COMPARATIVE ANALYSIS OF LEFT-HANDED AND RIGHT-HANDED CHILDREN'S ACADEMIC PERFORMANCE IN PUBLIC PRIMARY SCHOOLS IN LAGOS STATE

[1]FOWOWE, S. S. Ph.D
[1]Department of Early childhood Care and Primary Education College of Specialized and Professional Education, Lagos State University of Education, oto-Ijanikin.
[1]+2347065730467; simeonfowowe@gmsil.com

[2]OLANREWAJU Stephania Aderonke
[2]Department of Early Childhood Education, Faculty of Education, University of Ilesa, Ilesa
+2347033629822; stephaniaolanrewaju@gmail.com / stephania_olanrewaju@unilesa.edu.ng

[3]Sobulo, Elias Adeshina
[3]Department of Early Childhood Care and Education & Primary Education Studies, College of Specialized and Professional Education, Lagos State University of Education.
08034729085; sobuloea@lasued.edu.ng

[4]ANDRE Deborah Oluwafemi Ph.D
[4]Department of Early childhood Care and Primary Education College of Specialized and Professional Education, Lagos State University of Education, oto-Ijanikin.
Mafikuyomido@lasued.edu.ng

Abstract

This study examined differences in academic performance between left- and right-handed primary school pupils in Badagry and Epe Local Government Areas of Lagos State. A survey research design was adopted. The sample comprised 240 pupils selected through a multistage sampling procedure. Data were collected using pupils' Basic IV cumulative reports and a researcher-designed, 15-item questionnaire with four response options: Strongly Agree, Agree, Disagree and Strongly Disagree. The questionnaire was reviewed for content validity, and its reliability coefficient, calculated using Cronbach's alpha, was 0.809. Data were analysed using analysis of variance and t-tests at the .05 significance level. The findings indicated statistically significant differences between left- and right-handed pupils on the outcomes examined. The study recommends inclusive classroom arrangements, appropriate learning resources and teacher training to support pupils with different learning needs.

Keywords: Left-Handed Children; Right-Handed Children; Academic Performance; Cognition; Skills

Introduction

Education plays an important role in children's intellectual, social and emotional development. At the primary school level, pupils acquire foundational skills that support later learning. Understanding factors associated with academic performance can therefore help educators identify ways to support pupils' learning. One learner characteristic that has received limited attention in Nigerian educational research is handedness-the preference for using one hand over the other, commonly described as left- or right-handedness. Although studies have examined handedness in

relation to cognitive processing and academic performance, findings vary across studies and contexts (Papadatou-Pastou et al., 2020).

Left-handedness is a natural variation, but research cited in this study estimates its prevalence among Nigerian children at approximately 4%–8%, depending on the location and assessment method (Uwaezuoke et al., 2015; Iyiola et al., 2015). Some left-handed children may experience pressure from adults to use their right hand for writing or other tasks (Akinyemi, 2019). Classroom conditions may also create practical difficulties, as desks, scissors, and other learning materials are designed mainly for right-handed users. These experiences may affect pupils' comfort and participation, although evidence is needed to establish their effects on academic performance.

Research findings on handedness and academic achievement are mixed. Emore et al. (2008) reported that non-right-handed pupils were more likely to perform above the class average, while Uwaezuoke et al. (2015) and Papadatou-Pastou et al. (2020) suggest that differences in achievement may be small or dependent on context. Factors such as classroom conditions, teacher attitudes, social acceptance and learning support may shape pupils' experiences. These varied findings support the need for further research in Nigerian public primary schools.

Examining academic performance by handedness may help determine whether measurable differences exist between left- and right-handed pupils in the study area. Such evidence could inform inclusive classroom practices and help educators respond to pupils' needs without relying on stereotypes. The present study therefore compares the academic performance of left- and right-handed pupils in selected public primary schools in Badagry and Epe Local Government Areas of Lagos State.

Statement of the Problem

Many factors influence academic performance in public primary schools, including pupils' backgrounds, teacher practices, and school resources. Handedness is one learner characteristic that has received comparatively little attention in the Nigerian context. Although left-handedness is a natural variation, some children may encounter social pressure to switch hands or practical difficulties in classrooms where materials and arrangements are designed primarily for right-handed pupils. These experiences raise questions about whether left- and right-handed pupils differ in academic performance.

Existing studies report mixed findings, and evidence from public primary schools in Lagos State remains limited. Without local evidence, educators and policymakers may either overlook relevant classroom barriers or rely on unsupported assumptions about handedness and ability. This study therefore compares the academic performance of left- and right-handed pupils in selected public primary schools in Badagry and Epe Local Government Areas of Lagos State.

Purpose of the Study

The purpose of this study was to evaluate the comparative analysis of left-handed and right-handed children's academic performance in Public Primary Schools in Lagos State.

The specific objectives are to:

l justify how cultural beliefs and social stigma influence left-handed and right-handed children's academic performance in public primary schools

l assess how neurological and cognitive differentiation influences left-handed and right-handed children's academic performance in Public Primary Schools

l evaluate the difference in the academic performance of left-handed and right-handed children comparatively

Hypotheses

$H0_1$: There is no significant influence of cultural beliefs and social stigma on left-handed and right-handed Children's academic performance in public primary schools

$H0_2$: There is no significant influence of neurological and cognitive differentiation on the left-handed and Right-Handed Children's Academic Performance in Public Primary Schools

H03: There is no significant comparative difference in the academic performance of left-handed and right-handed children in Public Primary Schools.

Methodology

The study adopted a survey research design. The population comprised Basic Four pupils in public primary schools in Lagos State. A multistage sampling procedure selected a sample of 240 pupils from schools in Badagry and Epe Local Government Areas. Data were collected using the Third-Term Basic Four Cumulative Pupils' Report (3rd-BIVCPR) and a researcher-developed questionnaire titled *Comparative Analysis of Left-Handed and Right-Handed Children's Academic*

Performance Questionnaire (CAL-H&R-HCAPQ). The questionnaire contained 15 items rated on a four-point scale: Strongly Agree, Agree, Disagree and Strongly Disagree. Its content validity was assessed, and its reliability coefficient, calculated using Cronbach's alpha, was 0.809. Data were analysed using analysis of variance and a paired-samples *t*-test at the .05 significance level.

Presentation and Interpretation of Data

$H0_1$: There is no significant influence of cultural beliefs and social stigma on left-handed and Right-Handed Children's Academic Performance in Public Primary Schools

Table 1: ANOVA Analysis showing Significant influence of cultural beliefs and social stigma on left-handed and right-handed Children's academic performance in public primary schools

	Sum of Squares	**Df**	**Mean Square**	**F**	**Sig.**
Between Groups	9.360	2	4.680	.029	.009
Within Groups	38369.971	238	161.218		
Total	3846.331	240			

Source: Researchers' work (2025)

The ANOVA result in Table 1 shows that the calculated F-value is 0.029 and the significance value (p) is 0.009. Since the p-value is less than the 0.05 level of significance, the result indicates that there is a statistically significant influence of cultural beliefs and social stigma on the difference in the academic performance of left-handed and right-handed children in Public Primary Schools. This means that any observed differences in mean performance between the groups are likely due to societal perception and beliefs.

Table 2: POST HOC Test for Multiple Comparisons of the influence of cultural beliefs and social stigma on Left-Handed and Right-Handed Children's Academic Performance in Public Primary Schools

(I) Variable	**(J) Variable**	**Mean Difference (I-J)**	**Std. Error**	**Sig.**	**95% Confidence Interval**	
					Lower Bound	Upper Bound
Others	Social stigma	.85057*	.37468	.024	.1145	1.5867
	Cultural belief	-2.81034*	.37468	.000	-3.5464	-2.0743
Social stigma	Others	-.85057*	.37468	.024	-1.5867	-.1145
	Cultural belief	-3.66092*	.37468	.000	-4.3970	-2.9248

Cultural	Others	2.81034*	.37468	.000	2.0743	3.5464
belief	Social stigma	3.66092*	.37468	.000	2.9248	4.3970

Data in Table 2 shows that the LSD Post Hoc Test was used to determine the direction of difference in the data generated. Others to Social stigma is significant at .024, Others to Cultural belief at .000; Social stigma to Others is significant at .024, Social stigma to cultural belief at .000; Cultural belief to Others is significant at .000, and Cultural belief to social stigma at .000 respectively. Hence, the core influential factor that contributed to the influence is cultural belief with a sig-value of 0.000 ($p<.05$).

$H0_2$: There is no significant influence of neurological and cognitive differentiation on the left Handed and Right-Handed Children's Academic Performance in Public Primary Schools

Table 3: ANOVA Analysis showing the significant influence of neurological and cognitive differentiation on left-handed and right-handed children academic performance in public primary schools

	Sum of Squares	**Df**	**Mean Square**	**F**	**Sig.**
Between Groups	2476.739	2	1238.370	46.856	.000
Within Groups	6290.218	238	26.429		
Total	8766.957	240			

Data from Table 3 show an F-value of 46.856, given a sig-value of .000, testing at an alpha level of .05. Since the p-value is less than the alpha level, the null hypothesis is rejected, and the alternative, which states that there is a significant influence of neurological and cognitive differentiation on Left-Handed and Right-Handed Children's Academic Performance in Public Primary Schools, is retained.

Table 4: POST HOC Test for Multiple Comparisons of the influence of neurological and cognitive differentiation on Left-Handed and Right-Handed Children Academic Performance in Public Primary Schools

(I) Variable	**(J) Variable**	**Mean Difference (I-J)**	**Std. Error**	**Sig.**	**95% Confidence Interval**	
					Lower Bound	Upper Bound
Neurological	Cognitive	-4.52299*	.37324	.000	-5.2562	-3.7897
	Others	-4.71264*	.37324	.000	-5.4459	-3.9794
Cognitive	Neurological	4.52299*	.37324	.000	3.7897	5.2562
differentiation	Others	-.18966	.37324	.612	-.9229	.5436
Others	Neurological	4.71264*	.37324	.000	3.9794	5.4459

	Cognitive	.18966	.37324	.612	-.5436	.9229

***. The mean difference is significant at the 0.05 level.**

Data in Table 4 show that the LSD Post Hoc Test was used to determine the direction of difference in the data generated. Neurological factor to cognitive differentiation is significant at .000; Neurological factor to others at .000; Cognitive differentiation to Neurological factor is significant at .000; Cognitive differentiation to others at .612; Others to Neurological factor is significant at .000; and Others to Cognitive differentiation at .612, respectively. Therefore, the core influential factor is the neurological factor, with a sig-value of 0.000 ($p<.05$).

H03: There is no significant comparative difference in the academic performance of left-handed and right-handed children in Public Primary Schools.

Table 5: T-test statistics showing a significant comparative difference in Left-handed and Right-handed children academic performance in public primary schools

Variables	N	Mean	SD	t-cal.	Sig.	Remark
Left-Handed	46	3.42	.89			
Right-Handed	194	1.97	.32	2.889	.004	Reject $H0_3$
Total	240					

Table 5 shows that left-handed children scored lower than right-handed children; however, the mean score for left-handed children was higher (3.42) than for right-handed children (1.97). With the t-cal. Value of 2.889 and significant at .004 ($P < 05$), the null hypothesis is rejected. In contrast, the alternative, which states that there is a significant comparative difference in Left-Handed and Right-Handed Children's Academic Performance, is retained, as it reveals that the left-handed children performed better than their right-handed counterparts.

Discussion of Findings

The results for hypothesis one indicate a statistically significant relationship between cultural beliefs and social stigma and pupils' academic performance. This finding may suggest that negative perceptions of left-handedness affect pupils' school experiences. Kushner (2017) discusses cultural beliefs that associate left-handedness with impurity or disrespect, while McManus (2019) emphasises the importance of accepting handedness as a natural variation. However, the present study's result should be interpreted as an association; it does not establish

that cultural beliefs caused differences in academic performance. Schools can still promote respectful, inclusive practices that do not pressure pupils to change their natural hand preference.

The result for hypothesis two indicates a statistically significant relationship between the neurological and cognitive factors examined and pupils' academic performance, with neurological factors reported as more influential. Iremeka (2023) discusses neurological considerations in the development and educational experiences of left-handed children and cautions against forcing them to switch hands. However, unless this study directly measured neurological or cognitive characteristics, it cannot establish that these factors explain the observed performance differences. The finding should therefore be described in terms of the variables actually measured, without inferring neurological mechanisms.

The result for hypothesis three indicates a significant difference in academic performance between left- and right-handed pupils. This is consistent with variation between the groups, although the direction and size of the difference should be reported from the results table. Alhassan (2018) reported that some non-right-handed pupils performed at or above the class average and discussed potential strengths in certain tasks. Such findings do not establish that left-handed pupils generally have particular cognitive advantages. The present result should be interpreted in its study context, and further research could examine how classroom practices and pupils' experiences relate to performance.

Conclusion

The study compared the academic performance of left- and right-handed pupils in selected public primary schools in Lagos State. The findings, as reported, indicated a statistically significant difference between the groups. The available results do not establish that left-handed pupils performed better or that they possess stronger neurological, cognitive or creative abilities. Such conclusions would require direct measures and supporting evidence.

Recommendations

Based on the study, it is recommended that:

1. Schools provide an inclusive learning environment for all pupils, including suitable seating and learning materials, and train teachers to support varied learner needs.

2. Teachers and other education stakeholders avoid stigmatising or pressuring pupils because of their handedness.
3. Teachers encourage respectful interaction and cooperation among left- and right-handed pupils.
4. Researchers use valid measures aligned with specific learning objectives and report the direction and size of any performance differences between groups.

References

Akinyemi, A. (2019). Cultural perceptions of left-handedness in Nigerian education. *Journal of Education and Society, 2*(1), 45–55.

Alhassan, A. B. (2018). Left-handedness and stigmatization in Africa: Implications for parents and teachers. *Global Journal of Archaeology and Anthropology*, *7*(3), 001-005.

Iremeka C. (2023). Switching left-handed children to right confuses brain functionalities – Neurologists. *Punch Newspapers. https://punchng.com/topics/healthwise/* Retrieved from Punch website July 2, 2023 4:00 am

Emore, E., Ebeye, O. A., Odion-Obomhense., Igbigi, P. S. (2008). A Look at the Effect of Hand Dominance on Learning. *Journal of Applied Sciences, 8* (1). 173-176. DOI:10.3923/jas.2008.173.176

Iyiola, O. A., Anifowoshe, A. T., & Oyeyemi, B. F. (2015). Incidence and Prevalence of Left handedness in a Nigerian sub-population. *Ilorin Journal of Science*, *2*(2), 441-454. https://doi.org/10.54908/iljs.2015.02.02.013

Kushner, H. I. (2017). *On the other hand: Left hand, right brain, mental disorder, and history*. JHU Press.

McManus, C. (2019). Half a century of handedness research: Myths, truths; fictions, facts; backwards, but mostly forwards. *Brain and neuroscience advances*, *3*, 2398212818820513. https://doi.org/10.1177/2398212818820513

Papadatou-Pastou, M., Ntolka, E., Schmitz, J., Martin, M., Munafò, M. R., Ocklenburg, S., & Paracchini, S. (2020). Human handedness: A meta-analysis. *Psychological bulletin*, *146*(6), 481–524. https://doi.org/10.1037/bul0000229

Payne, M. A. (1981). Incidence of Left-Handedness for Writing: A Study of Nigerian Primary Schoolchildren: A Study of Nigerian Primary Schoolchildren. *Journal of Cross-Cultural Psychology*, *12*(2), 233-239. https://doi.org/10.1177/0022022181122008

Uwaezuoke, S. N., Eke, C. B., & Nwobi, E. A. (2015). Left-hand dominance in children: Prevalence and maternal stereotypes in a South-east Nigerian city. *Laterality*, *20*(5), 530–542. https://doi.org/10.1080/1357650X.2015.1006642