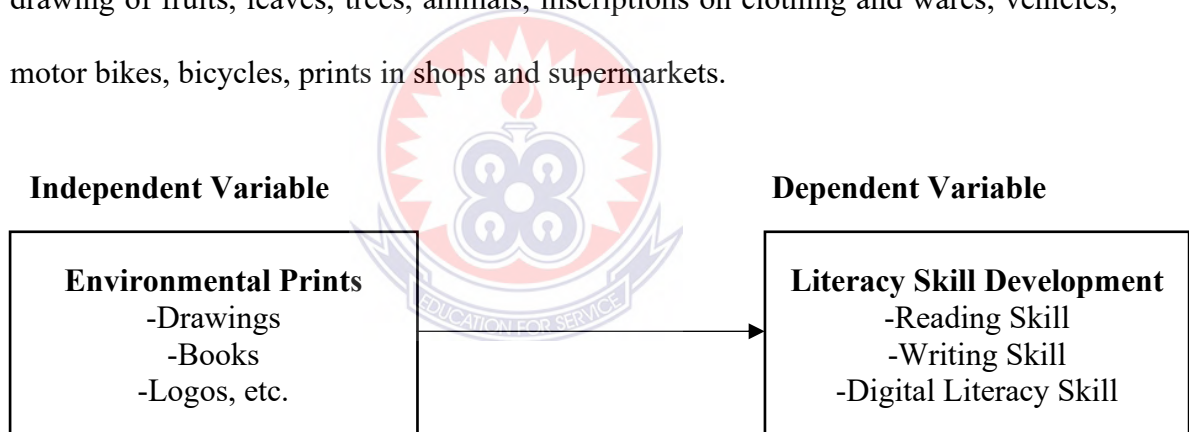


Figure 2.1: Conceptual Framework

On the extreme right are the dependent variables (literacy skills). The literacy skills development is dimensionalised into reading skills, writing skills and digital literacy skills. The interaction was in different forms and fashion, for example, children were guided by the teachers to mention the names of the environmental prints, and draw or trace the prints. They were also guided to tell stories, build blocks, play games, and dramatize with the materials or prints, the activities were hands-on. The item at the extreme right is the literacy development representing dependent variables which are

communication skills, and the ability to draw, trace and pronounce the names of the prints. These variables (outputs) were developed as the result of interaction with the independent variables. It equally means when environmental prints are increased or improved in quality the children's literacy skills development will automatically increase showing the correlation between the independent and dependent variables and that literacy development depends on environmental prints.

2.6 Summary of Literature Review

The literacy-rich classroom serves as a means to build the basic skills necessary for literacy development by demonstrating to students with disabilities the function and utility of language in an intentional, purposeful, and intensive way. While many students come to school with exposure to literacy in their everyday lives, students who may not have access or exposure benefit from the instruction and intensity provided by teachers and staff in this setting. Given the support of this environment, students are better prepared to work on other literacy skills including phonemic awareness, phonics, fluency, vocabulary, and comprehension. However, a thorough review of the relevant literature indicates that there is an empirical gap in the literature regarding the impact of environmental prints on early childhood literacy skills development. Hence, in the researcher's quest to bridge this gap, this study collects quantitative data to test the relationship between environmental prints and literacy skills (reading skills, writing skills and digital literacy skills) development. The next chapter presents in detail, the research methodology which comprises the research design, approach, methods and data collection and analysis techniques used.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter discusses in detail the research methodology of the study. According to Leavy (2017), a research methodology is the combination of methods and theory and a strategy for how a study will continue, and how the various research components will be incorporated into a strategy that outlines how the particular research experiment will be performed. This chapter presents the procedures involved in carrying out the study, it covers the research design, study area, population, sampling procedure, data collection instrument, data collection procedure, ethical consideration and data processing and analysis.

3.1 Research Philosophy

According to Saunders, Lewis, and Thornhill (2016), research philosophy is a system of beliefs and assumptions about the development of knowledge. The choice of philosophical foundation is important because it shapes the foundation of the research and the conduct of inquiry (Creswell, 2009). Based on the research aim and objectives, postpositivism philosophical research orientation will be used for this research. Postpositivism is associated with predetermined and highly structured data collection techniques (e.g. questionnaire, survey, etc.), as it is observable and measurable facts (Saunders et al., 2016). The postpositivist worldview contends that there are laws or theories that govern the world, and these need to be tested or verified and refined so that we can understand the world (Creswell & Crewell, 2018, p.47). The following are some of the reasons for chosen postpositivism as the research paradigm for this study. The main questions that postpositivist researchers aim to answer are “what” type of questions, which is the same as the research question of the

present study, e.g. *What is the impact of environmental prints on the literacy development of children in Sissala East Municipality?* Also, according to Creswell and Clark (2018), the best philosophical worldview associated with quantitative research is postpositivist philosophy.

3.2 Research Design

Creswell and Clark Plano (2018) defined a research design as the procedures for collecting, analyzing, interpreting and reporting data in research studies. There are three main types of research designs namely quantitative, qualitative and mixed methods designs (Grey, 2014; Creswell and Clark Plano, 2018). Based on the nature of the research problem and research questions, this current study adopted the quantitative research design. According to Creswell and Crewell (2018), the quantitative research approach is an approach for testing objective theories by examining the relationship among variables. A deductive approach helps to explain causal relationships between concepts and variables (Saunders et al., 2016, p. 46).

Bryman (2012) also described the quantitative research approach as a research approach that emphasizes quantification in the collection and analysis of data and that entails a deductive approach to the relationship between theory and research, in which the accent is placed on the testing of theories; has incorporated the practices and norms of the natural scientific model and positivism in particular; and embodies a view of social reality as an external, objective reality. Quantitative research is also inspired by the positivism world view and deductive research approach. Creswell and Crewell (2018) argue that “postpositivist is reductionistic in that the intent is to reduce the ideas into a small, discrete set to test, such as the variables that comprise hypotheses and research questions” (pp.43). In this design, the researcher collected

quantitative data and analysed the data to help explain the phenomena from the perspective of numbers.

3.3 Research Method

According to Saunders et al. (2016), a research strategy is a method used to address research objective(s) and it includes experiment, survey, case study, ethnography, narrative inquiry, grounded theory, action research, and archival research. The strategy used for the data collection for this research is the survey method. The research method that was used for data collection was based on the research questions, research objectives, research design, philosophical underpinnings, the extent of existing knowledge, the amount of time available, and other availability of other resources (Easterby-Smith et al., 2015) is the survey method. According to Creswell and Crewell (2018, p.48), 'a survey research provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population'. The survey method utilized in gathering data from the study respondents was a questionnaire. This method is preferred to others because it helps to gather more information from a large number of people especially respondents who are mostly busy serving customers or those scattered geographically. Surveys are a good way of gathering a large amount of data from a large group of people through a questionnaire (Creswell & Crewell, 2018; Saunders et al., 2016).

3.4 Population

Kankam and Weiler (2010) define population (participants) to refer to all people whom you will focus on in the study. According to these researchers, the population could range from a whole school, classes, one class or a group of students (p.38). A population according to Kusi (2012) is defined as a group of individuals or people

with similar or the same characteristics the researcher is interested in. The entire population of the study includes all early childhood teachers in Ghana. However, the entire population of the study is too big; therefore, a target population was selected for the study. The target population is the group of individuals that the intervention intends to conduct research and draw conclusions from (Barnsbee et al., 2018). The target population for this study comprised all early childhood teachers within the Sissala East Municipality. The targeted population of the study consisted of 687 early childhood teachers in the 176 public and private schools in the Sissala East Municipality (Sissala East municipality directorate, 2019/2020 academic year).

Table 3.1: Accessible Population Distribution of the Respondents

Category of School	Number of Schools	Male	Female	Total
Public	120	28	552	580
Private	56	78	29	107
Total	176	106	781	687

Source: Statistics Office, GES, Sissala East municipality, 2020

3.5 Sample and Sampling Techniques

According to Saunders et al. (2016), it is unrealistic to collect data from the entire population but rather a sample. Sampling is done to enable the researcher to study a relatively small number of units in place of the target population and to obtain data that are representative of the whole target population (Madow, 1946). Sampling is referred to the process of selecting a portion of the population to represent the entire population (Polit, Beck & Hungler, 2001). A sample consisted of a carefully selected subset of the units that comprise the population.

A sample size of a study is a small population that is selected for the data collection and analysis and it is normally drawn from the population of the study. Gay as cited in Mugenda and Mugenda (2003) suggested that for correctional studies, 30 cases or more are required; for descriptive studies, 10% of the accessible population is enough and for experimental design, at least 30 cases are required. For this study, a sample size of 243 early childhood teachers was selected from 55 selected schools in the municipality.

The simple random sampling technique and Krejcie and Morgan's (1970) sampling table were respectively used to select the schools and the early childhood (kindergarten) teachers that participated in this current research. A simple random sampling technique was used to select 55 schools out of the 120 schools in the municipality. Simple random sampling is a type of probability sampling in which the researcher randomly selects a subset of participants from a population. Each member of the population has an equal chance of being selected. The sample for the study consisted of 243 kindergarten teachers selected from both public and private schools. This sample size was determined and calculated using Krejcie and Morgan's (1970) sampling table at a 95% confidence level and a 5% margin of error. According to Krejcie and Morgan's sampling table, a population of 687 gave a sample of 243. Therefore, a sample size of 243 for this study was considered large enough to produce the desired results and allow for the generalization of the findings over the entire population.

A multi-phase sampling is a method that collects basic information from a large sample of units and then for a sub-sample of these units, collects more detailed information. A multi-phase sampling technique was employed to draw a sample of

243 kindergarten teachers from the accessible population. Cohen, Manion and Morrison (2007) noted that the purpose and population of sampling change at each phase of the sampling process in multi-phase sampling. In this study, the first stage of sampling consisted of stratifying the teachers into public and private.

The second phase consists of quota sampling in selecting the teachers to be included. 220 trained public school teachers and 23 trained private school teachers were selected. In all, 243 trained early childhood teachers were selected from both the public and private within the municipality. The third phase is the use of simple random sampling to pick up the teachers for each category. 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 a participant in the study. The teachers who picked the “Yes” tag are believed to offer rich information to aid the objectives of the study. Patton (1990) argues that the logic and power of purposeful sampling lie in selecting information-rich cases for study in depth.

Table 3.2: Sample Size Distribution of the Respondents

Category of School	Number of teachers	Sampled
Public	568	220
Private	99	23
Total	667	243

Source: Field Survey (2020)

3.6 Data Collection Instrument

Data collection instruments are tools that are used to collect information from research participants (Leedy & Ormrod, 2016). Frankel and Wallen (2000) indicated that data collection is important to every study because the conclusion of every study is based on what the data revealed. To them, therefore, the kind of data collected, the

methods of data collection employed and the scoring of the data collected need to be considered with care. With this in mind, the instrument employed to collect data through a careful inquiry was a questionnaire. The choice of this instrument is influenced by the fact that descriptive research design lends itself to quantitative instruments, Creswell (2009). The intended questionnaire was designed and structured in 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 was based on the knowledge content of the respondents about environmental prints, the third part was on the importance of environmental print, the fourth part was the challenges of environmental print usage and the fifth part was based on the measures to addressing the challenges. The questionnaire distributed to the respondents was structured using the 4-point Likert scale format (with 4= Strongly Agree and 1= Strongly disagree). Respondents were required to express their level of agreement or disagreement with statements on a 4-point Likert scale. All the questionnaire items were either adopted or adapted from past related literature.

3.7 Data Collection Procedure

The researcher obtained an introductory letter from the Department of Early Childhood Education, University of Education, Winneba stating the purpose of the study. The researcher after that took the letter to the Sissala East Municipal Education Directorate for approval. After the approval of the letter, the researcher visited the sampled schools and introduced himself to the head teachers of various schools and inform them about his intentions. Together with the sampled respondents, the date and time for the administration of the questionnaires were scheduled and on the said date, the researcher went to the schools and administered the questionnaires. The questionnaires were collected after completion on the same day.

2.8 Pilot-testing

Pilot testing is a means of testing the validity and reliability of the instrument. A pilot-testing of the questionnaire was conducted at selected kindergarten schools within the Sissala East municipality. The schools selected were not part of the schools for the main study. According to Gay (1992), a pilot test could be used to revise questions in the instrument that are unclear or may produce negative reactions in subjects. Hence, the need for pilot tests before the main study. The pilot-test was analyzed using the procedure in Statistical Package for Social Sciences (SPSS). Cronbach's alpha reliability coefficient was used to estimate the reliability coefficient of the questionnaire.

3.9 Validity and Reliability of the Instrument

In both quantitative and qualitative research, validity or trustworthiness rests on the foundation that a method, a test or a research tool is measuring what it is supposed to measure (Bryman, 2008). Similarly, Silverman (2009) stated that validity is a way of finding an accurate representation of the phenomena to which they refer. Reliability is a measure of the consistency over time of instruments with groups of respondents and it deals with precision and accuracy (Cohen, Manion & Morrison, 2007). Validity and reliability are essential features of any research (Creswell, 2003). To obtain the reliability of the instrument, Cronbach's co-efficient alpha was used to estimate the internal consistency with a reliability co-efficient of 0.73.

To determine the degree to which the instrument used for the study measured accurately what it was expected to measure, both instruments were given to the researcher's supervisor for his expert judgement to be made on the items. The instruments were given to other equally competent assessment experts to assess the

content and items included in the questionnaire. The aim was to review any ambiguities, threatening items and other problems which needed to be resolved before trying out the instruments. Their constructive and informative responses were used to improve both instruments thus the questionnaire and interview guide and to produce the final form which was used for the study.

3.10 Data Analyses Procedures

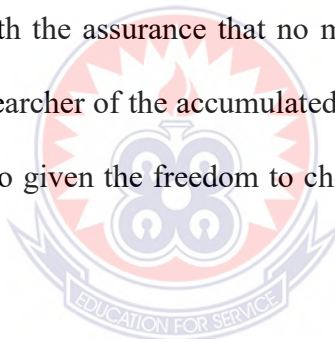
The data for this study were analysed using a quantitative approach. Data analysis forms one of the most important components of modern research. Data gathered from the field were checked to ensure their consistency and completeness. Patton (2002) noted that analysis of empirical data aims to make sense of massive amounts of data, reduce the volume of information, identify significant patterns, and construct a framework for communicating the essence of what the data reveals. The field data was collated, sifted through and edited to address questions that have been answered partially or not answered. For effective statistical presentation and analysis, the questionnaires were serially numbered to facilitate easy identification. Responses to the various items in the questionnaires were then added, tabulated and statistically analysed.

After editing and coding, the data from the questionnaire were entered into the computer using the Statistical Package for the Social Sciences (SPSS Version 22.0) software. It was used to calculate values for mean, standard deviation, percentages, tables, graphs and charts. Before performing the desired data transformation, the data were cleaned by running consistency checks on every variable. Corrections were made after verification from the questionnaires and the database was generated. Parametric statistics of t-, z-, and F-ratios were used for comparing one sample

variance to another sample variance, while chi-square(x^2) is a non-parametric test. The researcher was interested in comparisons or relationships between variables. In this case, the following statistical test was considered simple correlation, partial correlation, multiple correlations, and factor analysis z-ratio, t-ratio, Analysis of variance (ANOVA), and chi-square.

3.11 Ethical Considerations

With the issue of ethical considerations, the researcher assured the respondents of confidentiality and privacy. Also, the respondents were assured that their information would be used only for academic purposes. The ethical consideration of the data collection processes observed includes autonomy, anonymity, and confidentiality of the respondents along with the assurance that no manipulation of the data would be passed forward by the researcher of the accumulated data received by the respondents. The respondents were also given the freedom to choose whether they will participate in the study or not.



CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.0 Introduction

The purpose of the study was to examine the effect of environmental prints on the literacy development of children in selected private and public early childhood centres in the Sissala East municipality. 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 95% returned data obtained from 243 teachers for the study. This implies that out of the targeted sample of 243, a total of 230 questionnaires were retrieved for the study. The quantitative data were analysed using descriptive statistics (means, standard deviations, frequencies, and percentages) and inferential statistics (Linear Multiple Regression-LMR). The first part of this chapter describes the demographic characteristics of the respondents (private and public early childhood teachers). 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 Demographic Profile of Respondents

This section of the questionnaire (biographical) discusses the background information of the respondents. These included the teachers' Age, Sex, Highest educational qualification, area of specialization, type of institution of teaching, and years of teaching experience. The results are presented in graphs.

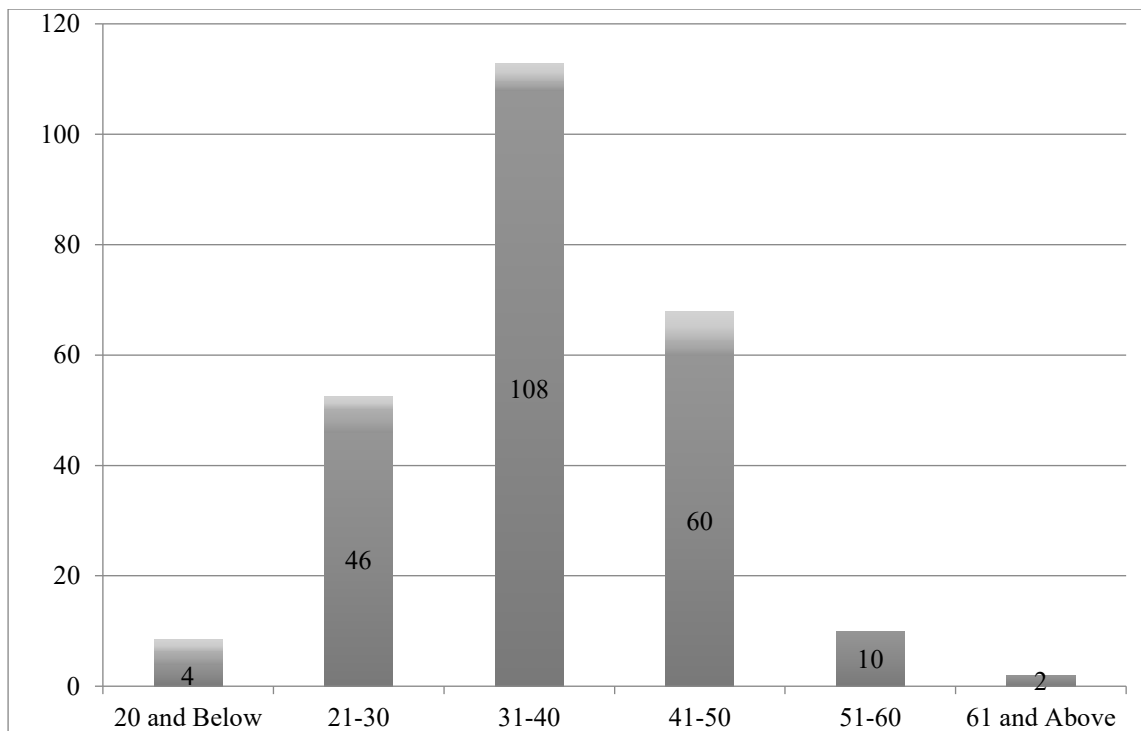


Figure 4.1: Ages of the Teachers

From Figure 4.1, the results show that most of the teachers were between 31-40 years. By implication, the results mean that most of the teachers were within the active working group.

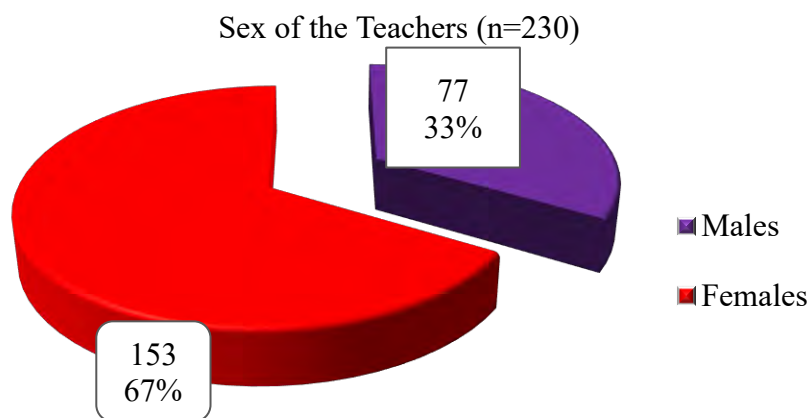


Figure 4.2: Sex of the Teachers

The females were the majority as portrayed in Figure 4.2. Since no comparison was made concerning male and female teachers, the outcome did not affect the study since the questionnaire was not gender-specific.

Teachers' Qualification

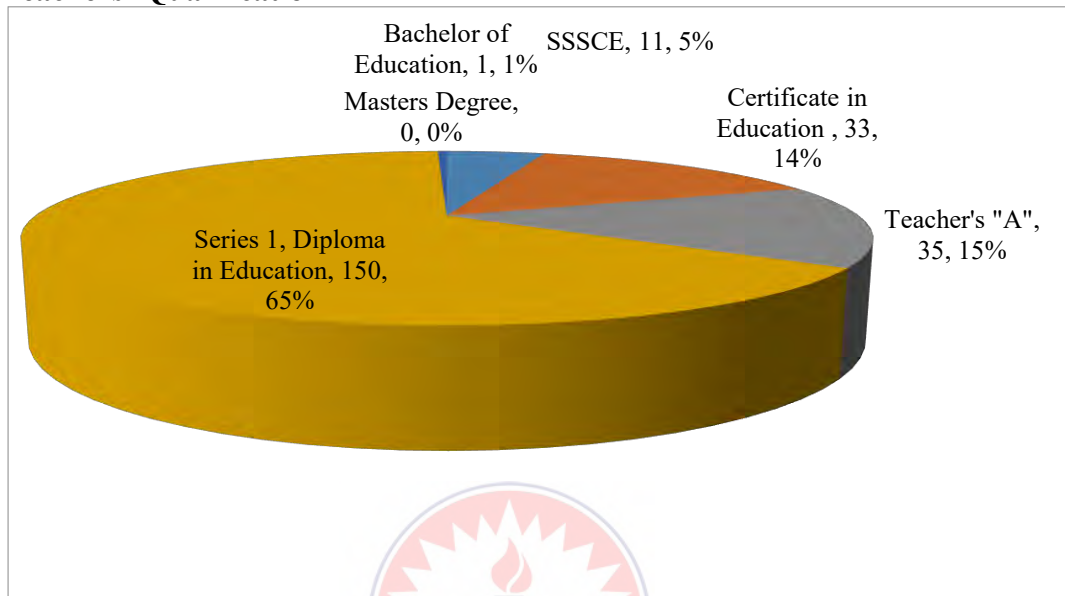


Figure 4.3: Qualification of the Teachers

In Figure 4.3, the results show that diploma holders were the majority. Though, the large size of teachers with diplomas did not affect the study since the questionnaire was designed to be neutral in terms of the sex of the teachers.

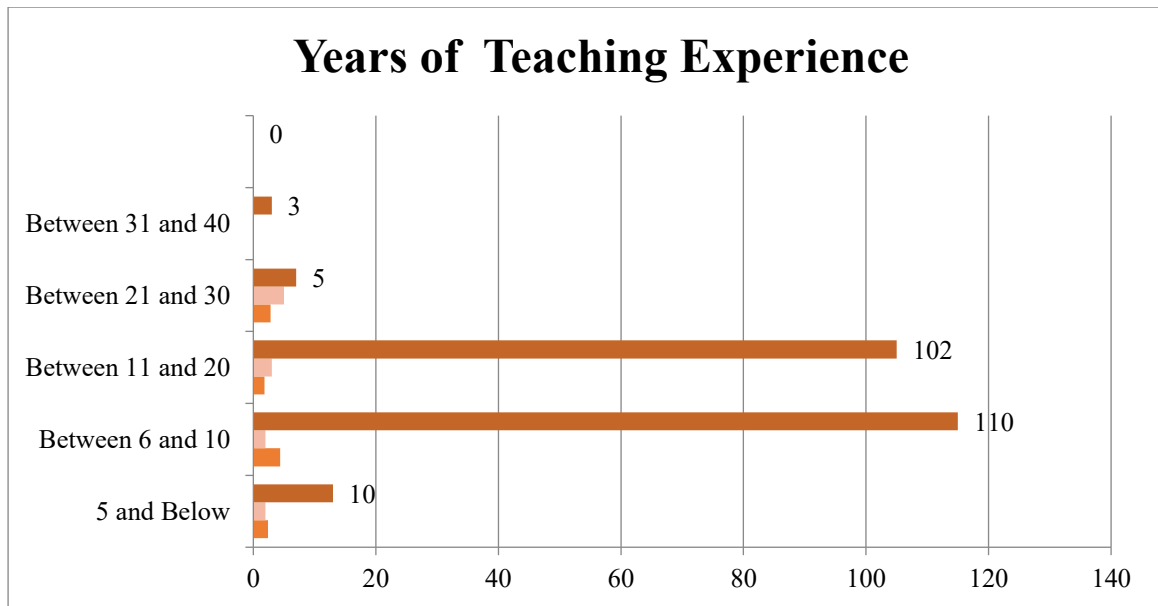


Figure 4.4: Years of Teaching Experience

As depicted in Figure 4.4, the results show that most of the teachers had taught for 6-10 years. Those who had taught for 31-40 years and above were the least. 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 teachers who had taught for 6-10 years did not affect the study since the questionnaire was designed to be age neutral.

4.2 Main Results

To gather pieces of evidence on environmental prints for the study, the selected private and public early childhood teachers were made to rate their responses using Strongly Disagree (SD), Disagree (D), Agree (A) and Strongly Agree (SA). Using means, the scales were scored as (Strongly Disagree =1, Disagree =2, Agree= 3, Strongly Agree =4). A criterion value of 2.50 was established for the scale. To obtain the criterion value (CV=2.50), the scores were added together and divided by the number scale ($4+3+2+1= 10/4=2.50$). To understand the mean scores, items/statements on the use and effects of environmental prints that scored a mean of

0.00 to 2.50 was regarded as low effects of environmental prints. Those items/statements that scored a mean from **2.50 to 4.00** was regarded as having high environmental prints effects among the children. This is for research questions 1-2 and 4. The final part of the main research results presents the regression analysis findings on the effects of the use of environmental prints on literacy skills development (writing, reading and digital literacy skills)

4.2.1 Early childhood teachers' perception of the use of environmental prints

The research question sort to understand early childhood teachers' perception regarding the use of environmental prints in Kindergarten lesson delivery. To answer this the respondents were quizzed and the findings are presented in table 4.1. Assessing tools teachers use in assessing children is one of the theoretical issues in assessment practice. However, in the Sissala East municipality, there is no baseline study to provide evidence in the Ghanaian context. This made the researcher establish a baseline study in the Sissala East municipality. The ensuing results are in Table 4.1.

Table 4.1: Results on teachers' perception of the use of environmental prints

Statements	MS	SDS	Kurtosis Statistic	MR
	Criterion Value =2.50			
I create literate-rich environments for pupils to interact and manipulate to gain literacy skills	3.95	.254	.533	1 st
I use wall charts to provide attractive pictures for children's use	3.77	.466	.455	2 nd
I encourage children to use awesome language while reading and writing	3.67	.255	.477	3 rd
I encourage children to Play with Words in the classroom library	3.69	.952	.343	4 th
I am unable to give individual attention to children on the used environmental prints	3.55	.382	.263	5 th
Mean of Means/StD.	3.55	.359	.464	6 th

Source: Field Data (2020)

(n=230)

Key- MS= Mean Statistic: SDS =Standard Deviation Statistic: MR=Means Ranking:
n=Sample Size

Table 4.1 above depicts results on teachers' understanding of assessment practices in selected private and public early childhood centres in the Sissala East municipality. In assessing the kurtosis values from Table 4.1, the results show that the variables follow a normal distribution as the values were within the acceptable limit for normal distribution of ± 2 as proposed by George and Mallery (2011). With the understanding of the results, the mean values were used to compare the CV of 2.50. In the comparison, it was evident the obtained average score was found to be slightly greater than the CV of 2.50

Reporting of the few aspects where the teachers were highly comprehensible, it was revealed that most of the selected private and public early childhood centres in the Sissala East municipality are aware of environmental prints and that, teachers create literate rich environments for pupils to interact and manipulate to gain literacy skills ($\underline{M}=3.95$, $\underline{SD}=.254$, $\underline{KS}=.553$, $\underline{n}=230$). Again, it was found that Teachers use wall charts to provide an attractive picture for children's use ($\underline{M}=3.77$, $\underline{SD}=.466$, $\underline{KS}=.455$, $\underline{n}=230$). Most of them again shared that Teachers encourage children to use awesome language while reading and writing ($\underline{M}=3.67$, $\underline{SD}=.255$, $\underline{KS}=.477$, $\underline{n}=230$). In other evidence, it was found that Teachers encourage children to Play with Words in the classroom library ($\underline{M}=3.69$, $\underline{SD}=.952$, $\underline{KS}=.343$, $\underline{n}=230$). On the low views and understanding of environmental Prints, it was found that most Teachers were unable to give individual attention to children on the use of environmental prints ($\underline{M}=3.55$, $\underline{SD}=.359$, $\underline{KS}=.464$, $\underline{n}=230$).

The researcher again rate children to cross-check the qualitative data results on teachers' views about environmental prints and to see whether the teachers were better equipped with the requisite professional knowledge on the environmental

prints; the rating was done in Kassana KG, Kong KG, Banu KG and Oak International KG. It was observed that teachers greatly engaged children in the following activities:

- i. Music and movement activities: auditions, musical games, text games and singing, songs, eurhythmy (Most of these prints were concrete objects children used)
- ii. Communication and creative activities: stories with pictures of scenes, memorization, working with books, and reading images.
- iii. Awareness activities: observations, readings by pictures, mathematical activities, talks, didactic games, and experiments.
- iv. Outdoor activities: walks, sand games, games and sports competitions, using playground equipment.
- v. The oral communication method was used and classified as expository methods (story-telling, description, explanation) and conversational methods (conversation, heuristic conversation, questioning on a special subject through pictures).
- vi. Teachers also use exploratory learning methods: the direct exploration of objects and phenomena (systematic and independent observation, small experiments, etc.) and indirect exploration (demonstration through pictures, films).
- vii. During most of the activities, teachers use extensively methods based on the pupils' direct voluntary action (exercises, practical work) and simulated action (didactic games, learning through drama from environmental prints).
- viii. It was found that the game was the major modality to stimulating the mental and physical capacity of the pupils and facilitating the adaptation of the pupils to the requirements of formal education.

The rating scale results were consistent with the quantitative data results as it indicated that teachers have high positive views about environmental print usage and that it had a positive effect on children's language and literacy development.

4.2.2 Strategies employed by early childhood teachers to engage children in the use of environmental prints in the Sissala East Municipality

To understand how early childhood teachers engage children in the use of environmental prints in the Sissala East Municipality, the teachers were quizzed and the results are presented in table 4.2. Assessing the kurtosis values from Table 4.2 the results show that the variables (assessment tools) follow a normal distribution. This is based on the reason that the kurtosis values were within the acceptable limit for normal distribution of ± 2 as suggested by George and Mallery (2011) indicating that the data was normal. Dwelling on the mean values, the results show that to an optimal level, most private and public early childhood centres in the Sissala East municipality employ good techniques, and activities to engage children in the environmental prints. This was evident after the obtained average score was found to be a little greater than the CV of 2.50. Nevertheless, the mean values presented in the ranking matter show that there was some emphasis on some of the activities than others in the Sissala East Municipality.

Table 4.2: Results on how teachers engage children in the use of environmental prints

Statements	MS	SDS	Kurtosis Statistic	MR
	Criterion Value =2.50			
I measure pupils' achievements at the end of instruction (naming the types of environmental prints in their schools).	3.75	.282	.435	1 st
I assess pupils' achievements during instruction (Drawing the types of environmental prints in the classrooms)	3.24	.251	.476	2 nd
I test children's performance on colouring outlines of environmental prints found in the school.	3.15	.313	.327	3 rd
I assess pupils' strengths, weaknesses, knowledge and skills before instruction on environmental prints	3.02	.230	.324	4 th
I measure pupils' performance against a goal, specific objective or standard on environmental prints	2.86	.913	.392	5 th
I assess children's achievement in creating their Prints	2.67	.244	.575	6 th
Mean of Means/StD.	3.12	.372	.421	7 th

Source: Field Data (2020)

(n=230)

Key- MS= Mean Statistic: SDS =Standard Deviation Statistic: MR=Means Ranking:
n=Sample Size

For instance, it was found that most of the private and public early childhood centres teach and measure pupils' achievements at the end of instruction (naming the types of environmental prints in their schools) (\underline{M} =3.75, \underline{SD} =.282, \underline{KS} =.435, \underline{n} =230). Another assessment tool found was portfolios. The majority of the teachers indicated that they teach and assess pupils' achievements during instruction (Drawing the types of environmental prints in the classrooms) (\underline{M} =3.24, \underline{SD} =.251, \underline{KS} =.476, \underline{n} =230). It was found that most teachers teach and test children's performance on colouring outlines of environmental prints found in their workbooks (\underline{M} =3.15, \underline{SD} =.313, \underline{KS} =.327, \underline{n} =230). The use of observation of learning outcomes was not left out as most of the teachers asserted that they teach and assess pupils' strengths, weaknesses, knowledge

and skills before instruction on environmental prints ($\underline{M}=3.02$, $\underline{SD}=.230$, $\underline{KS}=.324$, $\underline{n}=230$). Enviably, it was asserted that most private and public early childhood teachers in the Sissala East municipality teach and measure pupils' performance against a goal, specific objective or standard on environmental prints ($\underline{M}=2.86$, $\underline{SD}=.913$, $\underline{KS}=.392$, $\underline{n}=230$). In furtherance to the above, on average, it was found that some of the teachers teach and assess children's achievement in creating their Prints ($\underline{M}=2.67$, $\underline{SD}=.244$, $\underline{KS}=.575$, $\underline{n}=230$). In the rating scale, it showed that some teachers in the selected schools do not have high positive views and expertise required of them for the use of school facilities.

4.2.3 Impacts of environmental prints on literacy development of children in

Sissala East Municipality

To accomplish the purpose of the study, the researcher assessed how the use of environmental prints influence the literacy development of the children in selected private and public early childhood centres in the Sissala East municipality. To achieve this, Linear Multiple Regression (LMR) was deemed appropriate for the analysis. Linear Multiple Regression (LMR) was utilised to show the direction and magnitude of the influence of assessment on the socio-emotional development of the children. Proceeding to conduct Linear Multiple Regression (LMR), certain assumptions must be met and including the normality test and multi-collinearity. The researcher checked for the assumption before conducting the regression test. The graph (Figure 4.5) shows the normality test for the test variables.

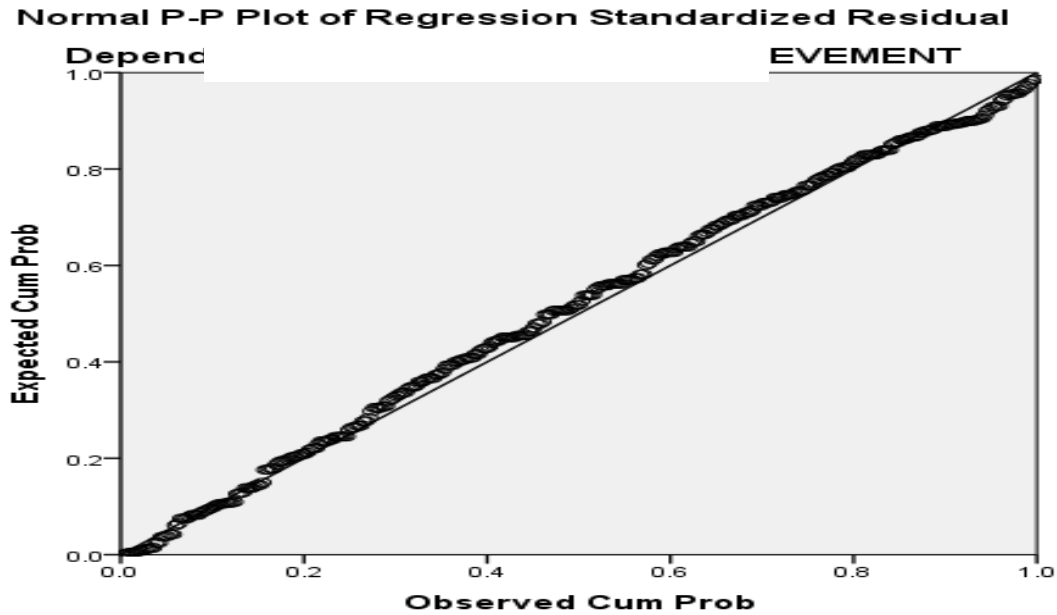


Figure 4.5: P-P plot for normality test

Figure 4.5 presents the normality of the study variables. The movement of the variables along the diagonal line shows that the variables were normal and Linear Multiple Regression (LMR) could be performed.

Table 4.3: Descriptive Results of the Independent Variables (assessment influencers-social skills, empathy and Relationship)

No	Environmental Prints Influencers	Mean	Std. D	N	Ranking
1	Reading Skills	17.05	2.026	222	1 st
3	Writing Skills	15.54	1.599	244	2 nd
2	Digital literacy skills	16.72	1.263	232	3 rd

Source: Field Data, (2020)

n=230

The results from the descriptive analysis show that there were differences in the means scores of the predictors' independent variables (Reading Skills, Writing skills and Digital Literacy Skills). From Table 4.3, Reading Skills recorded the highest mean and standard deviation (mean=17.05, SD=2.026, n=230). Writing Skills with a mean and standard deviation of (mean=15.54, SD=1.599, n=230). The last variable - Digital literacy skills recorded the least mean and standard deviation (mean=16.33,

SD=1.263, n=230). To establish more evidence, Table 4.4 indicates the result of the Linear Multiple Regression analysis between independent variables (reading skills, writing and Digital literacy skills) and dependent variables (Environmental Prints).

Table 4.4: Linear Multiple Regression Analysis of the dependent and independent Variables

Variables (Assessment Influencers)	Unstandardized		Standardize Coefficients (β)	t- value	p- value
	B	Std. Error			
(Constant)	56.50	3.602		17.38	.000*
Reading skills	1.334	.233	.335	5.734	.000*
Writing skills	1.078	.247	.282	4.250	.000*
Digital literacy skills	.743	.161	.695	4.263	.000*
Multiple R-value	.9853 ^a		F value		8.328
R Square value	.273		P value		.004*
Adjusted R Square	.210		Durbin-Watson		1.601
Predictors: (Constant), Environmental Prints					
Dependent Variable: Literacy Skills Development					

*significant @ 0.05 level

The result of the linear multiple regression analysis shows that the multiple correlation coefficient is 0.985. This measures the degree of relationship between the predictors and predicted value of literacy development of the children. This indicates that there is a strong and positive relationship between the independent variables (Literacy Skills Development) and the independent variables (Environmental Prints). From Table 4.5, the R^2 (R-square) of 0.250 measures the goodness-of-fit of the estimated regression model in terms of the proportion of the variation in the Environmental Prints of the children as explained by the fitted sample regression equation. Thus about 27% of the variation in Environmental Prints of the children is explained and accounted for by the predictors (Reading Skills, Writing skills and

Digital Literacy Skills) and the R^2 value is significant at a 5 percent confidence level. The Durbin-Watson statistic is 1.601 and it tests for autocorrelation in the residuals from a statistical regression analysis, thus, it informs whether the assumption of independent errors is tenable and in this data the value is close to 2, hence the assumption has almost been met. The Durbin-Watson statistic is 1.601 and it is between the two critical values of $1.5 < d < 2.5$, therefore, the researcher assumed that there is no first-order linear auto-correlation in the multiple linear regression data, thus, there is no autocorrelation in the sample.

From Table 4.5, the multiple linear regression coefficients (b-values) tell the relationship between the Environmental Prints of the children and each predictor (Literacy skills Development). The constant of the regression model is 56.501 which means that even when the independent variables (Reading Skills, Writing skills and Digital Literacy Skills) are held constant or zero, still, the literacy development of the children will be 56.501. The multiple linear regression coefficients of reading skills are recorded as ($\beta=.345$, $t=5.734$, sig. 000), which indicates that there is a significant positive relationship between the use of environmental prints and the reading skills dimension of literacy skills development. The relative effect size of the influence of environmental prints on reading literacy skills development of the children is significant at a 5% confidence level because the t-value is 5.834. Therefore, it could be said that environmental prints are making a valuable and significant contribution to the reading literacy skills development of children.

Concerning the impact of an environmental sprint on writing skills, the results were not different, however, they varied in magnitude. The multiple linear regression coefficients revealed that there is a significant and positive impact of environmental

prints on the writing literacy skills development of early childhood pupils ($\beta=.282$, $t=4.250$, sig. 000). The relative effect of environmental sprints on writing literacy skills development of the children is also significant at 5% confidence level because the t-value is 4.305. Therefore, it could be said that environmental sprints are making an appreciated and significant contribution to the writing literacy skills development of the children in the Sissala East municipality. Finally, on environmental sprints and digital literacy skills development, the linear multiple regression coefficient results revealed that there is a statistically significant positive relationship between environmental sprints and digital literacy skills development ($\beta=.695$, $t=4.268$, $p = 0.000^{**}$) signifies the effect neuroticism has on the literacy development of the children in the Sissala East municipality holding all the other independent factors constant. The relative effect of environmental sprints on digital literacy skills development is significant at a 5% confidence level because the t-value is 4.263. The results, therefore, suggest that environmental sprints are making some significant contribution to the digital literacy skills development of the children in the Sissala East municipality.

4.2.4 Challenges of Using Environmental Print in Early Childhood Class in Sissala East Municipality

The main focus of this research question was to assess the levels of understanding of the teachers about assessment practices in selected private and public early childhood centres in Sissala East Municipality to ascertain this, the respondents were made to rate their understanding. The results are presented in Table 4.5.

Table 4.5: Results on the challenges of teachers in using environmental prints

Statements	MS	SDS	Kurtosis Statistic	MR
	Criterion Value =2.50			
There are wrong inscriptions on school buildings and in the classroom about environmental prints	3.75	.274	.563	1 st
Children from poor homes do not get the opportunity to interact with prints at home	3.79	.435	.465	2 nd
Some environmental Prints do not use good language	3.64	.237	.451	3 rd
Variability in children's ages makes them find it difficult to use environmental prints that do not suit all ages	3.57	.922	.344	4 th
Teachers' inability to give individual attention to children on the use of environmental prints	3.24	.380	.223	5 th
Mean of Means/StD.	3.59	.449	.404	6 th

Source: Field Data (2019)

(n=230)

Key-MS= Mean Statistic: SDS =Standard Deviation Statistic: MR=Means Ranking:
n=Sample Size

Table 4.5 depicts results on the challenges of teachers in using environmental prints in selected private and public early childhood centres in the Sissala East municipality. In assessing the kurtosis values from Table 4.5, the results show that the variables follow a normal distribution as the values were within the acceptable limit for normal distribution of ± 2 as proposed by George and Mallery (2011). In understanding the results, the means values were used to compare the CV of 2.50. In the comparison, it was evident the obtained average score was found to be slightly greater than the CV of 2.50 showing that on average, the teachers were highly comprehensible, it was revealed that most of the selected private and public early childhood centres in the Sissala East municipality are aware that there are wrong inscriptions on school building and in the classroom about environmental prints (\underline{M} =3.75, \underline{SD} =.274, \underline{KS} =.563, \underline{n} =230).

Again, it was found that teachers are aware that Children from poor homes do not get the opportunity to interact with prints at home (\underline{M} =3.79, \underline{SD} =.435, \underline{KS} =.465, \underline{n} =230). Most of them again shared that Variability in children's ages makes them find it difficult to use environmental prints that do not suit all ages (\underline{M} =3.64, \underline{SD} =.237, \underline{KS} =.451, \underline{n} =230). In other evidence, it was found that teachers are aware some environmental Prints do not use good language (\underline{M} =3.57, \underline{SD} =.922, \underline{KS} =.318, \underline{n} =230). On the low understanding of assessment practice, it was found that most teachers are unable to give individual attention to children on the use of environmental prints. (\underline{M} =3.24, \underline{SD} =.380, \underline{KS} =.2.23, \underline{n} =230).

4.2.5 Ways of Addressing the Identified Challenges by Early Childhood Teachers in Sissala East Municipality

Table 4.6 presents results on ways of addressing the challenges of teachers in using environmental prints in selected private and public early childhood centres in the Sissala East municipality. In assessing the kurtosis values from Table 4.6, the results show that the variables follow a normal distribution as the values were within the acceptable limit for normal distribution of ± 2 as proposed by George and Mallery (2011).

Table 4.6: Results on Ways of Addressing Challenges of Teachers in using environmental prints

Statements	MS	SDS	Kurtosis Statistic Criterion Value =2.50	MR
Teachers plan to use the curriculum to design and provide age-appropriate environmental prints	3.52	.547	.473	1 th
Teachers encourage parents to provide or scan their environment and focus on salient details of prints for multi-purpose activities	3.33	.377	.344	2 th
Teachers and parents ensure that all environmental prints are carefully selected and scrutinized to fit children's level	3.19	.557	.441	3 th
Teachers select, modify and design environmental Prints to suit the children's age, level of intelligence and interest	3.12	.237	.337	4 th
Teachers individualized instruction and vary their methods of teaching to ensure that children who need assistance are catered for	3.07	.532	.367	5 th
Organization of in-service-training for teachers on the use of environmental prints	2.83	.583	.458	6 th
Conceptualising the Role of Environmental Print in Literacy to enable children to learn and use prints in everyday life	2.80	.353	.556	7 th
Teachers encourage the use of digital literacy in preparing prints	2.78	.940	.877	8 th
Teachers assess children on the use of environmental prints helps pupils to discover their strengths and weakness.	2.75	.584	.139	9 th
Revising previously produced teacher-made environmental prints to match current instructional emphasis.	2.72	.340	.488	10 th
Teachers consider Pupils' effort when assigning pupils' grades.	2.69	.688	.579	11 th
Teachers Choose appropriate environmental prints for instructional decisions.	2.60	.538	.458	12 th
Using assessment on environmental prints results when planning to teach.	2.57	.466	.470	13 th
Using assessment results when making decisions (eg. Placement, promotion) about individual pupils.	2.56	.356	.451	14 th
Using assessment results when evaluating class improvement.	2.54	.668	.434	15 th
Mean of Means/StD.	2.90	.497	.458	16 th

Key- MS= Mean Statistic: SDS =Standard Deviation Statistic: MR=Means Ranking:
n=Sample Size

The results showed that the mean values were used to compare the CV of 2.50. In the comparison, it was evident the obtained average score was found to be slightly greater than the CV of 2.50 showing that on average, in the few aspects where the teachers were highly comprehensible, it was revealed that most of the selected private and public early childhood centres in the Sissala East Municipality teachers plan using the curriculum to design and provide age-appropriate environmental prints ($\underline{M}=3.52$, $\underline{SD}=.547$, $\underline{KS}=.473$, $\underline{n}=230$). The above results, showed that teachers encourage parents to provide or scan their environment and focus on salient details of prints for multi-purpose activities ($\underline{M}=3.33$, $\underline{SD}=.377$, $\underline{KS}=.344$, $\underline{n}=230$). Most teachers and parents ensure that all environmental *prints* are carefully selected and scrutinized to fit children's level ($\underline{M}=3.19$, $\underline{SD}=.557$, $\underline{KS}=.441$, $\underline{n}=230$).

It could also be noticed Teachers select, modify and design environmental Prints to suit the children's age, level of intelligence and interest ($\underline{M}=3.12$, $\underline{SD}=.237$, $\underline{KS}=.227$, $\underline{n}=230$). It realised that Teachers individualized instruction and vary their methods of teaching to ensure that children who need assistance are catered for ($\underline{M}=3.07$, $\underline{SD}=.532$, $\underline{KS}=.367$, $\underline{n}=230$). Also, it was found that most stakeholders Organize in-service-training for teachers on the use of environmental prints ($\underline{M}=2.83$, $\underline{SD}=.583$, $\underline{KS}=.458$, $\underline{n}=230$). It was ascertained that Conceptualising the Role of Environmental Print in Literacy enables children to learn and use prints in everyday life ($\underline{M}=2.280$, $\underline{SD}=.353$, $\underline{KS}=.556$, $\underline{n}=230$). From the results, it was found that most teachers encouraged the use of digital literacy in preparing prints ($\underline{M}=2.78$, $\underline{SD}=.940$, $\underline{KS}=.877$, $\underline{n}=230$). Teachers assessing children on the use of environmental prints helps pupils to discover their strengths and weakness ($\underline{M}=2.75$, $\underline{SD}=.584$, $\underline{KS}=.139$, $\underline{n}=230$).

In evidence, teachers are revising previously produced teacher-made environmental prints to match current instructional emphasis. (\underline{M} =272, \underline{SD} =.340, \underline{KS} =.488, \underline{n} =230). On the low understanding of environmental print usage, it was found that most Teachers consider Pupils' effort when assigning pupils' grades. (\underline{M} =2.69, \underline{SD} =.688, \underline{KS} =.579, \underline{n} =230). Also, it was found that Teachers Choose appropriate environmental prints for instructional decisions (\underline{M} =2.60, \underline{SD} =.538, \underline{KS} =.458, \underline{n} =230). Lastly, it was ascertained that the majority of the teachers need more training in pupils' assessment, tests, and measurement to boost their understanding of assessment practice (\underline{M} =2.57, \underline{SD} =.466, \underline{KS} =.4.70, \underline{n} =230). The rating scale confirmed a high score of challenges some teachers are met with regarding the use of environmental prints as indicated in the questionnaires by the respondents. In other words, the high rating on the rating scale affirms responses on the questionnaires.

4.3 Discussion of Findings

4.3.1 Early childhood teachers' perception of the use of environmental prints

About research question three, it was found that on average, most private and public early childhood teachers in the Sissala East have some basic Knowledge and understanding of environmental prints. This finding is supported by the existing literature as Hart and Risley (1992) state, whether children come from impoverished or enriched language environments, their preschool teachers are in a unique position to provide opportunities to build the fundamental skills and knowledge they will need for the transition into the first years of formal schooling—the years when reading and writing will be among their most significant core achievements. Simply put, preschool teachers have the potential to make an invaluable contribution to the literacy development of children.

For this reason, teachers, educators and reading researchers have a responsibility to ensure that these individuals have the training and willingness to undertake this task. With increasing frequency, policy discussions of children's literacy outcomes focus on issues of teacher preparation and professional knowledge, and the role these two factors play in academic achievement. At the same time, recent federal accountability initiatives demand increasing school readiness and include stringent accountability standards. Among communities of educational researchers and practitioners, there is growing recognition that adequate professional development opportunities for building teacher knowledge in the domain of literacy are critical to the academic success of children. However, crafting such training programs can be challenging because the knowledge base needed to support the development of emergent literacy skills and the teaching of reading and writing is extensive, complex, and often underestimated. Moreover, conversations about building teacher knowledge through preservice programs and professional development have tended to concentrate on the needs of elementary school teachers and students, rather than the needs of preschool teachers and their younger learners.

According to Neuman and Celano (2001) despite a growing awareness of the relationship between early literacy learning and later academic success, limited attention has been directed toward studying the knowledge base of early childhood educators and its effect on the performance of their students. This lack of attention can be attributed, in part, to the underlying complexity of the task. It is daunting to determine what teachers need to know, under what circumstances, and how they need to know it to be masterful, adaptive, and responsive in the preschool classroom. The research literature on this topic is sparse even for primary grade teachers. Nonetheless, the research community must begin to investigate these complex

questions by examining precisely what teachers need to know and how much of this knowledge they already possess.

4.3.2 Strategies Employed by Early Childhood Teachers to Engage Children in

The Use of Environmental Prints in The Sissala East Municipality

The finding on this question indicates that teachers in Sissala East Municipality combine professional methods and techniques as well as a literate-rich environment suitable for children's age and ability to literacy development in Sissala East Municipality. The literature available supports the findings above, as confirmed by the comprehensive review of the research literature presented in the *Report of the National Reading Panel* in the United States (NICHD, 2000) and the influential *Rose Report*, an independent review of the teaching of reading in the

Teachers in Sissala East Municipality work has been greatly supported by United Kingdom (Rose, 2006), reading written text relies on two simultaneous and interrelated processes – decoding and (linguistic/listening) comprehension – as proposed in Gough and Tunmer's (1986) influential model 'The Simple View of Reading'. Teachers in Sissala East Municipality practice and are involved in decoding the process of translating writing into speech, and in alphabetic languages such as English depends on phonemic awareness: the ability to perceive the individual distinctive sounds that words contain, which is the most sophisticated level of phonological awareness; for example, understanding that the word 'ship' has three sounds (/ʃ/, /ɪ/ and /p/), and so does the word 'chop' (/tʃ/, /ɪ/ and /p/).

Phonics: knowledge of letter-sound correspondences, or understanding the relationship between letters and the sounds they represent. Phonics requires phonemic awareness and alphabet/letter knowledge, that is, knowing the letters of the alphabet,

their names, and the sounds they can be used to represent. This includes knowing that sometimes a single sound can be represented by a combination of letters as is the case with the digraph ‘sh’ in ‘ship’ and ‘ch’ in ‘chip’, as well as knowing that the same letters can represent different sounds as in the case of ‘chip’ vs. ‘chorus’. Fluency: the ability to read “with speed, accuracy and with the proper expression” (NICHD, 2000, p. 189), which involves increasingly automatic and accurate word recognition as well as comprehension skills.

Comprehension is the process of understanding and interpreting what is read, and depends on vocabulary: the words a person knows and understands (receptive vocabulary) and uses (expressive vocabulary); vocabulary can be measured in terms of both *breadth* and *depth*, as well in terms of its technicality or sophistication (Pearson, Hiebert, & Kamil, 2007). *Breadth* refers to the number of words a person knows, at least at a surface level. *Depth* refers to how well a person knows each word – the sounds that make it up (phonemic structure); its spelling (orthography); its composition (morphology), including for instance how a word’s structure reflects its grammatical function, for example when a noun is used in the plural (fox –foxes; child - children) or a verb in its past or continuous forms (try– tried –trying; go – went - going); its origin (etymology); and its meanings and contexts of use.

Technicality/sophistication is a system for differentiating common words used in everyday, non-specialist contexts (e.g. ‘cat’, ‘window’, ‘walk’), also known as Tier 1 words, from Tier 2 words, which are less common, associated with particular disciplines, technical fields or literary language (Beck, McKeown, & Kucan, 2002; Torr & Scott, 2006). oral language: the ability to combine words into larger, meaningful constructions, which involves an understanding of grammar/syntax – the

ways words are arranged in meaningful messages, known as ‘clauses’, and realize basic speech functions such as statements (give information), question (request information), offer (give goods and services), or command (request goods and services) ‘genres’ or ‘registers’, which are characterized by particular combinations of language choices that allow people to achieve particular communicative goals (for example: recounting a sequence of events; telling a story; giving information about, describing, defining or explaining concrete and abstract things and processes; persuading others) in different types of situational contexts.

This finding was supported by literature because teachers in Sissala East Municipality considered Background knowledge – knowledge of the physical and biological world and our experiences in it as well as of social relationships, structures and attitudes; because such knowledge is essential for the ability to interpret and use words appropriately, it provides a foundation for vocabulary building. The interdependence of these two processes – decoding and comprehension – has been well established. If decoding is too slow and difficult, readers cannot focus on the meaning of what they are reading: in other words, the speed/rate of fluency affects comprehension (Eason, et al., 2013; Fuchs, et al., 2001; Silverman, Speece, Haring, & Ritchey, 2013). Fluent readers, who find decoding effortless, by contrast, can direct much more of their attention to interpreting the meaning of what they are reading (Hirsch, 2003).

Oral language experiences allow children opportunities to develop their understanding not only of grammar, genres and registers, but also of phonology, and the sound structure of language, and provide essential support for phonemic awareness, which is required for learning phonics. The ability to read with ‘proper expression’, or the quality of prosody that characterizes fluent reading, on the other hand, reflects a

reader's comprehension (Fucks et al., 2001), and vocabulary supports both comprehension and the accuracy and automaticity of decoding (Ouellette & Beers, 2010; Ouellette & Shaw, 2014; Silva & Cain, 2015).

A study of the concurrent influence of oral vocabulary on specific literacy skills in a sample of 60 Grade 4 students, for example, has shown that breadth of receptive vocabulary predicts encoding performance, expressive vocabulary breadth predicts word recognition, and the depth of vocabulary knowledge predicts reading comprehension (Ouellette, 2006). This interdependency between decoding and comprehension processes is captured in Scarborough's (2001) presentation of decoding/'word recognition' and comprehension as two large strands of interwoven competencies that gradually – as word recognition becomes increasingly automatic and comprehension increasingly strategic – come together to form a stronger, tighter 'rope' that represents skilled reading, which is defined as "the fluent execution and coordination of word recognition and text comprehension".

4.3.3 Impacts of environmental prints on literacy development of children in Sissala East Municipality

It was found that the use of environmental prints has positive effects on children's literacy skills development in most private and public early childhood centres in the Sissala East municipality. Some of these skills were reading, writing and digital literacy. Research conducted by the National Reading Panel (NRP) agreed with this finding as it found that skills in phonemic awareness, phonics, fluency, vocabulary, and comprehension are essential to literacy development (NRP, 2001). Before students with disabilities can begin to develop these five skills, they need to

understand the functions and uses of literacy (Ehri & Sweet, 1991; Gunn, Simmons, & Kameenui, 1995; Mason & Allen, 1986; Sulzby & Teale, 1991).

A literacy-rich environment is a setting that stimulates students with disabilities to participate in language and literacy activities in their daily lives thereby giving them a beginning understanding of the utility and function of oral and written language. Acquisition of reading skills was possible because research conducted found that skills in phonemic awareness, phonics, fluency, vocabulary, and comprehension are essential to literacy development. Before children in Sissala East Municipality with disabilities can begin to develop these five skills, they needed to understand the functions and uses of literacy. A literacy-rich environment is a setting that stimulated children with disabilities to participate in language and literacy activities in their daily lives thereby giving them a beginning understanding of the utility and function of oral and written language.

4.3.4 Challenges of Using Environmental Print by Early Childhood Teachers in Sissala East Municipality

Most teachers encountered some challenges including teachers' inadequate professional knowledge, age differences of children, special needs problems of children, inadequate prints in some activities of teaching and others. The finding above was strongly supported by literature where in the 1980s, a New Zealand educator and educational psychologist named Marie Clay devised a technique of intensively addressing the reading problems of 1st graders who were substantially behind the literacy levels of their peers. Clay's techniques grew into a method known as "Reading Recovery." In 1984, professor of education, Gay Su Pinnell, brought Reading Recovery to Ohio State University and placed it within a teacher training

program that she called the Literacy Collaborative. The purpose of the Literacy Collaborative was to train both teachers and trainers in Reading Recovery methods. Guided reading, as a method of teaching literacy, rose directly from the techniques of Reading Recovery. Unfortunately, teachers in Sissala East Municipality did not have the professional training to equip them with the necessary skills and techniques to successfully handle using environmental prints in ensuring literacy development.

Pinnell's colleague, Irene Fountas, professor of education at Lesley College in Boston, Massachusetts, initiated another Literacy Collaborative at Lesley. Fountas and Pinnell are now considered the founders of the guided reading/balanced literacy movement in the United States. Their publications aimed at supporting the work of the teacher-in-the-classroom, as she implements guided reading, are considered the "bibles" of the method. The books of Fountas and Pinnell include chapters devoted to the design of the physical "guided reading" classroom, with directives on requisite areas, arrangement of furniture, and display of books and student work. For example, in their 1996 book, "Guided Reading: Good First Teaching for All Children," the authors call for an organized environment that "is truly supportive and moves children toward independence" (1996, p.43). In a long chapter, areas for different size groups, including a rug area with easels; a levelled library; and, a guided reading area; a print-rich classroom, including a "word wall"; pocket charts, mailboxes, and message boards, are all prescribed as necessary components of a learning environment. They also include centres, defined as, "a physical area set aside for specific learning purposes". Within the same chapter, Fountas and Pinnell call for designing an organized environment before the school year begins.

In another teacher manual, “Guiding Readers and Writers, Grades 3-6,” Fountas and Pinnell make clear that the design of the classroom communicates the expectations for individual behaviour and group interactions, and that “the curriculum for creating a learning community is delivered in the way the classroom is organized” (2004, p. 88). The authors advise, “You’ll want to address both *ownership* and *independence*, two key concepts that permeate your classroom life” (2004, p. 89). Quite notably, no mention is made of the teacher’s personal desk in either chapter. Fountas and Pinnell include bibliographies in their publications which reference “professional literature.” In a close review, the professional literature referenced is entirely the literature of literacy research and practice, and includes no references to environment and behaviour studies. In *Creating Architectural Theory*, Jon Lang describes architectural environments as *behaviour settings*. This is an echo of “chronotype.” Lang says that the environment consists of a set of behaviour settings, existing simultaneously with each other, and consisting of two components, a *standing pattern of behaviour* and a *milieu*. The milieu is the physical structure, which affords both direct support for human activities, and indirect, symbolic, or effective meanings and associations for the human user or observer Lang, (1987) as cited in Fisher (2008). Lang writes about the fundamental concepts of the person-built environment relationship:

The environment can be considered to consist of interrelated geographic, built, social, and cultural components that afford certain behaviours in consistent ways. The set of *affordances* of the environment at a particular location constitutes the *potential environment* for human behaviour at that place...The role of the architectural environment is...accommodative and not deterministic except in the negative sense: if the built environment does not afford behaviour, the behaviour cannot take place (Lang, 2005). The architectural environment is not, as Lang notes, deterministic

unless it is designed to restrict particular behaviour, such as in a prison where free movement is restricted. The architectural environment cannot make someone behave in a pre-determined way.

However, according to Lang, a physical setting that provides an affordance for particular human behaviour can be purposefully created. It seems that literacy research has been brought to the precipice of the question of what role the purposeful *design* of the milieu may play in literacy education. If certain behaviour, such as fluent reading or fluent verbal communication, is desired; then, one might ask, how can the milieu support that behaviour? While many contemporary literacy researchers acknowledge social space, few of them are aware of the power of physical space, or milieu, to *afford* the social space it contains.



CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter opens with a summary of the objectives of the study, its methodology and data analysis techniques. It proceeds with a summary of the key findings about each objective and the conclusions drawn from them. Specific recommendations from the findings and conclusions are made to stakeholders for decision-making.

5.1 Summary of the Study

Assessment can be seen as an umbrella term which includes the use of various strategies and methods to determine the extent to which students are achieving the predetermined learning objectives and outcomes of a lesson. This implies that assessment is very vital and critical in the formative years. This made the researcher examine environmental Prints in selected private and public early childhood centres in the Sissala East municipality.

Specifically, the study was to identify the environmental Prints used by teachers in selected private and public early childhood centres in the Sissala East municipality, ascertain the environmental Prints used by teachers in assessing children in selected private and public early childhood centres in the Sissala East Municipality, explore the level of understanding of the teachers about environmental Prints in selected private and public early childhood centres in the Sissala East municipality and finally examine the effects environmental Prints t on the literacy development of children in selected private and public early childhood centres in the Sissala East municipality. To achieve this, the study was rooted in a quantitative method design; quantitative data were collected and analysed quantitatively. A total of 230 questionnaires were

retrieved from 243 teachers and the analysis was based on retrieved questionnaires. A self-developed questionnaire was designed for the data collection. The obtained data were coded and quantitative form based on the objectives of the study.

5.2 Key Findings

The following were the major findings from the study.

1. It was found that the use of environmental prints has positive effects on children's literacy skills development in most private and public early childhood centres in the Sissala East municipality. Some of these skills were reading, writing and digital literacy.
2. The finding indicates that teachers in Sissala East Municipality combine professional methods and techniques as well as a literate-rich environment suitable for children's age and ability to develop literacy skills in Sissala East Municipality.
3. The findings showed that environmental prints had a great influence on children's literacy development in the areas of digital literacy.
4. Most teachers encountered some challenges including teachers' inadequate professional knowledge and views, age differences of children, special needs problems of children, inadequate prints in some activities of teaching and others.

5.3 Conclusions

Based on the data from the study it can be settled that private and public early childhood centres in the Sissala East municipality were well equipped with the knowledge and necessary skills required for the use of environmental prints. The study also concludes that there is a significant and positive relationship between

environmental prints and children's literacy skills (reading, writing and digital literacy skills) development. Likewise, based on the findings, it is concluded that poor student background, lack of language in environmental prints, age variabilities, wrong inscriptions on school buildings and teachers' inability to pay much attention to children are the key challenges affecting the use of environmental prints in classrooms in early childhood education. Finally, study concludes that early childhood teachers can be addressed these identified challenges by focusing on salient details of all carefully selected age-appropriate prints, scrutinizing and designing the prints to fit children's level of intelligence and interest, adopting the pupil-centred approach, taking part in in-service-training, encouraging the use of digital literacy in preparing prints and choosing appropriate environmental prints for instructional decisions.

5.4 Research Implications

The research findings present theoretical and practical implications. Theoretically, the study fortifies several research implications in existing theories in previous project environmental prints research studies and studies on literacy skills development. Even though there is a large body of literature on early childhood literacy skills development, fewer exist on the effect of the use of environmental prints on children's literacy skills development. This research is in response to filling this perceived gap in the extant literature, by investigating the relationship between the use of environmental prints in the classroom and early childhood literacy skills development (reading skills, writing skills and digital literacy skills). The empirical findings prove that there is a statistically significant and positive relationship between the use of environmental prints in the classroom and early childhood literacy skills development. Practically, the findings of this research imply that early childhood teachers in the Sissala East municipality should consider the adoption and implementation of the use

of rich environmental prints in their lesson delivery since the study confirms that it has a significant positive influence on children's literacy skills development. The teachers should properly plan the preparation, design and implementation of the use of environmental prints in their lesson delivery to get the best results. Lastly, since some of these environmental prints might be appropriate for the children, teachers should make effort to modify and design the environmental prints, adopt a pupil-centred approach, and revise previously produced teacher-made environmental prints to match current instructional emphasis to suit the children age, level of intelligence and interest.

5.5 Recommendations

To the findings resulting from the study, the following recommendations are made to teachers of private and public early childhood centres in the Sissala East Municipality in their quest to employ environmental prints in teaching children:

1. The Municipal Education Directorate of Sissala East should make it a point to equip the teachers with skills concerning the use of environmental prints to improve the teachers' understanding and the use of environmental prints. This is because environmental prints form an integral part of the teaching profession since it is the most widely used channel for literacy development in children in Ghana.
2. The Municipal Education Directorate of Sissala East should sensitized the Early Childhood Teachers on regular basis on the importance of their environmental prints about its practice that falls under construction, administration and scoring. To this end, teachers should know about the implication of their environmental prints and their effect on children's literacy which would adversely affect how decisions are made on their children.

Teachers should be aware of how misleading scores could affect the future of a student. This could be achieved through effective supervision from the office of the educational directorate and head teachers.

3. In furtherance, to the above, it is recommended that the Municipal Education Directorate of Sissala East should organized more workshops and in-service training for private and public early childhood centres in the Sissala East Municipality concerning the creation and use of environmental prints. This could be achieved through the collaboration of the Ministry of Education, the institute of education and other stakeholders.
4. Lastly, since the study found a significant relationship between the use of environmental prints in classroom and the literacy development of children in the Municipality, it is suggested that the Municipal Education Directorate of Sissala East and Private School Owners should provide developmental appropriate environmental print materials such as drawing of teaching learning materials, books, newspapers, toys (e.g., vehicles, motor bikes), drawings of fruits, leaves, trees and animals, etc. for teachers to use to improve their students' literacy development.

5.6 Suggestions for Future Research

The following are suggested for future research:

1. A study could also be carried out to check on the interpretation of environmental prints and their consequences among kindergarten teachers in the Sissala East municipality.
2. A study also needs to be carried out to look at the perception of teachers on environmental prints and their effect on their children.

3. A study should be carried out to look into testing practices in terms of item analyses of objective-type tests of teachers.



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APPENDICES

APPENDIX A

Questionnaire for Teachers

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

Dear Respondents

I am a master student of University of Education, Winneba conducting a research on the topic **“ENVIRONMENTAL PRINTS AND LITERACY DEVELOPMENT ON CHILDREN OF SISSALA EAST MUNICIPALITY IN UPPER WEST REGION”**.

You are kindly requested to help provide data for the study by responding to the questions below. Please tick in the appropriate box or supply the necessary information where there are no response alternatives. Your responses would be treated confidentially and used for the purpose of the study only.

Instructions: Please tick (✓) the response that applies to you most.

SECTION A

Personal Data

Indicate your answer to the questions by ticking [] in the appropriate box.

1. Gender: a. Male [] b. Female []
2. Age: a. 21-30 [] b. 31-40 [] c. 41-50 [] d. 51-60 [].
3. Professional Qualifications:
a. Cert. A [] b. Diploma [] c. First Degree [] d. Second Degree []
e. Others (please specify)

Your rank in the GES

4. A. Superintendent [] b. Senior Sup. [] c. Principal Sup. [] d. Ass.

Director [] Number of years in the Service

- a. 0-5 [] b. 5-10 [] c. 11-15 []

- d. 16-20 [] e. 21-15 [] f. 26-30 []

g. Others (please specify)

5. How long have you been teaching in your present school?

- a. 1-5 [] b. 6-10 [] c. 11-15 []

- d. 16-20 [] s e. 21-35 [] f. 26 years and above []



SECTION B

QUESTIONNAIRES

This section relates to the effects of environmental prints on literacy development, teachers content knowledge, challenges of the use of environmental print and ways of addressing them. Read each statement carefully and indicate the extent to which you agree or disagree with the statements by ticking (✓) 1=strongly disagree (SD), 2=disagree (D), 3=agree (A) and 4=strongly agree (SA)

a. Teachers` perception about the use of environmental prints	SD	D	A	SA
Teachers teach pupils reading and identification of environmental prints in their schools.				
I assess ' children`s achievements on sorting, classifying and grouping environmental prints e.gs fruits, text, paper etc.				
I teach and test children performance in drawing, tracing and painting of environmental prints and writing the names of environmental prints.				
I teach and assess pupils` reading of environmental prints (letters of alphabets).				
teachers teach and measure pupils` performance against a goal, specific objective or standard on the use of environmental prints with the use of computer (digital literacy)				
I Teach children on everyday language usage involving activities on environmental prints				
Impact of environmental prints on literacy development				
Teachers create literate rich environments pupils to interact and manipulate to gain literacy skills				
Teachers use wall charts to provide attractive picture for children`s use				
Teachers encourage children to use awesome language while reading and writing				
Teachers encourage children to Play with Words in classroom library				
Teachers unable to give individual attention to children on the use environmental prints				
Results on how teachers engage children in the use of environmental prints				
I measure pupils` achievements at the end of instruction (naming the types of environmental prints in their schools).				
I assess pupils` achievements during instruction (Drawing the types of environmental prints in the classrooms)				
I test children performance on colouring outlines of environmental prints found in the school.				
I assess pupils` strengths, weaknesses, knowledge and skills prior to instruction on environmental prints				
I measure pupils` performance against a goal, specific objective or standard on environmental prints				
I assess children achievement on creating their own Prints				
The challenges of using environmental print in Sissala East Municipality				
There are wrong inscriptions on school building and in the classroom				

about environmental prints				
Children from poor homes do not get the opportunity to interact with prints at home				
Some environmental Prints do not use good language				
Variability in children ages make them find it difficult using environmental prints that do not suit all ages				
Teachers' inability to give individual attention to children's on the use of environmental prints				
Ways of Addressing Challenges of teacher in using environmental prints				
Teachers plan using the curriculum to design and provide age appropriate environmental prints				
Teachers encourage parents to provide or scan their environment and focus on salient details of prints for multi-purpose activities				
Teachers and parents ensure that all environmental prints are carefully selected and scrutinized to fit children level				
Teachers select, modify and design environmental Prints to suit the children age, level of intelligence and interest				
Teachers individualized instruction and vary their methods of teaching to ensure that children who need assistance are catered for				
Organization of in-service-training for teachers on the use environmental prints				
Conceptualising the Role of Environmental Print in Literacy to enable children to learn and use prints in everyday life				
Teachers encourage the use of digital literacy in preparing prints				
Teachers assess children on the use of environmental prints helps pupils to discover their own strength and weakness.				
Revising previously produced teacher-made environmental prints to match current instructional emphasis.				
Teachers consider Pupils' effort when assigning pupils' grades.				
Teachers Choose appropriate environmental prints for instructional decisions.				
Using assessment on environmental prints results when planning teaching.				
Using assessment results when making decisions (eg. Placement, promotion) about individual pupils.				
Using assessment results when evaluating class improvement.				