

EFFECT OF MONTESSORI-BASED METHOD ON LITERACY SKILLS ACQUISITION OF YOUNG CHILDREN IN PUBLIC PRIMARY SCHOOLS IN OBAFEMI OWODE LOCAL GOVERNMENT

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Abstract

Literacy skills are built in the early years. For young children, acquiring these skills may be affected by challenges such as individual, environmental, or systemic challenges. To achieve the expected literacy skills, a method that considers their uniqueness and uses multisensory learning is required. This study examined the effect of the Montessori-based method on the literacy skill acquisition of young children. This study adopted a pre-test and post-test non-equivalent quasi-experimental research design. The study was conducted in two Public Schools in Obafemi-Owode Local Government Area of Ogun State, Nigeria. It comprised 40 children in a lower basic primary school. Data were collected using the Literacy Skill Test. The data collected were analyzed using descriptive statistics, while inferential statistics of analysis of covariance were used to answer the research hypothesis. The results indicated that pupils recorded an improvement in phonological awareness and reading with the use of the Montessori-based method. This study recommends that educators embrace the Montessori-based method and receive appropriate Montessori training to help young children develop appropriate literacy skills.

Keywords: Literacy Skills, Montessori-based method, Young Children, Phonological Awareness

Introduction

The importance of early literacy skills in shaping a child's educational trajectory and lifelong success is well established. Literacy skills, which encompass reading, writing, listening, and speaking, are not only vital for effective communication but also for cognitive, emotional, and social development. Children with strong early literacy skills are better positioned to engage in critical thinking, effective communication, and lifelong learning later in life. Reading and writing skills often develop concurrently during the early literacy stages and are foundational to academic success (Quinn &Philippakos, 2023). Conversely, children who lack rich early language experiences are often at a disadvantage upon entering school, with slower language development and executive functioning, which hampers their academic progress (Brown, 2014; Paratore *et. al.*, 2011; Reutzel, 2015).

Global statistics underscore the urgency of early intervention. Nearly 40% of children under the age of five are at risk of not achieving their developmental potential (Jeong *et. al.*, 2022). In Nigeria, the literacy crisis is particularly severe among vulnerable populations. According to the UNICEF report (2023), there is a significant literacy crisis among vulnerable children in Nigeria, with over 70% lacking foundational literacy and numeracy skills. The orphaned and vulnerable children (OVC) in Nigeria include orphans, children in child-headed households, internally displaced children, child laborers, and those affected by HIV/AIDS, abuse, or armed conflict (FMWASD, 2014; Charles &Osah, 2019). These children often face social and economic exclusion, trauma, and inadequate access to quality early education, all of which impair their language development and hinder literacy acquisition.

Vulnerability is defined as exposure to harm, physically or emotionally, and often correlates with poverty, displacement, trauma, neglect, and socioeconomic marginalization, which impede language development and literacy acquisition. In such contexts, children are deprived of critical early literacy experiences, such as shared reading, phonemic awareness, and exposure to print. Without these foundational exposures, young children are less prepared to succeed academically and are more likely to fall behind their peers.

In response to these challenges, the Montessori-based method has emerged as a promising approach to support early literacy development, particularly in young children. Grounded in child-centered and multisensory learning principles, the Montessori-based method fosters independent learning, self-regulation, and critical thinking through structured environments and tactile materials that engage multiple senses. Its individualized approach encourages children to progress at their own pace, making it particularly suitable for struggling learners and learners with diverse needs. It encourages self-directed learning that promotes self-confidence, independent thought, and action while fostering social-emotional and intellectual growth. It nurtures order and concentration and creates a structured environment, stimulating learning resources and daily routines that support children's emerging self-regulation. "The Montessori environment allows children to take responsibility for their education, giving them opportunities to function independently" (Omotuyole, 2016).

The literacy crisis in Nigeria is a pressing concern. The situation is dire: UNICEF (2024) reports that only 26% of Nigerian children aged 7–14 years have basic reading and mathematical skills, with 70% of 10-year-olds unable to read a simple sentence. These alarming statistics reflect deep systemic issues and emphasize the urgent need for inclusive and effective educational interventions. In line with the United Nations' 2030 Agenda for Sustainable Development, which calls for equitable and quality education for all, addressing the literacy gap is not only an educational priority but also a matter of social justice.

Therefore, this study investigates the effect of the Montessori-based method on literacy skills acquisition among young children in public primary schools in the Obafemi Owode Local Government Area of Ogun State, Nigeria. Through a quasi-experimental research design, this study investigated whether Montessori-based strategies can improve phonological awareness and reading outcomes, providing insights into their potential for wider implementation in similar contexts.

Statement of the Problem

Young children who live in chaotic environments or environments marked by instability, trauma, and limited educational resources, or who come from low-income families and have limited access to high-quality early education, are at a significant disadvantage in terms of literacy achievement. Without timely and appropriate interventions, these early disadvantages can persist, widening the academic achievement gap and limiting long-term educational and social outcomes.

While the importance of early, child-centered, and inclusive teaching strategies is widely acknowledged, there remains a lack of empirical evidence assessing the effectiveness of such methods, particularly the Montessori-based approach, in addressing the impact on the literacy skills of young children in low-resource public school settings in Nigeria. The Montessori-based method, with its emphasis on multisensory, individualized, and self-directed learning, holds promise for supporting literacy development in this population group. However, its potential impact remains underexplored in local educational contexts, where systemic barriers and resource constraints persist.

This gap in research highlights the urgent need to evaluate whether Montessori-based interventions can meaningfully improve literacy skills, particularly phonological awareness and reading ability, of vulnerable children in public primary schools. Addressing this need is critical for informing more effective, equitable, and responsive educational strategies that support the development and success of marginalized learners.

Purpose of the Study

This study investigates the effectiveness of the Montessori-based method, a child-centered, multisensory, and hands-on educational approach, in improving the literacy skills of young primary school pupils in Obafemi Owode Local Government Area, Ogun State, Nigeria. The objectives are to:

1. Examine whether the method of intervention (Montessori-based or Traditional) affects the literacy skills of vulnerable primary school pupils.
2. Ascertain whether gender affects the literacy skills of vulnerable primary school pupils.
3. Determine if treatment and gender have an effect on the literacy skills of vulnerable primary school pupils.

Research Hypotheses

H01. There is no significant difference of treatment effect (Montessori-based method) on the Literacy skills of young primary school pupils.

H02. There is no significant difference in gender on the literacy skills of young primary school students pupils.

H03. There is no significant interaction effect between treatment and gender on the literacy skills of young primary school pupils.

Theoretical Framework

This study is grounded in developmental psychology, drawing on theories such as Jean Piaget's cognitive theory and Erik Erikson's psychosocial theory of development. These frameworks emphasize the role of both individual maturation and social interactions in shaping the development and enhancement of young children's literacy skills. They help provide an in-depth understanding of behaviors, developmental milestones, and the biological and environmental influences that impact literacy development in children.

Jean Piaget's Cognitive theory explains how children's thinking develops through a series of structured, sequential stages. He proposed that cognitive development is not merely the accumulation of knowledge but rather the construction of mental models that help children understand the world. He identified four stages of this cognitive development. The sensorimotor stage (0–2 years) focuses on learning through sensory experiences and motor actions, with the major achievement being the permanence of objects. The preoperational stage (2–7 years) is characterized by the development of symbolic thought and language, although children at this stage still struggle with logical reasoning and conservation. In the concrete operational stage (7–11 years), children develop logical thinking related to concrete objects, showing improved problem-solving skills and understanding of conservation, classification, and numerical reasoning. The formal operational stage (from approximately 11 years onward) involves abstract, hypothetical, and scientific reasoning, enabling individuals to think systematically about possibilities beyond immediate experience.

Key cognitive processes are central to Piaget's theory. Schemas are mental structures used to organize knowledge. Equilibrium refers to a balanced state in which existing schemas adequately explain experiences. Adaptation involves adjusting mental models through assimilation (fitting new information into existing schemas) and accommodation (modifying schemas when new information cannot be easily integrated). Together, these processes explain how cognitive development progresses as children interact with and understand their environment. This theory emphasizes and has educational implications for children, such as respect for individual differences, respect for developmental stages, constructive learning, developmentally appropriate education, use of concrete materials, individualized instruction, and respect for autonomy, all of which align with the Montessori-based method.

Erik Erikson's psychosocial theory of development proposes that human development occurs across eight sequential stages, each defined by a psychosocial crisis that must be resolved for healthy personality development. Successful resolution of each crisis fosters positive psychological qualities, whereas failure may result in emotional and social difficulties.

The stages begin with trust versus mistrust in infancy, where consistent and responsive caregiving leads to a sense of security, whereas neglect results in fear and mistrust. In autonomy versus shame and doubt during toddlerhood, children seek independence; encouragement builds confidence, whereas excessive control leads to shame and low self-esteem. The initiative versus guilt stage in early childhood focuses on curiosity and self-assertion, with supportive guidance promoting purpose and discouragement leading to feelings of guilt. During the industry versus inferiority stage in middle childhood, academic and social competence are developed; success fosters pride, whereas repeated failure leads to feelings of inferiority. Adolescence is marked by identity versus role confusion, wherein individuals explore values, beliefs, and future roles to form a stable identity. In young adulthood, intimacy versus isolation focuses on forming close relationships, with success resulting in love and connection. Adulthood involves generativity versus stagnation, reflecting the desire to contribute meaningfully to society and future generations. Finally, in late adulthood, integrity versus despair involves reflecting on life achievements, leading to wisdom and fulfillment or regret and despair. The Montessori method

aligns with Erikson's psychosocial theory in several ways. Just as Erikson's stages emphasizes on the importance of independence, sense of initiative, sense of competence, etc., Montessori classrooms allow children to make choices and work independently to develop autonomy, allow children to explore interests to develop initiative, allow children to be involved in hands-on activities in order to develop a sense of competence etc.

Methodology

This study employed a pre-test post-test non-equivalent quasi-experimental research design with a 2×2 factorial structure. The independent variable was the method of instruction at two levels: the Montessori-based method (Experimental Group) and the traditional method (Control Group). Gender (Male and Female) was also examined as a moderating variable. The dependent variable was literacy skills. A quasi-experimental design was deemed appropriate because of the impracticality of random assignment in natural educational settings involving human participants. The population captured in this study is primary one pupils in Obafemi Owode Local Government Area, Ogun State, Nigeria. This location was purposefully selected because of the high population of low-level income earners in the area due to economic and social factors. A simple random sampling technique was employed to select the two schools in the area. One intact class of primary 1 pupils was selected from each school for the study. Each intact class contained 20 pupils, making a sample of 40 pupils for the study. This sampling ensured homogeneity in the class structure and minimized external variations.

Data was collected using a Literacy Skill Test (LST), which was developed by the researcher with a focus on phonological awareness and reading comprehension. It was developed using a 2-way table of specifications to align test items with cognitive objectives in the curriculum. It assessed three domains of cognitive development: knowledge, comprehension, and application. Knowledge assessed pupils' ability to recall previously learned material, comprehension measured the pupils' ability to understand the meaning of what has been taught, and application tested the ability of the pupils to utilize their knowledge of the learned content in a new situation. Both the experimental and control groups were administered a pre-test using the Literacy Skill Test to establish their baseline literacy abilities. Subsequently, the experimental group received intervention through the Montessori-based method for 5-weeks. The content validity of the instruments was determined by consulting with the experts in the field and lecturers in the Department of Early Childhood Education. It was done to ensure relevance to the subject matter, coverage of the content areas, appropriateness of language usage, and clarity of purpose.

According to the analysis of the findings of this study, the reliability statistics for the pretest (Cronbach's Alpha) are 0.766, and (Cronbach's Alpha) based on standardized items is 0.83. while reliability statistics for post-test (Cronbach's Alpha) are 0.934, and (Cronbach's Alpha based on standardized items) is 0.935. This implies that the research instruments are reliable.

Results

Data was analyzed using inferential statistics and analysis of covariance to answer research hypotheses. ANCOVA confirmed a significant difference in the effect of treatment ($F(1,39) = 31.444, p < 0.001, \eta^2 = 0.473$), indicating that the Montessori-based method significantly enhanced the children's literacy skills. Gender had no significant difference ($p = 0.171$), and no significant interaction effect between treatment and gender was observed ($p = 0.152$).

Test of Hypotheses

Hypothesis 1

There is no significant difference in treatment effect (Montessori-based Vs Traditional method) on literacy skills of young primary school pupils.

Hypothesis 2

There is no significant difference in the gender effect on literacy skills of young primary school pupils.

Hypothesis 3

There is no significant interaction effect of treatment and gender on the literacy skills of young primary school pupils.

Table 1: Summary of Analysis of Covariance of Literacy Test Scores by Treatment and Gender

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Squared	Eta
Corrected Model	1388.919 ^a	4347.230	61.478	.000	.875		
Intercept	1 73.250	1	173.250	30.674	.000	.467	
Prelitotal	999.339	1	999.339	176.936	.000	.835	
Treatment	177.598	1	177.598	31.444	.000	.473	
Gender	11.018	1	11.018	1.951	.171	.053	
Treatment *gender	12.091	1	12.091	2.141	.152	.058	
Error	197.681	35	5.648				
Total	5667.000	40					
Corrected Total	1586.600	39					

a. R Squared = .875 (Adjusted R Squared = .861)

Hypothesis 1

There is no significant difference in treatment effect (Montessori-based Vs Traditional method) on literacy skills of young primary school pupils

The results in the table shows that there is a significant effect of treatment on literacy skills of young primary school pupils. ($F_{(1,39)} = 31.444$, $p=0.000$, $\eta^2 = .473$). Since $p<0.05$, it follows that the main effect of treatment on literacy skills of pupils is statistically significant. In conclusion, the null hypothesis is rejected.

Hypothesis 2

There is no significant difference in gender effect on literacy skills of young primary school pupils.

The results of the table reveals that after controlling the effect of pretest scores of pupils, there is no significant effect of gender in the literacy skills of young primary school pupils. $F_{(1,39)} = 1.951$, $p=0.171$, $\eta^2 = 0.053$. Clearly $p>0.05$, hence the null hypothesis is accepted.

Hypothesis 3

There is no significant interaction effect of treatment and gender on the literacy skills of young primary school pupils.

The interaction effect of treatment and gender on posttest of pupil's literacy test according to the statistics on table ($F_{(1,39)} = 2.141$, $p= 0.152$, $\eta^2 = 0.058$) shows no statistically significant interaction effect of treatment and gender on the literacy skills of young primary school pupils. Hence, the hypothesis is accepted.

Table 2 : Pair Wise Comparisons of Literacy Skills of Young Primary Pupils (Post Hoc)

Dependent Variable: POSTTOTAL

Mean		95% Confidence Interval			for Difference	
(I) Treatment	(J) Treatment	(I – J)	Std. Error	Sig.	Lower bound	Upper Bound
Non - Montessori	Montessori	-4.304*	.768	.000	-5.862	-2.746
Montessori	Non -Montessori	4.304	.768	.000	2.746	5.862

Based on estimated marginal means: *The mean difference is significant at 0.05 level

Adjustments for multiple comparisons: Bonferroni

The post-hoc analysis results (Table 2) indicate that the mean post-test scores of pupils were significantly higher in the treatment group (Montessori-based) than in the non-Montessori-based treatment group.

The mean difference between the treatment and non-treatment groups was quantified as -8.608 ($p < 0.05$), which was statistically significant. The direction of the decreasing effect of the Montessori-based method on the literacy skills of young primary school pupils is as follows: traditional method < Montessori method. In conclusion, the null hypothesis is rejected, acknowledging the significant difference found.

Discussion of Findings

The Montessori-based method led to a 70.7% improvement in literacy skills among young children, which was significantly higher than the 21.4% gain from the traditional method. This may be attributed to Montessori's emphasis on phonological awareness in their curriculum. These findings align with those of Lillard (2012), Van der Henst (2019), and Pickering (2019), who found that students taught using the Montessori approach achieved higher positive scores than those taught using the traditional approach.

Although girls showed a slightly higher mean gain than boys, the difference was not statistically significant, indicating that gender did not significantly impact literacy outcomes. This supports the findings of Lillard (2019) and Marshall (2011), suggesting that treatment methods, rather than gender, played a larger role. There was no significant interaction between treatment and gender on literacy outcomes. This implies that both boy and girls benefited similarly from the Montessori-based method. These results are supported by studies from Lillard (2013) and Quest (2013).

Montessori classrooms encourage children to explore materials and activities at their own pace, fostering independence and a sense of ownership over their learning. This can be particularly beneficial for children who might not have had consistent exposure to literacy experiences at home. Montessori materials often incorporate various senses, like touch, sight and sound, in learning activities. This multisensory approach caters to diverse learning styles and can be particularly helpful for vulnerable children who might struggle with traditional, text-based methods. Montessori classrooms introduce children to the sounds and patterns of language early on, laying the foundation for future reading success. This is crucial for vulnerable children who might not have been exposed to such concepts in their environment. Montessori teachers provide individualised support and guidance to each child, catering to their specific needs and learning pace. This personalised approach can be particularly beneficial for vulnerable children who might require additional support to develop their literacy skills.

Conclusion

The results of this research imply that the traditional methods could be substituted with the Montessori method to achieve more positive outcomes in literacy skills. This study reveals that the Montessori method had a significant effect on the literacy skills of vulnerable primary school pupils; the gender variable did not have any significant effect on the literacy skills of vulnerable pupils, nor did the interaction effect of treatment and gender have a statistically significant effect on the literacy skills of vulnerable pupils. Other considerations for positive

implications include early intervention and individualised instruction. If pupils are introduced to the Montessori method from the early years of life and instruction is based on the individual child's interest, strengths and pace, there will be changes of higher positive results.

Recommendations

The findings from this study showed that the Montessori approach was more effective and had a positive impact on the literacy skills of vulnerable pupils. Therefore, the following are recommended:

1. Educators should embrace the Montessori method in developing the literacy skills of young children.
2. Educators should be provided with specialised training by certified personnel on Montessori principles and methods to equip them with the required competencies.
3. Curriculum planners should incorporate the Montessori systematic approach of teaching literacy skills and ensure explicit instruction in phonemic awareness, which may not be emphasised in the traditional approach.
4. Educators should implement vocabulary-rich activities that are tailored to pupils' interests and age.
5. Educators should develop individualised learning plans that cater to the specific needs and learning styles of each pupil.
6. Collaboration with other professionals, such as speech therapists and special education teachers, is encouraged to provide comprehensive support for the children.
7. Teacher training institutions should incorporate child-centred approaches like the Montessori methods into their training programme.
8. The government should channel more investments into literacy skills acquisition of young children through special intervention agendas

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