RELATIONSHIP BETWEEN CREATIVE EXPRESSION AND ACQUISITION OF LITERACY SKILLS AMONG PRESCHOOLERS IN PUBLIC EARLY CHILDHOOD CARE CENTRES IN ELEME LOCAL GOVERNMENT AREA

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Abstract

This study is focused on the relationship between creative expression and acquisition of literacy skills among preschoolers in Public Early Childhood Care Centres in Eleme Local Government Area. The study adopted the correlational research design. Two purposes, two research questions and two hypotheses guided the study. 2071 preschoolers found in 21 Public Early Childhood Care Centre in Eleme Local Government Area constituted the population of this study, from where 890 preschoolers representing approximately 43% of the population were sampled using simple random sampling technique through balloting-with-replacement. The instrument that was used for data collection was the researcher-designed 22 items questionnaire titled: Creative Expression and Acquisition of Literacy Skills Questionnaire (CEALSQ). Pearson Product Moment Correlation was used to answer the research questions and to test the hypotheses at 0.05 level of significance. The study revealed that, there is significant relationship between painting, scribbling and preschoolers' acquisition of literacy skills in Public Early Childhood Education Centres in Eleme Local Government Area. Based on the findings, it was recommended that: preschoolers should be given appropriate materials to use in painting exercises to enable them acquire the necessary literacy skills. Preschoolers should be given materials, rough papers to scribble in order to acquire proper sense of letters and number formation.

Keywords: *Creative Expression, Literacy Skills, Preschoolers*

Introduction

The Early Childhood Education Centres are learning facilities put in place to enable preschoolers have organized learning and development under the auspices of the caregivers. It is necessary that being at the centre, every preschooler should be able to acquire and develop all milestones and skills needed for future learning, since the early childhood stage serves as the cradle for growth and development. Literacy skills acquisition stands at the core of education, serving as the foundation for communication, critical thinking, and lifelong learning. UNESCO (2017) recognizes literacy as a complex set of abilities that involve not only written information but also critically evaluating and creating content. In this work, literacy skills is seen to manifest as preschoolers' ability to; identify letters, differentiate between two distinct sounds, phonemic awareness and blending of sound to form words. Basically, literacy skills in a child, involves their ability to identify letters, differentiate between two distinct sounds blend two or more letters together to make meaning. The first stage of literacy development is ability of nursery school preschoolers to identify letters. The identification of letter, such as capital letters and small letters in a word is an essential literacy skill. By being able to identify the capital and small letters preschoolers increase their ability to notice such letters eventually in familiar words (e.g., the first letter in their name, letters in other familiar words or names).

Another important literacy skill to be required by preschoolers is phonemic awareness. Phonemic awareness is the ability of a child to differentiate between two distinct sounds. And this involves the teacher stretching out each sound, practically when the teacher says a word the pupils repeat the sounds. For example, the teacher says a three- or four-phonemic word such as cat or lamp. Preschoolers play a clapping game with the teacher or another child. They clap or touch hands as they say the individual sounds in the word. The blending of letters is a skill needed to slide sounds together in order to pronounce words correctly.

According to Joe (2022), beginner readers find it difficult to hear how a group of separate sounds are blended to form a word, would not be able to pronounce words or read sentences. Simply put, the blending skill is the act of breaking words apart into their sounds. Firstly, when preschoolers hear a word they will first have to break the word into its component sounds, after which they blend the sounds together to form the word been studied. When spelling a word, the preschoolers

will have to conceive the word in their mind, and then break it down into its component sounds, in order to identify the letters needed to spell those sounds. It is observed by the researchers that some preschoolers in public primary schools fall short of literacy skill acquisition. That is to say, they do not develop literacy skills as early as some of their peers. This could have been influenced by different factors; chief amongst them is use of creative expressions by pupils.

Creative expression is the process of making or producing something that is both novel and valuable. It involves the capacity to think outside of conventional frameworks and to bring into existence new forms or configurations that have aesthetic or functional value. On this note, Robinson (2016) sees creative expression as the act of turning new and imaginative ideas into reality. It involves seeing the world in new ways, finding hidden patterns of doing things, making connections between seemingly unrelated concepts and ideas, and providing solutions. Furthermore, Gardener (2021) recounted that creative expression refers to the ability to create work that is both original and appropriate. It can manifest in various domains, including the arts, sciences, and everyday life. It is a complex activity based process that combines originality, imagination, and innovation to getting a finish end. Furthermore, Mihaly (2022), views creative expression as any act, idea, or product that changes an existing domain or that transforms an existing domain into a new one. What counts is whether the novelty he or she produces is accepted for inclusion in the domain of learning.

In the view of Sean (2021), creative expressions like drawing, painting, and scribbling allow preschoolers to communicate their ideas and emotions non-verbally. These activities help them articulate thoughts and feelings they might not yet have the vocabulary to express verbally. Engaging in other creative expression such as cutting, gluing, and coloring helps preschoolers develop fine motor skills. These skills are essential for writing and other tasks requiring hand-eye coordination.

Painting helps the preschooler develop symbolic thinking, which is foundational for literacy. When preschoolers paint, they learn to represent objects, ideas, and stories through visual symbols, which parallels the way written language represents spoken words and concepts. Also, Stanley (2018) argued that painting encourages narrative thinking and storytelling in young preschoolers. As preschoolers create paintings, they often narrate what they are depicting, thus practicing oral

language skills and laying the groundwork for written narrative skills. However, Jerome (2015) suggested that painting can serve as a medium for young preschoolers to explore and express their understanding of the world. This form of expression aids cognitive development and language acquisition, as preschoolers describe and discuss their artwork. Halliday (2017) posits that painting activities can enhance literacy skills by integrating visual and verbal modalities. Preschoolers' interactions with their own paintings and others' artworks can enhance their ability to interpret and create meaning out of what they have done, and foster skills that are transferable to reading and writing. Furthermore, Freire (2022) emphasized that when preschoolers paint, they engage in pre-writing activities, developing fine motor skills and understanding the concept of representation, which are crucial for writing development. Freire argues that painting helps preschoolers use language for different functions, such as describing, narrating, and explaining, which are important for literacy.

Painting allows children to differentiate shapes, sizes, and colors, which supports visual discrimination which is an important skill for distinguishing letters and words in print. Children learn to observe spatial relationships, such as left-to-right and top-to-bottom orientations, which are fundamental to reading and writing (Neumann, 2016). The act of painting requires children to coordinate their vision with their hand movements, improving hand-eye coordination. This skill is crucial for tasks such as copying text, spacing letters appropriately, and eventually developing fluent handwriting (Gerde et al., 2015). Furthermore, Brian (2020), noted that fine motor activities, such as painting, directly influence a child's ability to develop writing fluency, an essential component of early literacy development.

Scribbling is considered as exploratory writing, where preschoolers experiment with creating shapes and lines. Scribbling helps preschoolers understand the symbolic nature of writing. Through this activity, they learn about letter formation, directionality, and the concept that written symbols can represent spoken language. Kress (2023) sees scribbling as a multimodal form of communication that combines visual and textual elements. Kress argued that scribbling is a crucial step in literacy development, where preschoolers express their thoughts in what can be called unintelligent lines. Scribbling help preschoolers understand the interplay between different modes of communication, such as visual and textual, enhancing their ability to interpret and create

meaning through various forms. Joshua and Okogba (2024) maintained that scribbling is a pre-writing activity that upon which other literacy skills of preschoolers are hinged.

In the view of Brian (2020), scribbling is defined as an exploratory activity where preschoolers create marks that resemble writing. As such, Brian highlighted the role of scribbling in helping preschoolers develop the fine motor skills necessary for writing and to begin understanding the connection between written symbols and their meanings. On the other hand, Sucic (2017) sees scribbling as a precursor to writing, where preschoolers experiment with making marks on paper. Sucic further emphasizes the importance of scribbling in early literacy development. It allows preschoolers to practice the physical aspects of writing and to begin understanding the symbolic nature of written language. Furthermore, Neuman (2020) views scribbling as an early form of writing where preschoolers make marks that represent their thoughts and ideas. Over time, scribbles evolve into recognizable shapes, patterns, and eventually letters. It provides opportunity for them to practice making marks and to begin understanding that writing is a tool for communication. The way preschoolers acquire literacy skills cannot be done without a pronounced theory backing it. Research by Rowe (2018) suggests that early exposure to free-form writing activities aids in letter recognition and the ability to form words, which are critical components of literacy development. Scribbling require controlled hand movements, which strengthen the small muscles in children's fingers, hands, and wrists. These fine motor skills are essential for grasping writing tools and forming letters accurately (Puranik & Lonigan, 2014). Engaging in activities such as finger painting, using crayons, or making brushstrokes prepares children for the mechanics of handwriting.

This work is hinged on theory of reading acquisition by Uta Frith (1985). In Frith's theory, preschoolers acquire literacy by moving through particular stages that are developmental and associated with both age and experience. Frith include three stages of reading acquisition in the model. The first stage, the logographic stage, is characterized by instant recognition of symbols, images, or words. In the second stage, the alphabetic stage, preschoolers begin to use letter symbols to represent the sounds they hear in individual words. Preschoolers in this stage demonstrate an emerging understanding of sound and symbol relationships. The third stage, preschoolers begin to blend sounds and commence reading.

This theory is considered relevant to the study as literacy skill involves the recognition of symbols, images and words which could be acquired through painting and drawing. The theory holds that preschoolers develop literacy skill as they begin to associate letter symbols with sounds. This in effect help them build the ability to read and write which are major determinant of literacy skill. However, the researchers observed that some preschoolers seem not to exhibit the required literacy skills expected despite the effort of caregivers. It is therefore necessary to ask; could it be that these preschoolers do not carry out creative expression? What then is the relationship between creative expression and acquisition of literacy skills among preschoolers?

Purpose of the Study

The main purpose of the study is to examine the relationship between creative expression and literacy skills acquisition of preschoolers in public early childhood education centres in Eleme Local Government Area of Rivers State. Specifically, the study will;

1. Determine the relationship between painting and the acquisition of literacy skill by preschoolers in public early childhood education centres in Eleme Local Government Area of Rivers State.
2. Ascertain the relationship between scribbling and the acquisition of literacy skills by preschoolers in public early childhood education centres in Eleme Local Government Area of Rivers State.

Research Questions

The following research questions guided the study:

1. What is the relationship between painting and acquisition of literacy skills by preschoolers in early childhood education centres in Eleme Local Government Area?
2. What is the relationship between scribbling and acquisition of literacy skills by preschoolers in early childhood education centres in Eleme Local Government Area?

Research Hypotheses

The following research hypotheses was tested at a significant level of 0.05

1. There is no significant relationship between painting and the acquisition of literacy skills by preschoolers in public early childhood education centres in Eleme Local Government Area.
2. There is no significant relationship between scribbling and acquisition of literacy skills by preschoolers in early childhood education centres in Eleme Local Government Area

Research Methods

This study was carried out in early childhood education centres in Eleme Local Government Area of Rivers State. It focused on relationship between creative expression and literacy skills acquisition of preschoolers in public early childhood education centres in Eleme Local Government Area of Rivers State. Two objectives, two research questions and two hypotheses guided the study. The research design adopted for this study was the correlational research design. 2071 preschoolers found in 21 Public Early Childhood Care Centre in Eleme Local Government Area will constitute the population of this study. This is because the preschoolers are those who carry out creative expression; and they also are the ones to acquire literacy skills. 890 preschoolers representing approximately 43% of the entire population constitutes the sample size for the study using simple random sampling technique through balloting-with-replacement. The instrument that was used for data collection in this study was the researcher-designed 22 items questionnaire which was validated and titled: Creative Expression and Acquisition of Literacy Skills Questionnaire (CEALSQ). Pearson Product Moment Correlation was used to answer the research questions and to test the hypotheses at 0.05 level of significance.

Results

Research Question 1: What is the relationship between painting and preschoolers' acquisition of literacy skills in public Early Childhood Centres in Eleme Local Government Area?

Ho_1: There is no significant relationship between painting and preschoolers' acquisition of literacy skills in Public Early Childhood Centres in Eleme Local Government Area.

Table 1: Summary of Pearson Product Moment Correlation on the relationship between painting and preschoolers' acquisition of literacy skills

		Painting	Preschoolers' acquisition of literacy skills
Painting	Pearson Correlation	1	.810**
	Sig. (2-tailed)		.000
	N	877	877
Preschoolers' acquisition of literacy skills	Pearson Correlation	.810**	1
	Sig. (2-tailed)	.000	
	N	877	877

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

Table 1 shows that the p-value of Pearson's Product Moment Correlation between painting and preschoolers' acquisition of literacy skills as .000 which is less than 0.05. Therefore, the null hypothesis one is rejected and therefore stated thus: there is a significant relationship between painting and preschoolers' acquisition of literacy skills in public early childhood centres in Eleme Local Government Area.

Research Question 2: What is the relationship between scribbling and preschoolers' acquisition of literacy skills in public Early Childhood Centres in Eleme Local Government Area?

Ho_2: There is no significant relationship between scribbling and preschoolers' acquisition of literacy skills in public Early Childhood Centres in Eleme Local Government Area.

Table 2: Summary of Pearson's Product Moment Correlation on the relationship between scribbling and preschoolers' acquisition of literacy skills

		Scribbling	Preschoolers' Acquisition of Literacy Skills
Scribbling	Pearson Correlation	1	.509**
	Sig. (2-tailed)		.000
	N	877	877
Preschoolers' Acquisition of Literacy Skills	Pearson Correlation	.509**	1
	Sig. (2-tailed)	.000	
	N	877	877

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

Table 2 shows that the p-value of Pearson's Product Moment Correlation between scribbling and preschoolers' acquisition of literacy skills as .000 which is less than 0.05. Therefore, the null hypothesis three is rejected and therefore stated thus: there is a significant relationship between scribbling and preschoolers' acquisition of literacy skills in public Early Childhood Centres in Eleme Local Government Area.

Summary of Findings

The following are the findings of this study:

1. There is positive and significant relationship between painting and preschoolers' acquisition of literacy skills in public early childhood education centres in Eleme Local Government Area.
2. There is significant and positive relationship between scribbling and preschoolers' acquisition of literacy skills in public early childhood education centres in Eleme Local Government Area.

Discussion of Findings:

The findings in table 1, shows a significant and positive relationship between painting and preschoolers' acquisition of literacy skills in public early childhood education centres in Eleme Local government Area. The issue of painting in early childhood centres cannot be ruled out

from preschoolers' daily activities. Apart from the vibe and fun preschoolers derived from painting, painting also help them develop their fine motor skills which use very important in writing and holding of paint brushes, pencils and crayon. This finding could be due to the fact that preschoolers are always carrying out painting activities. When they paint, they could also paint and appreciate letters they have just painted. Hence, painting exposes them to literacy activities such as letter identification and print awareness among others. This study agrees with the findings of Brian (2020), who noted that fine motor activities, such as painting, directly influence a child's ability to develop writing fluency, an essential component of early literacy development. Painting helps preschoolers develop fine motor control, which is essential for writing. Using brushes, fingers, or other tools to paint helps preschoolers refine the motor skills needed to hold a pencil and form letters. Research by Rowe (2018) shows that activities like painting enhance fine motor development, which is closely linked to the ability to write legibly and form letters correctly, a crucial aspect of literacy.

The finding in table 2 indicated a strong, positive and significant relationship between scribbling and preschoolers' acquisition of literacy skills. The issue of scribbling is one of the early expressions carried out by preschoolers in school. Preschoolers show case their creativity from scribbling exercises. As preschoolers scribble, they try to write mock letters and other literacy skills. This study is in agreement with the findings of Nueman (2020) who showed that the art-based activities such as scribbling promote oral language development, which is critical in building literacy foundations. Also Puranik and Lonigan (2017) asserted that scribbling is a critical stage in early literacy because it helps preschoolers develop the muscle strength and dexterity needed for forming recognizable letters. In their contribution, Joshua and Okogba (2024) maintained that scribbling is a pre-writing activity that upon which other literacy skills of preschoolers are hinged.

Conclusion

This study focused on relationship between creative expression and preschoolers' acquisition of literacy skills in public early childhood education centres in Eleme Local Government Area. The learning activities that preschoolers are exposed to have gone beyond talk and chalk

approach to hands-on activities. This will integrate the interest and needs of preschoolers into the classroom space for profitable learning experiences. For preschoolers to acquire sound literacy skills, certain activities are needed to boost the skills' acquisition. One of such is creative expression, which has to do with the activities preschoolers carry out with their hands in the classroom; such include painting and scribbling. From the findings so far, it could be concluded that there is a significant relationship between creative expression such as, painting and scribbling and preschoolers' acquisition of literacy skills.

Recommendations

The following recommendations were made based on the findings of the study:

1. Head teachers should provide preschoolers with appropriate learning materials to use in painting exercises in order to enable them acquire the necessary literacy skills.
2. Caregivers should ensure that preschoolers do not lack materials, rough papers needed to scribble in order to acquire proper writing skills.

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PERCEPTION OF TEACHERS ON THE IMPACT OF QUALITY LEARNING ENVIRONMENT ON ACADEMIC PERFORMANCE OF PUPILS IN AWKA SOUTH LOCAL GOVERNMENT EDUCATION ZONE

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Abstract

The study investigated the perception of teachers on the impact of quality learning environment on academic performance of Awka South L.G.A of Anambra State. The study was guided with three (3) research questions and three (3) hypotheses. The research adopted the descriptive survey design. The population for the study comprised of 627 public primary school teachers (265 male and 362 female teachers) in Awka South L.G.A. 109 teachers (35 male 74 female) primary five teachers were randomly selected through Simple random sampling and purposive sampling. A Questionnaire titled "Impact of Quality Learning Environment on Academic Performance of Pupils Questionnaire" was used as instrument for data collection. The instrument was validated by three education experts. Reliability of the instrument was determined with Cronbach alpha. The reliability test yielded reliability coefficients of 0.89, 0.83 and 0.90 were obtained for each of the clusters respectively with an over-all co-efficient value of 0.87. Mean and standard deviation were used as data analysis instrument while t-test was used to test the hypothesis at .05 level of significance. Findings revealed that primary school teachers perceive that the nature of the physical infrastructure such as the classroom dilapidated buildings, lack of computer laboratory and nature of the school playground had impacts on pupils academic performances. It also reveal that quality social learning environment such as cordial relationship among teachers, cordial relationship between teachers & instructional materials and socialization of pupils through play has meaningful impacts of pupils academic performances. There is a significant mean difference in the perception of male and female teachers on impact of quality physical learning environment on academic performance of primary five pupils. However, there was not significance difference in the perception of male and female teachers on quality social learning and quality temporal learning environment on pupils academic performances. The study recommends among others that entire head teachers should pay more attention in renovations of dilapidated physical

infrastructures and procurement of instructional materials in schools to maximize pupil's activeness to lessons which should contribute to their academic performances.

***Keywords**: Primary school, teacher, quality learning environment, academic performance*

Introduction

Education is perceived as the vehicle that drove the ancient world into the digital society we experience today. It is also responsible for the training of citizens in different careers that would benefit them, their families and society at large. Iwuanyanwu and Uwadiegwu (2019) posited that education is a developmental process initiated by an individual which collectively influences societal values. In the views of Ofojebe and Kene-Chiedu (2020) education is perceived as the corner stone of economic and social development and a principal means of providing for the welfare of individuals. Education is what happens to an individual from birth till death. This means that a child's education begins once he is born. This education begins informally at home and continues formally in the primary school.

Primary school is an educational institution where children receive primary education prior to their entry into secondary school. According to the National Policy on Education as cited in Hayab and Ogunode (2021), primary school is an academic institution where children aged six to eleven (6-11) are provided with basic literacy and numeracy skills. Unicef (2024) asserted that in primary schools, children learn foundational skills that prepare them for life, work and active citizenship. This means that primary school is an inclusive and formal academic institution which provides learning contents to pupils within the particular age limit of five through eleven. The primary school as an educational institution cannot be effective without the activities of a teacher.

A teacher is a trained and certified individual whose job is to teach in schools. He is also a professional in education whose activities is to educate and guide a child on academic issues. Aleke (2016) defined a teacher as one who is professionally trained to impart knowledge, attitudes and skills to a learner. Similarly, Okeleke (2023) defines a teacher as a person with the responsibility of training and educating members of any given society towards the acquisition of desired: knowledge, values, ideologies and skills for the benefit of the society. Okeleke averred that a teacher is expected to possess requisite qualification and qualities relevant to execute teaching practice effectively, so as to instil in the products the desired

knowledge and skills. This definition suggests that a teacher is occupied with many responsibilities bothering himself and students under his watch. Oluwatayo, Ugwude and Aguocha (2020), noted that teachers are generally responsible for maintaining and developing subject knowledge and understanding, reflecting on their own practice, taking active responsibility for their own continuing professional development and participating in the school's procedures for performance management. A teacher is also ultimately responsible for translating educational policies and principles into actions based on practice during interaction with the pupils. A professional teacher would desire to carry out his teaching activities in a quality learning environment.

Learning environment simply means a space provided in the school that befits learning. William (2015) referred to learning environment as the diverse physical locations, contexts, and cultures in which students learn. Relatively, Rusticus, Worthington, Wilson and Joughin (2020) defines learning environment as that which comprise the psychological, social, cultural and physical setting in which learning occurs and in which experiences and expectations are co-created among its participants. Based on the above submissions, quality learning environment is that particular environment specially prepared for learning. A group Alliance for Education Solutions (2024) defined quality learning environment as that which encompasses both the school culture and school climate and characterized with physical and psychological safety; high levels of trust and collaboration; solid understanding of the effects of poverty; positive school, family, home and community relationships; needs-based approaches for all pupils; engaging and relevant curriculum; pupils voice and engagement; effective transition; attention to children attendance and mobility; and appropriate behavioural interventions. A good learning environment is a compendium of all physical infrastructures, instructional materials, and the relationship in the school.

The physical infrastructures as an aspect of the learning environment, comprises of all the buildings made available for learning. Odeh, Oguche and Ivagher (2015) outlined the characteristics of the school infrastructures to include school buildings, furniture's, playgrounds, sporting facilities and other related equipment which aid the teacher's delivery of lesson. Elujekwute (2019) refers to infrastructures as all the physical buildings available for learning in the school environment. It therefore means that infrastructures that make up the school learning environment include the laboratory, library, classrooms, staffroom and other

important physical structures that promote learning. These infrastructures suits meaningfully in learning when they are equipped with desired instructional materials.

The instructional materials that contributes to the learning environment includes all educational materials that are used by teachers to draw their lessons closer to children's level of understanding. Oke (2016) defined instructional material as tangible or physical object which provides rigorous, visual or both to the five senses during teaching and learning. Oke further said that instructional materials are all forms of information carriers that can be used to stimulate and boost effective teaching and learning accomplishments. Similarly, Ogoda, Akume, Edo, and Ogi (2019) posited that instructional materials are those alternative channels of communication, which a classroom teacher can use to concretize a concept during teaching and learning process. Anything that stimulates a learner during learning and results in the understanding of the curricula content may be classified as instructional materials. However, the use of appropriate school infrastructures and instructional materials may not be successful without the desired relationship in the classroom.

The social relationship in the school contributes significantly to student learning as well as their academic performances. Bright in Chinonyerem (2016) observed that teacher-pupil social relationship has a great influence on the school subjects taught by the teachers which reflects on the academic performance of children. The authors study at the University of Maryland College Park showed that learners who have cordial social relationship with their lecturers found the courses those lecturers taught easy and interesting and thus performed academically better, unlike the other courses they took. Akoja (2017) held that nature of teacher-pupil relationship has an effect on pupils' academic performance in the subject area the teacher is teaching and that there is a tendency for immorality and lousiness on both side if the relationship becomes too informal. Hence, Suleiman and Otieno, (2022) assert that the relationship between teachers, learners and instructional materials are significant in the quest for quality education. On the whole, the learning environments as discussed in paragraphs above, can effectively contribute to children's academic performances.

Academic performance is described as how well a child performed in a particular academic endeavor. Abaidoo (2018) posit that academic performances are those measurable results of a child culled from learning activities and exercises, test, defense, practical, assignments and examinations. According to Amaechina and Ezeh (2019) academic performance refers to how

well a learner accomplished his or her tasks and studies. The authors averred that academic performance is ability of a learner to obtain high grades and standard test scores in school courses, especially courses that are part of the core academic curriculum. Academic performance also deals with the way children go about their studies and responsibilities given to them by their teachers. This corroborates with Ajayi and Abaidoo (2022) who submitted that academic performance is the competency of learners to complete various assignment allocated to them by their teachers. Academic performances of school children are important because it periodically evaluates efforts made by pupils towards learning. It also serves as a mirror to access the school environment to know if its equal to children's motivation and determines learning. Academic performances of pupils is sometimes determined by gender.

Gender refers to the socio-cultural, personal, and physical features of being a male or female. It is a spectrum that is identified and expressed in diverse ways. Onye and Obizue (2020) averred that gender connotes all the roles, behaviours, and traits that society deems appropriate and expects of male and female individuals. Ubabudu (2024) reported that in recent times, educational stakeholders have expressed great concern about the poor academic performance of learners, and the academic gap which is sometimes attributed to gender disparity. However, there has been debates over gender and academic performances. For instance, a research study conducted by Orji, Phoebe, Ogbonnaya, Nkpoyen and Edet (2921) showed that gender has no appreciable effect on the academic performance among learners. But other scholars and their findings show the contrary. Conversely, research by Asif, Safdar, & Ali (2020), Kisigot, Ogula, and Munyua (2020), Siddiky and Haque (2024), revealed that gender or sex had an impact on learners' academic performances.

It has been observed through the pages of different literatures that some authorities had aired their views on what should be the impact of quality learning environment with particular reference to academic performance of pupils taking cognizance of the physical, social and temporal learning environment. For instance, Hurst, Wallace and Nixon (2013) reported that social interactions helps the teacher in effective teaching and improve learning by enhancing children's knowledge of literacy, critical thinking and problem-solving skills. This is in-line with Lukman (2023) who reported that a positive social learning environment contributes to learners behavior in class which also positively tells on their performances in school. Green-Taylor (2024) posited that the temporal learning environment creates sense of security, help young children to learn about their world, adjust to new situations and prevent challenging

behaviours. The author further narrated that the temporal learning environment which comprises of the daily routes in the school also helps young children to feel safe within a nurturing network of caregivers. Ikegbusi, Eziamaka and Iheanacho (2021) held that there is a serious influence of school physical structure on pupils learning and interest in schooling. The physical learning structure here according to Ikegbusi et al comprise of the aesthetic design of the school buildings, spaced and well arranged classroom, indoor and outdoor facilities and a host of others. Contributing, Ihekoronye (2020) observed that a conducive and healthy school environment shapes the attitudes which children develop toward the school as well as promotes teaching and learning; while Okenyi (2022) pointed out that the use of instructional materials in teaching makes classroom activities practical, real, motivating and attractive for both teachers and pupils. Akurut (2023) also reported that instructional materials such as animations, study guides and tours, website archives' among others contributed meaningfully towards children's academic performances. This in effect translates to enhance pupils' academic achievements, as it results to active and effective participation in the classroom for both learners and instructors.

A mere observation at some public primary schools in Awka South LGA indicates that there are classrooms provided for learning. These classrooms are full of desk and chairs though some are broken. Some walls of these classrooms are painted while others are not. A good number of them had pictures of objects, fruits and animals on them. There is also an observed conventional class routines activities such as time for devotions, time for lessons, time for break, and time for dismissal. A critical observation also shows that pupils relates with each other in play and classroom activities such as drawing and question/answer series. These observations where on ground in some schools. However, the perceptions of teachers on the impacts of these learning environments is yet to be ascertained and this becomes a major gap in this study. Also, in different literatures consulted, none were found to be conducted in the study area among the literatures; there is also absent of teachers perceptions on the impact of learning environments on pupils academic performances and this is another gap created in this study. There is also dearth of opinions of male and female teachers concerning their perceptions on the impact of quality physical, social and temporal learning environment. These observed gaps are what this study sought to fill.

Research Questions

The following research questions guided this study

1. What are the perceptions of teachers on the impact of quality physical learning environment on pupils academic performance in Awka South L.G.E.A of Anambra State?
2. What are the perceptions of teachers on the impact of quality social learning environment on pupils academic performance in Awka South L.G.E.A of Anambra State?
3. What are the perceptions of teachers on the impact of quality temporal learning environment on pupils academic performance in Awka South L.G.E.A of Anambra State?

Research Hypothesis

1. There is no significant difference in the mean perception of male and female teachers on the impact of quality physical learning environment on pupils academic performance Awka South L.G.E.A
2. There is no significant difference in the mean perception of male and female teachers on the impact of quality social learning environment on pupils academic performance in Awka South L.G.E.A
3. There is no significant difference on the mean perception of male and female teachers on the impact of quality temporal learning environment on pupils academic performance in Awka South L.G.E.A

Methods

The study adopted a descriptive survey research design. It was guided by three research questions ad tree hypothesis. The population for the study comprised of 627 public primary school teachers (265 male and 362 female teachers) in Awka south L.G.E.A. 109 teachers were e sample size for the study. Simple random sampling and purposive sampling was used to select 35 male teachers and 74 female teachers in the public Primary schools. The instruments for data collected consisted of 18 items used to elicit relevant information based on the problem investigated. The data for the study was gathered with a questionnaire titled "Impact of Quality Learning Environment on Pupils Academic Performance Questionnaire. The instrument was

validated and yielded reliability co-efficient of 0.83, 0.86 and 0.87 with a general index of 0.86. A criterion mean of 2.50 was also established to analyze the questionnaire, thus, responses with mean of 2.50 and above were agreed while those below 2.50 were disagreed. The t-test statistics was used to test the hypotheses at 0.05 level of significance. The decision rule is that if P-value is less than level of significance, reject Ho.

Results:

Research Question 1: What are the perceptions of teachers on the impact of quality physical learning environment on pupil's academic performance in Awka South L.G.E.A of Anambra State?

Table 1

Mean Ratings on Perceptions of Teachers on the Impact of Quality Physical Learning Environment on Academic Performance of Primary Five Pupils

S/N		Gender	N	Mean	SD	Decision
1	The nature of the classroom play a major role in children's success in learning	Male	35	2.81	0.46	Agree
		Female	74	2.72	1.42	Agree
2	Dilapidated buildings in the school demoralize children's active participation to learning and this affects their performance	Male	35	2.78	1.83	Agree
		Female	74	2.92	1.61	Agree
3	Closeness of classrooms makes classrooms noisy and affects learning	Male	35	2.01	0.23	Disagree
		Female	74	2.40	0.88	Disagree
4	None-availability and use of quality library as perceived by teachers contributes to poor learning among pupils	Male	35	2.19	1.26	Disagree
		Female	74	2.33	1.42	Disagree
5	Inadequate quality edifice for computer laboratory contributes to poor learning and performance in computer studies	Male	35	3.01	1.49	Agree
		Female	74	2.77	0.98	Agree
6	The aesthetic nature of the school environment contributes to academic success of pupils	Male	35	1.96	0.54	Disagree
		Female	74	2.24	0.12	Disagree
7	The nature of the school playground determines children's success in physical education	Male	35	2.90	0.56	Agree
		Female	74	2.69	1.09	Agree
	Grand Mean	**Male**		**2.52**	**0.91**	
		Female		**2.58**	**1.07**	Agreed

The findings in Table 1 shows the mean ratings on perceptions of primary school teachers on the impact of quality physical learning environment on academic performance of primary five pupils. It shows that primary school teachers perceive that the nature of the classroom, dilapidated buildings, lack of computer laboratory, and nature of the school playground are physical factors that impacts on pupils academic performance.

Research Question 2: What are the perceptions of teachers on the impact of quality social learning environment on pupil's academic performance in Awka South L.G.E.A of Anambra State?

Table 2

Mean Ratings on Perceptions of Teachers on the Impact of Quality Social Learning Environment on Academic Performance of Primary Five Pupils

S/N		Gender	N	Mean	SD	Decision
8	Cordial relationship among teachers has a positive impact of pupils academic performances	Male	35	2.56	0.72	Agree
		Female	74	2.81	0.42	Agree
9	Poor relationship among pupils in school contributes to their poor academic performances	Male	35	2.69	0.84	Agree
		Female	74	2.60	1.27	Agree
10	Positive relationship among teachers with instructional materials makes pupils active to lessons	Male	35	2.77	1.22	Agree
		Female	74	2.93	0.45	Agree
11	Academic performance of pupils is commendable when pupils socialize meaningfully with play materials	Male	35	2.82	0.92	Agree
		Female	74	2.64	1.33	Agree
12	Pupils tend to perform academically better when their relationship with teachers becomes informal	Male	35	1.62	1.67	Disagree
		Female	74	2.30	1.23	Disagree
	Grand Mean	**Male**		**2.51**	**1.07**	
		Female		**2.65**	**0.94**	Agreed

The findings in Table 2 shows the mean ratings on perceptions of primary school teachers on the impact of quality social learning environment on academic performance of primary five pupils. It shows that primary school teachers perceive that cordial relationship among teachers, positive relationship among teachers with instructional materials and relationship among pupils

with play materials impacts academic performances meaningfully. It also shows that poor relationship among pupils and informal relationship with pupils and teachers leads to poor academic performances.

Research Question 3: What are the perceptions of teachers on the impact of quality temporal learning environment on pupil's academic performance in Awka South L.G.E.A of Anambra State?

Table 3

Mean Ratings on Perceptions of Teachers on the Impact of Quality Temporal Learning Environment on Academic Performance of Primary five Pupils

S/N		Gender	N	Mean	SD	Decision
13	Children who spend much time in play outperform others in school	Male	35	0.29	1.64	Disagree
		Female	74	0.72	1.39	Disagree
14	Children who spend normal time in lunch and rush back to lessons outperform others who spend much time	Male	35	2.98	1.24	Agree
		Female	74	3.02	0.52	Agree
15	Much time spend on group activities encroaches into other assessments and this affects other performances	Male		2.76	0.45	Agree
		Female		2.88	0.22	Agree
16	Children who arrive class late miss lessons but this does not have negative impact on their performances	Male	35	1.29	1.09	Disagree
		Female	74	0.82	1.88	Disagree
17	Much time spent on rest negatively impacts on pupils performances	Male	35	1.17	1.74	Disagree
		Female	74	2.34	1.20	Disagree
18	There is high performance of pupils who spend less time in reading rather than attending to lessons	Male	35	2.12	1.34	Disagree
		Female	74	1.95	1.12	Disagree
	Grand Mean	**Male**		**1.43**	**1.25**	
		Female		**1.95**	**1.05**	**Disagreed**

The findings in Table 3 shows the mean ratings on perceptions of primary school teachers on the impact of quality temporal learning environment on academic performance of primary five

pupils. It shows that primary school teachers perceive that children who spend normal time in lunch and rush back to lessons outperform others who spend much time and that much time spends on group activities encroaches into other assessments and this affects other performances. Children who overplay and arrive to school late were victim of poor performances.

Hypothesis 1

There is no significant difference in the mean perception of male and female teachers on the impact of quality physical learning environment on pupils academic performance Awka South L.G.E.A

Table 4

t-test comparison of mean ratings in perception of male and female educators on the impact of quality physical learning environment on academic performance of primary five pupils

Gender	N	Mean	SD	df	t	P-value	Decision
Male	35	2.52	0.91				
				107	1.984	0.352	Significant
Female	74	2.58	1.07				

Table 4 indicates that there is a significant mean difference in the perception of teachers on impact of quality physical learning environment on academic performance of primary five pupils. The null hypothesis in this regard is therefore rejected since the p-value (0.352) is less than the level of significant (.05).

Hypothesis 2

There is no significant difference in the mean perception of male and female teachers on the impact of quality social learning environment on pupils academic performance in Awka South L.G.E.A

Table 5

t-test comparison of mean ratings in perception of male and female teachers on the impact of quality social learning environment on academic performance of primary five pupils

Gender	N	Mean	SD	df	t	P-value	Decision
Male	35	2.51	0.07				Not
				107	1.984	0.909	Significant
Female	74	2.65	0.94				

Table 5 indicates that there is no significant mean difference in the perception of perception of male and female teachers on the impact of quality social learning environment on academic performance of primary five pupils. The null hypothesis in this regard is therefore not rejected since the p-value (0.909) is greater than the level of significant (.05)

Hypothesis 3

There is no significant difference on the mean perception of male and female teachers on the impact of quality temporal learning environment on pupils academic performance in Awka South L.G.E.A

Table 6

t-test comparison of mean ratings in perception of male and female teachers on the impact of quality temporal learning environment on academic performance of primary five pupils

Gender	N	Mean	SD	df	t	P-value	Decision
Male	35	1.43	1.25				Not
				107	1.984	1.238	Significant
Female	74	1.95	1.05				

Table 6 indicates that there is a significant mean difference in the perception of male and female teachers on the impact of quality temporal learning environment on academic performance of primary five pupils. The null hypothesis in this regard is therefore not rejected since the p-value (1.238) is greater than the level of significant (.05)

Discussion

Findings show that the nature of the classroom, dilapidated buildings, lack of quality computer laboratory and nature of the school playground as perceived by teachers constitute a problem towards quality physical learning environment whereas closeness of classrooms, non-use of library and aesthetic nature of the school environment do not. The above findings corroborates the findings of Nuhu (2015) reported that the classroom building with adequate furniture; class with small class population and the use of instructional materials were found to have positive impact on the performance of students. Ikegbusi, Eziamaka and Iheanacho (2021) also identified physical facilities such as nature of indoor & outdoor facilities, spaced classroom, and the beautiful nature of the school buildings on as compliments to learning interest and academic performances. The hypothesis test indicated that there was a significant difference between perception of male and female teachers on impact of quality physical environment on pupils academic performance.

Finding also show that teachers perceive that their cordial relationship, relationship among pupils, positive relationship with the teacher and instructional materials contributed to the impact of quality social environment. The above findings are in-line with Suleiman and Otieno, (2022) reported that cooperation among teachers, learners and instructional materials remains vital towards the quest for quality education. This means that the above findings revolves around cooperation; thus, when there is no cooperation, the effect tells on \learners and their performances. Some of the above findings are also in-line with Ikegbusi, Eziamaka and Iheanacho (2021) who reported that teachers interaction with co-teachers and other staff; their interaction with pupils; and pupils interaction with their fellows were perceived as significant towards academic performance and achievements of learners. The hypothesis tested show that male and female teachers do not differ in their perceptions on the impact of quality physical environment on pupil's academic performance.

Finding show that teachers perceive that the temporal learning environment children find themselves such as normal time for lunch had meaningful impact on their academic performances. However, children who spend much time in play, spends much time in lunch, much time on group activities that encroaches into other lessons, those who came late and those who spend less time in reading were perceived by teachers as having negative impacts on academic performances. The above findings are in-line with Paris, Beeve and Springer (2017)

who reported that an organized classroom is known with its temporal environment which includes the use of schedules and established routines and that they are important because they influences a Child's social and emotional development. Green-Taylor (2024) also identified the school timing, sequence and length of routines and activities that take place throughout the school day as the temporal environment that determines academic performances of learners. This means that the nature of the temporal environment in any school determines if students will perform high or low. The hypothesis tested show that male and female teachers do not differ in their perceptions on the impact of quality temporal learning environment on pupil's academic performance.

Conclusion

Primary school teachers in Awka South perceived that the physical layout of the school, the social environment and the temporal environment has a great impact on pupils academic performance of Awka South L.G.EA. The physical facilities includes the classroom structures, the laboratory, library, the playground to among others. The social relationships includes teacher to teacher, teacher to pupils and finally pupils with their colleagues while the temporal environment includes the daily routine that goes on in the school. All these impacts pupil's academic performances.

Recommendations

Based on the findings in this study, the paper recommends as follows:

1. State government should ensure that physical infrastructures in the school are periodically maintained and where there is need to erect new ones, it should be done urgently so that teachers and pupils can assess them for learning. Rehabilitation and maintenance will enhance the aesthetic of schools, attract pupils to school and thus, contribute to pupils academic performances.

2. Social environment in the school should be strengthened through teachers efforts to ensure that children feel free to associate with their teachers and peers at all times for the purpose of academics.

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MOTHER TONGUE MEDIUM OF INSTRUCTION AS CORRELATE OF PUPILS ACADEMIC ACHIEVEMENT IN BASIC SCIENCE IN AWKA SOUTH LOCAL GOVERNMENT EDUCATION AUTHORITY

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Abstract

This study explored mother tongue medium of instruction as correlate of pupil's academic achievement in basic science in Awka South Local Government Education Authority of Anambra State. Two purpose of the study, two research questions and two null hypotheses tested at 0.05 level of significance guided the study. Correlational research design was adopted for the study. The population consisted of 665 public primary school teachers in the 45 public primary schools in the area. Using simple random sampling technique of balloting without replacement, 200 teachers were selected as the sample for the study. Mother Tongue Medium of Instruction as a Correlate of Pupils Academic Achievement in Basic Science in Primary Schools (MTMICPAABSPS) Questionnaire was used to collect data on pupils' use of mother tongue in basic science, while data for academic achievement was collected from the annual result record sheets (pupils' annual cumulative result of 2022/2023 academic session) in each of the sampled schools. Face and content validity of the instrument was determined by three experts; one in the Department of Early Childhood and Primary Education and one in Measurement and Evaluation in the Department of Educational Foundations both from the Faculty of Education, Nnamdi Azikiwe University, Awka and a Basic Science classroom teacher in Awka South. Cronbach Alpha was employed for the reliability of the instrument and reliability coefficient of 0.81 was obtained. Data collected with the aid of three research assistants who were basic science classroom teachers were analysed using Pearson Product Moment Correlation Coefficient for the research questions while the hypotheses were tested also using significance of the correlation at 0.05 alpha level. Findings of the study revealed among others that there is a high positive relationship between

mother tongue and pupils' academic achievement in basic science in primary schools. there is no significant relationship between male and female pupils' use of mother tongue and their academic achievement in basic science in primary schools in Awka South Local Government Education Authority. It was concluded that the use of mother tongue as a medium of instruction has the potential to improve understanding and knowledge impartation in the classroom, and, by extension, improve academic achievement since mother tongue is the language with which the pupils use to create their own knowledge. The study recommended that Federal government should further re-enforce the use of mother tongue as recommended in National policy of Education as a medium of instruction at the lower level of basic education for effective and efficient teaching and learning to take place among others.

Keywords: *Language, Mother Tongue, Basic Science and Academic Achievement*

Introduction

The importance of language in any human society cannot be over emphasized as it is of utmost importance in our day to day interaction which has ensured orderliness in the society. Language is the primary vehicle through which human culture is acquired, shared and transmitted. Language is a treasure of culture and self-identity. Without language, there is bound to be problem in the society for thoughts, ideas, information, and the society would become impossible. According to Yusuf, Bello and Obafemi (2016), language is seen as a set of arbitrary vocal symbols shared by a group of people who are connected by mutual and natural trust. Language is a distinctively human system of communication based on oral and written symbols. In the same vein, Obanya as cited in Udensi, Ogbonnaya and Ezema, (2018), opined that language is man's most important gift and maintained that language is a good instrument for thought and creativity. Language is culture bound and is transmitted from generation to generation. History and culture have an overbearing influence on the language of a particular group of people. In the case of Nigeria, there are two sets of languages on which communication revolves: the native languages or the mother tongue with its numerous and distinct dialects and the English Language. Nigeria has an estimate of four hundred and fifty languages which are mutually unintelligible to each other, with Igbo, Hausa, and

Yoruba as the three major languages and other languages such as: Tiv, Igala, Efik, Ebira, Jukun, Ijaw, among others as the minor languages. The socialization of a child into culture or society involves the use of indigenous language, which he describes as the life blood of any culture (Udensi, Ogbonnaya and Ezema, 2018).

First language (also known as native language/father tongue/mother tongue, arterial language, or L1) is a language that a person has been exposed to from birth. Sometimes, the term "mother tongue" or "mother language" is used for the language that a person learned as a child at home (usually from their parents). Mother-tongue is the language that a child learns in his/his mother's lap. It is the language which the child learns almost without any conscious effort on his part. It is a language which the child acquires while living in his own social group. According to Solanke as cited in Yusuf, Bello and Obafemi (2016), mother tongue is an indispensable cultural legacy with which all forms of human interaction are carried out. Abijo (2014) opined that "mother tongue education is the use of the native language or the first language to teach at formal and non-formal levels". Mackenzie and Walker (2013) corroborate Abijo's view and state that children's potentials are often wasted when language acquisition is attempted without the use of native language which results in lack of development and educational failure. Fafunwa as cited in Ozoemena, Ngwoke and Nwokolo (2021) opined that mother tongue education is the systematic way of training and instructing a child through the medium of first language. The authors further states that mother tongue involves a formal approach which is the use of first language in teaching a child, or the use of mother tongue or native language as a means of formal education in schools. National Policy on Education (FRN, 2013), stipulated that the medium of instruction for pupils in schools especially at the pre-primary and lower basic education should be done with the use of mother tongue. The mother tongue should be used to teach pupils all the subjects especially basic science. The fact that, science education is an indispensable tool for national development made the Nigerian government to provide two stand-alone science inclined subjects, which are basic science and basic technology in order to enable primary schools pupils' acquire basic scientific literacy at their tender age.

In practical terms, basic science is actually an integration of sciences. Basic science is body of knowledge that prepares Basic education pupils for the study of core science subjects (physics,

chemistry, biology) at the senior secondary school level. This implies that for a student to be able to successfully study single science subjects at the senior secondary school level and tertiary institutions, such student had to be well grounded in basic science at the Basic education. In a nutshell, Yaga (2014) posited that, basic science involves helping children develop basic scientific ideas and understanding, which will enable them to explore and investigate their world.

At the completion of the compulsory 9-year basic education level, pupils are expected to have developed interest for advanced studies in the field of science and technology. Onwu in Ugwu (2014) asserted that, basic science prepares pupils to observe and explore the environment to explain simple natural phenomena and to develop scientific attitudes such as curiosity, critical reflection and objectivity. In addition, basic science enable pupils to apply the acquired basic scientific skills and knowledge to solve everyday problems in the environment, develop self-confidence and self-reliance through problem solving activities in science endeavors. In order to ascertain the academic progress of pupils in basic science, they are subjected to termly assessment exercises to determine their level of academic achievement in the subject.

Academic achievement is commonly measured by examinations or continuous assessment. Academic achievement is the outcome of education, it is the extent to which pupil, teacher or institution has achieved their educational goals (Oyetade, 2014). In the same vein, Karue and Amukowa (2013) viewed academic achievement as the level of individuals' education and/or educational outcomes accomplished successfully, as a result of learning at school. Academic achievement distinguishes inactive pupils from serious pupils. Moreso, Kosgei, Mise, Odhiambo and Ayugi (2013) asserted that, in order to quantify the academic achievement of students, grade point average, semester grade point average and cumulative grade point average (CGPA) are used. Adeyemo (2011) opined that academic achievement means achievement a student makes in school namely; his marks in the examination, which is the criterion for the achievement of pupils.

Despite the importance attached to science education, it appears that the purpose of teaching of science education have not been fully achieved as there has been an observably systematic failure in pupil's academic achievement in basic science in public primary schools in Anambra State. Document cited by the researcher from the office of the Local Government Education Authority, Anambra State showed that primary school pupils' results in the 2018/2019, 2019/2020,

2020/2021 and 2021/2022 academic sessions in Basic Science Common Entrance Examination published by Anambra Ministry of Education, only 40.23%, 37.18%, 32.19% and 47.14% respectively of pupils were able to make credit passes and above (Anambra State Universal Basic Education Board, 2023). This revelation points to the fact that academic achievement of pupils in the subject in Anambra State is not encouraging. Alarmed by this development, Otarigbo and Oruese as cited in Agaba and Ogwuche (2020) reported that lack of specialist teachers in basic science are currently employed in primary schools and also non use of mother tongue as a medium of instruction in teaching pupils science concepts. This situation has been a serious concern to all stakeholders in the education sector, probing into the root causes of pupils' poor performances in basic science. With differing opinions; some attributing it to the difficult nature of the subject, others have attributed it to poor and inadequate teaching and learning facilities and inadequate laboratories, while a vast majority have attributed it to the teachers handling the subject (Ayibatonye and Ikechi, 2018). Without an iota of doubt, the use of mother tongue will help pupils break new grounds in the course of studying basic science. The issue of gender disparity in the context of academic achievement is a common phenomenon in Nigeria.

The issue of gender is an important one in science education especially with increasing emphasis on ways of boosting manpower for technological development. According to Okeke (2018), gender refers to the socially culturally constructed characteristics and roles which are ascribed to males and females in any society. Sunday, Oduwole and Olaoye, (2021) opined that gender differences in the use of mother tongue, seems to be characterized by contradictory results. Also, Onyeka, Nwamaradi and Chimuanya (2023) posited that there is no difference in the level of understanding among male and female students. Beka (2016) pointed out that sex of learners did not reveal statistically significant difference towards the use mother tongue as a medium of instruction. From literature gathered, there are some research works on the perception of pupils on the use of mother tongue. However, in South East, Nigeria, precisely in Awka South Local Government Education Authority, there seems to be paucity of empirical studies concerning the relationship between the use of mother tongue and academic achievement among primary school pupils' in basic science. It is against this backdrop, that the researcher is motivated to ascertain mother tongue medium of instruction as correlate of pupil's academic achievement in basic science in Awka South Local Government Education Authority.

Statement of the Problem

Science education plays an importance role in the technological development and globalization of a nation's economy. This may be the reason why emphasis is placed on the provision of science education at all levels of education in Nigeria. For science education to gain much ground, it must be taught in an organized and well-structured pattern, involving practical activities for both teachers and pupils. This will undoubtedly make learning more interesting and meaningful. However, most of today's science teaching is based on memorization and regurgitation of scientific knowledge. If the Nigerian child is to be encouraged from the start to develop curiosity, initiative, industry, manipulative ability, spontaneous flexibility, manual dexterity, mechanical comprehension and the co-ordination of hand and eye, he should acquire these skills and attitudes through his mother-tongue.

Many learners struggle with comprehension when English is their second language. This difficulty arises due to limited vocabulary, unfamiliar sentence structures, and differences between English and their native language. As a result, they may struggle to grasp the full meaning of texts, instructions, or spoken communication. However, the mother tongue plays a crucial role in enhancing comprehension. When learners have a strong foundation in their first language, they can transfer knowledge, concepts, and critical thinking skills to English. For example, if they understand a topic well in their native language, it becomes easier to learn the same topic in English. Additionally, translating complex ideas into their mother tongue can aid in deeper understanding before expressing them in English.

The problem of poor academic achievement by pupil-s in basic science has been of concern to all science educators in the state. At the school certificate level, the Common Entrance Examination (2023) confirms this observation. Several factors contributed to deterioration in Pupils' academic achievement in basic science which includes language of instruction used at the early stages of pupils' education, pupils' interest and their inability to retain the concepts learnt among others. It is possible that these factors jointly or singly affect pupils` academic achievement in basic science. It is also possible that language of instruction in teaching basic science contributes to pupils' abysmal academic achievement in the subject. It is in line with this that, the researchers

investigated mother tongue medium of instruction as correlate of pupil's academic achievement in basic science in Awka South Local Government Education Authority.

Purpose of the Study

The main purpose of the study is to determine mother tongue medium of instruction as correlates of pupils academic achievement in basic science in primary schools in Awka South Local Government Education Authority. Specifically, the study sought to determine the:

1. relationship between mother tongue and pupils' academic achievement in basic science in primary schools in Awka South Local Government Education Authority.
2. relationship between male and female teachers' use of mother tongue and pupils academic achievement in basic science in primary schools in Awka South Local Government Education Authority.

Research Questions

The following research questions guided the study:

1. What is the relationship between mother tongue and pupils academic achievement in basic science in primary schools in Awka South Local Government Education Authority?
2. What is the relationship between male and female teachers' use of mother tongue and pupils academic achievement in basic science in primary schools in Awka South Local Government Education Authority?

Hypotheses

The following null hypotheses were tested at 0.05 level of significance:

1. There is no significant relationship between mother tongue and pupils academic achievement in basic science in primary schools in Awka South Local Government Education Authority.

2. There is no significant relationship between male and female teachers' use of mother tongue and pupils academic achievement in basic science in primary schools in Awka South Local Government Education Authority.

Methods

The study was designed to determine mother tongue medium of instruction as correlate of pupils' academic achievement in basic science in Awka South Local Government Education Authority of Anambra State. Two research questions, two null hypotheses tested at 0.05 level of significance guided the study. The study adopted a correlational research design. The population of the study comprised of 665 public primary school teachers in the 45 public primary schools in Awka South Local Government Education Authority. Using simple random sampling technique of balloting without replacement, 200 teachers were selected as the sample for the study. 10 teachers each were selected from 20 schools out of the 45 public primary schools in the area. Mother Tongue Medium of Instruction as a Correlate of Pupils Academic Achievement in Basic Science (MTMIPAABS) Questionnaire was used to collect data on pupils' mother tongue in basic science, while data for academic achievement was collected from the annual result record sheets (pupils' annual cumulative result of 2022/2023 academic session) in each of the sampled schools. Face and content validity of the instrument was determined by three experts; one in the Department of Early Childhood and Primary Education, one in Measurement and Evaluation in the Department of Educational Foundation both from the Faculty of Education, Nnamdi Azikiwe University, Awka and a Basic Science classroom teacher in Awka South. Cronbach Alpha was employed for the reliability of the instrument and reliability coefficient of 0.81 was obtained. Data collected with the aid of three research assistants who were basic science classroom teachers were analysed using Pearson Product Moment Correlation Coefficient for the research questions while the hypotheses were tested also using Pearson Product Moment Correlation at 0.05 alpha level.

Results

Research Question One: What is the relationship between the use of mother tongue as a medium of instruction and pupils' academic achievement in basic science in primary schools in Awka South Local Government Education Authority?

Table 1: Relationship between Pupils' use of Mother Tongue as a medium of instruction and Academic Achievement in Basic Science

Variables	N	Mother Tongue	Achievement	Decision
Mother Tongue	200	1	0.81	High Positive Correlation
Achievement	200	0.81	1	

Table 1 reveals that the correlation coefficient (r) between mother tongue and pupils academic achievement in basic science is 0.81. This shows that there is a high positive relationship between mother tongue and pupils' academic achievement in basic science in primary schools in Awka South Local Government Education Authority.

Research Question Two: What is the relationship between male and female teachers use of mother tongue and pupils academic achievement in basic science in primary schools in Awka South Local Government Education Authority?

Table 2: Relationship between Male and Female Teachers' Use of Mother Tongue as a medium of instruction and Pupils Academic Achievement in Basic Science

Variables (Gender)	N	Mother Tongue	Achievement	Decision
Male	86	0.37	.823	Low Positive Correlation
Female	114	.822	0.37	Low Positive Correlation

Table 2 reveals that the correlation coefficient (r) between the male and female teachers' use of mother tongue and pupils academic achievement in basic science is 0.823 and 0.822 respectively. This shows that there is a low positive relationship between primary school male and female pupils' mother tongue and their academic achievement in basic science.

Hypothesis One: There is no significant relationship between mother tongue and pupils academic achievement in basic science in primary schools in Awka South Local Government Education Authority.

Table 3: Test of Significance of Pearson Correlation between the use of Mother Tongue as a medium of instruction and Pupils' Academic Achievement in Basic Science

Sources of Variation	N	R	P-value	Decision
Mother Tongue				
	200	0.81	0.00	Significant
Academic Achievement				

Table 3 shows that the calculated value of r is 0.81 and had P-value (P .00 <0.05). Table 3 also shows that based on the P-value (.00), there is a significant relationship between use of mother tongue and pupils academic achievement in basic science in primary schools in Awka South Local Government Education Authority. Therefore, the null hypothesis was rejected. Therefore, there is a significant relationship between mother tongue and pupils' academic achievement in basic science in primary schools in Awka South Local Government Education Authority.

Hypothesis Two: There is no significant relationship between male and female teachers' use of mother tongue and pupils academic achievement in basic science in primary schools in Awka South Local Government Education Authority.

Table 4: Test of Significance of Pearson Correlation between Male and Female Teachers' use of Mother Tongue as a medium of instruction and Pupils Academic Achievement in Basic Science

Gender	Sources of Variation	N	R	P-value	Decision
Female	Mother Tongue				
	Academic Achievement	114	0.822	0.37	Not Significant
Male	Mother Tongue				
	Academic Achievement	86	0.823	0.37	Not Significant
Total		**200**			

Table 4 shows that the correlation of female teachers' use of mother tongue and pupils academic achievement was 0.822 with P-value of 0.00 while their male counterparts had a correlation of 0.857 with P-value of 0.00. This shows that the null hypothesis was accepted. Therefore, there is no significant relationship between male and female teachers' use of mother tongue and pupils academic achievement in basic science in primary schools in Awka South Local Government Education Authority.

Discussion of Findings

Findings of the study in table 1 revealed that there is a high positive relationship between mother tongue and pupils' academic achievement in basic science. Also, the findings in table 3 revealed that there is a significant relationship between mother tongue and pupil's academic achievement in basic science in primary schools in the study area. Learning in mother tongue makes pupils to master concepts and skills exposed to them. In general, the use mother tongue as a medium of instruction makes the environment of learning becomes resourceful which in turns influences the academic achievement of pupils in any subject area. This is in accordance with Sunday, Oduwole

and Olaoye (2021) who opined that students performed better when taught in their mother tongue than when taught in English language. Adeosun, Sulaiman, and Sholagberu, (2022) found out that children taught basic science and other subjects using an African language as medium of instruction over a six year period significantly out-performed their peers in all related aspects of the school curriculum. Also, Akumabor as cited in Adeosun, Sulaiman, and Sholagberu (2022) emphasized that for a child to learn basic concepts easily in any subject area like basic science and make significant progress in life and at school, the language to use is the indigenous language which is the child's language of the immediate environment or the mother tongue. This is because indigenous languages are of great importance in the teaching and learning of native intelligence and wisdom which are beneficial to future development in terms of curiosity, manipulative skills, spontaneous flexibility, initiative, and manual dexterity which fosters national pride, and identity.

Moreso, the findings of the study in table 2 revealed there is a low positive relationship between primary school male and female teachers' use of mother tongue and pupils academic achievement in basic science. Also, findings in table 4 revealed that there is no significant relationship between male and female teaches' use of mother tongue and pupils academic achievement in basic science in primary schools in Awka South Local Government Education Authority. This is in accordance with Beka (2016) who pointed out that sex of teachers did not reveal statistically significant difference towards the use of mother tongue as a medium of instruction. Also, Sunday, Oduwole and Olaoye (2021) pointed out that gender has no impact on the learners' ability to learn his or her mother tongue. This could be as a result of equal opportunities and conditions given to the pupils to actively engage and participate in the learning processes. According to Onyeka, Nwamaradi and Chimuanya (2023)**,** they pointed out in their research work that there is no significant difference between the female and male pupils who were taught science in the mother-tongue and that both gender have equal ability to learn concepts in basic science when done using the mother tongue.

Conclusion

If effective and efficient teaching and learning is to be achieved in the primary schools, especially at the lower primary, the use of mother tongue as the medium of instruction ought to be encouraged. From the findings of this study, it can be concluded that the use of mother tongue as a medium of instruction has the potential to improve understanding and knowledge impartation in

the classroom, and, by extension, improve academic achievement since mother tongue is the language with which the pupils think. From the results of this study, it has been empirically proven that using mother tongue in teaching basic science enhances higher mean achievement scores than the use of English language. The study concludes that there is a low positive relationship between primary school male and female teachers' use of mother tongue and pupils academic achievement in basic science. Also, the study concludes that there is a significant relationship between mother tongue and pupils' academic achievement in basic science in primary schools and there is no significant relationship between male and female teachers' use of mother tongue and pupils academic achievement in basic science in primary schools.

Recommendations

Based on the findings of the study, the following recommendations were made;

1. . Federal government should further re-enforce the use of mother tongue as recommended in National policy on Education as a medium of instruction at the lower level of basic education.

2. Curriculum developers should develop basic science curriculum in the mother-tongue for easy planning and presentation of basic science lessons in mother-tongue.

3. Authors and publishers of educational books should endeavour to write and publish basic science books and other instructional materials in the mother-tongue

4. Additional trainings in form of workshops, symposium and seminars should be organized for the in-teachers and pre-service teachers to enhance their level of proficiency in respect to mother tongue and its implementation as a medium of instruction in the classroom.

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THE IMPACT OF TECHNOLOGY ON TEACHING AND LEARNING OF MATHEMATICS IN PRE-PRIMARY SCHOOLS IN ONITSHA SOUTH LOCAL GOVERNMENT AREA, ANAMBRA STATE

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Abstract

This study focused on impact of technology in teaching and learning of Mathematics in pre-primary schools in Onitsha South Local Government Area of Anambra state. Descriptive Survey research design was adopted for the study. It was guided by three research questions. The population comprised of 305 pre- primary school teachers in Onitsha South Local Government Area. The sample comprised of one hundred and five (105) teachers, sixty –six (66) Primary school teachers and thirty – nine (39) Pre – primary school teachers. A 15-item questionnaire was used for collection of data from the teachers. The questionnaire was validated by two lecturers, while spilt half method was used to confirm the reliability of the instrument at coefficient of 0.88.The data were presented in tables and analysed using mean. Results of the study showed that the effective use of technology in teaching and learning of Mathematics in pre-primary schools make children to learn at a faster rate. Similarly, government should train teachers on how to use computer sets and software packages. Recommendations were also made that the government should make efforts to provide technology facilities in pre – primary schools and teachers should be sensitized on the need to use these facilities in mathematics teaching and learning.

Keywords: *Technology, Pre-primary schools, Mathematics, Teaching and Learning*

Background

The word 'technology' is derived from two Greek words: "techne" meaning "art/craft/skill" and "logos" meaning study of something. In view of this etymological understanding, Nwana (2009) pointed out that technology is the systematic study of technique and regular methods of producing things. Technology is the application of scientific knowledge for practical purpose to satisfy perceived needs. The National Policy on Education (FRN, 2013) defined technology under the technical/vocational education as something which involves the study of technologies and related sciences; and the acquisition of practical skills, attitude, understanding and knowledge relating to occupations in various sectors of economic and social life.

The rapid development of technology, in recent years, have brought significant developments in global education systems (Dooley T., Dunphy E., Shiel G., Butler D., Corcoran D., Farrell T., NicMhuira S., O'Connor M., Travers J., & Perry B., 2014). According to the National Council for Educational Mathematics (NCTM, 2015), technology is an integral part of encouraging mathematical skills in kindergarten as well. Toddlers can develop their critical and creative scientific thinking, as well as their interest in Mathematics (Clements &Sarama 2016; Dooley et al. 2014). Technology can support communication, collaboration, critical and creativity scientific thinking and the development of mathematical skills in toddlers. (Calder, 2015; Nikolopoulou, 2014; Papadakis et al., 2018).

Several researchers, have tried to outline some elements or tools of information and communication technology. They include:- a. The computer with its software. b. Communication systems like mobile phones, telephones, telex facsimile, Internet, E-mail, Fax, Videotext, document delivery. c. Technologically oriented audio and audio-visual materials / microwave systems like radio programmes, recorded cassettes, tele-lectures, television programmes, video tapes, and sound motion pictures. d. Reprographic systems (micrographics, electronic copies, word processing). Okoye, (2005); Sanni (2007), and Atagher (2008). Nwachukwu(2003) in his own view outlined other ICT-oriented activities in the field of education to include - Broadcast materials or CD-ROM as sources of information, Micro-computers with projectors and its devices, Electronic toys, E-mail, Video conferencing, Internet-based research and others.

The use of these tools in teaching and learning has several benefits. It creates easy access to information learning opportunities and resources for both learners and teachers, makes learning more flexible, interesting and reduces pupils perception of Mathematics as an abstract subject. It leads to economical delivery of instruction, enables new instructional models, promotes teacher productivity and helps to expand learning time beyond school period (Okoye, 2005 and Sanni, 2007). The use of the internet provides for both teachers and pupils, global access to all kinds of information generation and sharing. Radio and cassette players, educational television, video cassettes and VCD's can be used to teach and reinforce mathematical concepts, skills and processes especially at the primary school level.

According to Trucano (2005), there is widespread belief that technology can and will empower teachers and learners, transforming teaching and learning processes from being highly teacher-dominated to children centred. This transformation results in increased learning gains for children, creating opportunities for learners to develop their creativity, problem-solving abilities, informational reasoning skills, communication skills and other higher-order skills. In essence, technology includes tangible products such as machines and devices, as well as intangible innovations like software, methodologies, and systems that facilitate human activities. The impact to which these technology tools are used in pre-primary schools in Onitsha south Local Government Area of Anambra State constitutes a major problem of this study.

Over the years many countries of the world had questioned the value of pre-primary school and what role this early education plays in subsequent academic performance and socialization in the primary grades. Many parents have been on the dilemma of deciding whether or not to send their children to pre-school (Gregory, 2014). The foregoing concern was the basis for the initiative of the convention on the rights of the child, drafted by the United Nations Commission on Human Rights (UNCHR) and adopted by the General Assembly of the UN in 1989. Most countries have turned to universal pre-primary education in order to give children a better start to life (Myers, 2016).There is however some general agreement among experts around the world from developing as well as developed nations that early childhood care and education programs are not only desirable but essential for many children (Sylva, 2019). According to the National Policy on Education (FRN, 2013) Early childhood/Pre-primary is from birth-5 years. Pre-school is the

education given in an educational institution to children prior to their entering into primary school. It includes the crèche, the nursery and the kindergarten.

The objectives of pre-school according to FRN (2004) are:

1. Effect a smooth transition from home to school
2. Prepare the child for the primary level of education
3. Provide adequate care and supervision for the children while their parents are at work (on the farm, in the market or offices)
4. Inculcate social norms
5. Inculcate in the child the spirit of inquiry and creativity through the exploration of nature, the environment, art, music and playing with toys and so on.
6. Develop a sense of cooperation and team spirit
7. Learn good habits, especially good health habits and.
8. Teach the rudiments of numbers, letters, colours, shapes, forms and so on through play.

Teaching can be defined as the axon moving education impulse to deliver growth, development and knowledge. Teaching is an all-purpose profession engaged in human resource development for individual and economic growth. Olatunji (2012) defined teaching as a social function that aims at necessary growth in others. Teaching as an act of guiding and imparting knowledge in and outside the classroom, can only be done professionally by qualified and trained teachers. Teaching task is so challenging that it surpasses holding chalk, standing before children and giving out different kinds of instructions. Teaching as an application of intellectual technique is the only hope that can bring about overall national progress and development to every citizen of Nigeria.

Wells (2012), defines teaching as cluster of activities that are noted about teachers such as explaining, deducing, questioning, motivating, taking attendance, keeping records of work, student progress and students' background information. Morrison (2012), stated that teaching is an intimate contact between a mature personality and a less mature one which is designed to further the education of the latter. Teaching is defined as an interactive process primarily involving classroom talk, which takes place between teachers and pupils and occurs during certain definable activities.

Teaching is defined as an act of transferring the cultural heritage of a society which includes: the knowledge, skills, customs and attitude acquired over the years by teachers to the pupils or students (Evans, 2012). Teaching has to do with instructing or training a person.

Learning is defined as a relatively permanent change in an individual's potential behaviour as a result of experience. It is observed that only observable changes in behaviour seem to justify the inference that learning has occurred. Learning is the process by which an activity originates or is changed through reacting to an encountered situation provided that the characteristics of the change in activity cannot be explained on the basis of native response tendencies, maturation or temporary states of the organism.

Learning is an unending process of interaction between the learner and his environments. It is unending because it starts from birth and continues till death. This life-long process is defined as a process which involves the acquisition of new knowledge, skills, ideas, values and experiences which enable the individual to modify or alter his action or to realize his goals. Learning is acquiring new or modifying existing knowledge, behaviours, skills, values or preference and may involve synthesizing different types of information (Onwuka cited in Onyejekwe,2012).

Opute in Ughamadu and Okoye (2013) opines that no one definition of the concept, learning is universally accepted but there is a general consensus that learning means modification of behaviour as a function of practice. They goes on to say that it takes place when the performance of the organism is changed through stimulating contracts with the environment and that all the basic elements of curriculum are designed around the learner and all these interact to achieve all around development of the learner. Learning can occur in various settings, such as formal education, informal experiences, or self-directed study, and can be facilitated through different methods, including observation, practice, and teaching.

Mathematics has a vital role to play in achieving the highly desired technological / industrial development of the Nigerian society. Its relevance in an individual's daily dealings is so great that acquiring Mathematical skills, ideas, processes, computational abilities, intuitive and deductive reasoning etc, are indispensable tools for a successful and meaningful human existence. According

to Ale, Mathematics has substantial use in all other human activities including school subjects such as technology, science and others.

However, despite the vital role that Mathematics has to play in the society and its relevance in an individual's daily dealings, children's performance in the subject seems to be quite low. Some children exhibit much hatred or dislike for Mathematics. They devote greater time in studying other subjects than Mathematics, despite the compulsory status ascribed to it in the national policy. Several factors have been outlined as contributing to this low achievement of children in Mathematics and they include use of inappropriate teaching methods, and lack of ICT in teaching.

In the present study the researcher tries to record the views of preschool teachers about the usage, the benefits, and the barriers of technology for teaching of mathematics in the Pre-school. Teachers' views are particularly important, because they decide on the use and impact of technology in the teaching and learning of mathematics and as key members, they support the educational process. The main purpose of this study is to examine the impact of technology on the teaching and learning of Mathematics in pre-primary schools in Onitsha South Local Government Area of Anambra state. Specifically, the study sought to:

1. Examine the benefits of technology in teaching and learning of Mathematics in pre-primary schools.
2. Examine the factors affecting the effective use of technology in the teaching and learning of Mathematics in pre-primary schools.
3. Identify possible ways to enhance the effective use of technology in teaching and learning of Mathematics in pre-primary schools.

Research Questions

The following research questions guided the study:

1. What are the benefits of technology in teaching and learning of Mathematics in pre-primary schools?
2. What are the factors affecting the effective use of technology in teaching and learning of Mathematics in pre-primary schools?"

3. What are the possible ways of enhancing the effective use of technology in teaching and learning of Mathematics in pre-primary schools?

Methods

This study adopted a descriptive survey research design. Survey research designs are procedures in quantitative research in which investigators administer a survey to a sample or to the entire population of people, to describe the attitude, opinions, behaviours or characteristics of the population on a matter being studied(Tanny,2018).The population of the study is made up of all the pre-primary school teachers in Onitsha South Local Government Area of Anambra state. The total number of Primary school teachers in the Local Government Area is 305. Source: Onisha South Local Government Education Authority Fegge Summary Sheet July 2023.The sample of the study therefore was (105) teachers which comprised sixty–six (66) Primary school teachers and thirty – nine (39) Pre – primary school teachers. Primary school teachers were randomly selected from each school (33) two teachers and all the thirty-nine Pre-primary school teachers.

A structured questionnaire titled "Impact of Technology on Teaching and Learning of Mathematics in Pre-Primary Schools Questionnaire (ITLMPSQ)" was used to collect data for the study which was validated as an appropriate instrument for a survey research design. The questionnaire was designed by the researcher based on the objective of the study. There were a total of fifteen (15) items on the instrument. The items on the instrument cover some role of technology in teaching and learning of Mathematics in pre-primary schools. The order of distribution is as follows: items 1-5, covers issues on the benefits of technology and it sought to ascertain whether or not, the schools under study had derived any benefit from the use of technology in teaching or learning. Items 6-10 are on factors affecting the effective use of technology in teaching or learning process and sought to find the degree of effectiveness of technology by the teachers from the pre-primary schools in Onitsha South Local Government Area of Anambra state while items 11-15 are on possible ways of enhancing the effective use of technology in teaching and learning of Mathematic. The respondent were required to respond to the statements on a weighted four-point Likert type of scale of strongly Agree (SA) 4 point, Agree (A) 3 point, Disagree (D) 2 point, and Strongly disagree (SD) 1 point.

To ensure that the instrument for the study asked relevant questions, the researcher made the instrument available for face validated by two experts in the Departments Early Childhood and Primary Education and Measurement and Evaluation. The comments and suggestion made by the experts was used to produce the final copy of the questionnaire. The reliability of the questionnaire was established using split half method. Copies of the instruments were administered to the respondents from the selected pre-primary schools in another LGA and the responses were used to ascertain the reliability of the instrument using Pearson Product Moment Correlation. The instrument had a co-efficient value of 0.88 showing that the questionnaire was reliable for the study. The researcher adopted face to face method of administering the questionnaire. This is to minimize misinterpretation of the questionnaire by the respondents.

A total of 105 questionnaires were administered to the respondents by researchers and all were properly filled. Data was analysed using the mean and standard deviation. Since the generated data would be on interval scale. A criterion mean was set and used in taking decision. The criterion mean was arrived at by summing four, three, two and one and dividing the total by four. Thus: 4+3+2+1/4 = 10/4 = 2.50. Hence, any mean item that is 2.50 and above was accepted but any item mean that is less was considered as negative and was rejected.

Results

This section is concerned with presentation, analysis and interpretation of data of the study. This was done according to research questions.

Research Question 1: What are the benefits of technology in teaching and learning of Mathematic in pre-primary school in Onitsha South LGA?

Table 1: The mean rating of teacher's response on the likely benefits of technology in Primary schools

S/N	ITEMS	SA	A	D	SD	FX	N	X	RK
1	Technology makes children to learn better in maths	42	32	22	15	323	105	3.08	agree
2	Technology helps teachers to teach maths very well	47	27	22	15	328	105	3.12	agree
3	Technology helps children to develop interest in learning maths	44	22	17	12	288	105	2.74	agree
4	Technology would help children access interesting learning materials	45	21	18	11	290	105	2.76	agree
5	Technology help children to understand difficult concepts in maths	46	20	15	18	292	105	2.78	agree

From table 1 above, items 1,2,3,4 and 5 were accepted since their mean rating of teachers responses on these items which are 3.08, 3.12, 2.74, 2.76 and 2.78 were above the cut off mean 2.50. This implies that the likely benefits that would be derived from integration technology in teaching and learning of Mathematics in pre-primary schools are as follows: It would make people to learn faster, understand difficult concepts, have access to wide range of learning materials and help teachers to teach effectively.

Research Question 2: What are the factors affecting the effective use of technology in teaching and learning of Mathematics in pre-primary schools in Onitsha South LGA?

Table 2: The mean (X) rating of teachers' responses on the factors affecting the effective use of technology in teaching and learning of Mathematics in pre-primary schools.

S/N	ITEMS	SA	A	D	SD	FX	N	X	RK
6	Enough computer sets are not available for use in teaching and learning	47	20	17	16	298	105	2.84	agree
7	Most teachers do not have adequate knowledge of ICT	49	21	15	20	309	105	2.94	agree
8	Poor funding of Primary Education is a major problem of ICT usage	50	24	15	19	321	105	3.06	agree
9	Shortage of software packages for teaching and learning of Maths	48	23	20	15	316	105	3.01	agree
10	Lack of motivation to use ICT by teachers to teach in the classroom	49	25	18	17	324	105	3.09	agree

From table 2 above items 6,7,8,9 and 10 were accepted since the mean rating of teachers responses on these items 2.84, 2.94, 3.06, 3.01 and 3.09 were above the cut off mean 2.50. It could be inferred that the major factors affecting the effective use of technology in teaching and learning of Mathematics in pre-primary schools are: inadequate computer sets, inadequate knowledge of ICT by teachers, poor funding of Primary education, shortage of software packages for teaching and learning of Mathematics and lack of motivation to use ICT by teachers to teach in the classroom.

Research Question 3: What are the possible ways of enhancing the effective use of technology in teaching and learning of Mathematics in pre-primary schools in Onitsha South LGA ?

Table 3: The mean (X) rating of teachers' responses on the possible ways of enhancing the effective use of technology in teaching and learning of Mathematics in pre-primary schools

S/N	ITEMS	SA	A	D	SD	FX	N	X	RK
11	Government should provide enough computer set to Pre-primary schools	48	26	14	19	317	105	3.02	agree
12	Pre-primary school teachers should attend regular training on ICT	49	25	12	11	306	105	2.91	agree
13	Software packages should be provided for teaching and learning in pre-primary schools	49	24	16	12	312	105	2.97	agree
14	Computer instructors should be employed to assist the teachers	46	27	16	13	310	105	2.95	agree
15	More funds should be allocated to the Primary education sector	44	29	20	13	316	105	3.01	agree

From table 3, item 11,12,13,14 and 15 were accepted since the mean rating of teachers responses on these items 3.02, 2.91, 2.97, 2.95 and 3.01 were above the cut-off mean of 2.50. This implies that government should provide enough computer sets and projectors to schools. Pre-primary school teachers should attend regular ICT training. Software packages should be provided for teaching and learning of Mathematics in pre-primary schools. In addition, government should employ qualified computer instructors to assist pre-primary school teachers.

Discussion of findings

The objective of this research work is to find out whether technology is likely to enhance the effective teaching and learning of Mathematics in pre-primary Schools in Onitsha south Local Government Area of Anambra state. Questionnaires were distributed to the pre-primary schools teachers in the LGA by the researcher who went into fact finding. In summary therefore, the following research results were obtained. With respect to the likely benefits of technology in teaching and learning of Mathematics in pre-primary schools, the researcher discovered that information and communication technology would help children to learn better, technology would equally help teachers to teach very well and at the same time would help children to access to various learning materials. So the above findings were in line with earlier study carried out by

Awana (2009) which revealed that information and communication technology will facilitate the learning of Mathematic. Similarly, Obong (2009) also reported that technology facilitate the teaching and learning of Mathematics in pre-primary schools.

With regard to research question two, the researcher discovered that the major factors affecting the effective use of technology in teaching and learning Mathematics in pre-primary schools include the following: inadequate number of computer sets, poor knowledge of computer by the teachers, poor funding of primary education sector by the government, shortage of software packages for teaching and learning and lack of motivation to use technology to teach by Pre-primary teachers.

In research question three, it was discovered that the factor affecting the use of technology in teaching and learning of Mathematics in pre-primary schools can be overcome by providing adequate computer sets with projectors to schools, employment of well qualified computer instructors and regular supply of electricity to schools to empower the computer sets. The above findings were in line with earlier study carried out by Nwankwo (2009) which suggested that government should employ qualified computer instructors to train teachers in computer usage. Similarly, Whawo (2009) suggested that government should provide adequate computer sets to school in order to enhance the effective teaching and learning of Mathematics in pre-primary schools.

Conclusion

The desire to increase children's achievement in Mathematics is worthwhile. Having seen the benefits of technology and impact to the teaching and learning of Mathematics in the pre-primary schools, it becomes imperative to use technology as an indispensable tool in the teaching and learning process as such should be made available in adequate proportions to primary education sector to enhance the effective teaching of Mathematics.

Recommendations

Based on the findings of this study, the following recommendations were made:

1. Software packages for learning of Mathematics at the pre-primary school should be provided for teaching and learning by government.
2. The government should make efforts to provide these technology facilities in pre-primary schools for use in Mathematics instruction as well as other subjects.
3. There should be an effective monitoring system to ensure that the facilities already provided in schools are properly maintained and utilized for making Mathematics learning more creative.
4. Teachers should be sensitized on the need to use these facilities in Mathematics teaching and learning by the government.

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