

CONTEXT, INPUT AND PROCESS VARIABLES AS PREDICTORS OF GIRL-CHILD ACHIEVEMENT IN NUMERACY IN IDP CAMPS IN THE NORTH-EAST OF NIGERIA

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Abstract

This study examined the predictive validity of context, input, and process variables on girl-child achievement in Numeracy in Internally Displaced Persons (IDP) camps in North-Eastern Nigeria, the region most affected by insurgency. An ex-post facto survey design was adopted. A multi-stage sampling procedure was used, with purposive sampling employed to select Adamawa, Borno, and Yobe States, followed by proportionate-to-size sampling to select representative IDP camps. Intact Primary 5 classes of girls were selected, while all teachers teaching the girls in the selected IDP camp schools participated in the study. Data were collected using two validated instruments: the Numeracy Achievement Test ($r = 0.96$) and the Inventory and Resources Availability and Utilisation Checklist for Displaced Girls ($r = 0.95$). Two research questions guided the study, and the data were analysed using multiple regression at the 0.05 level of significance. The findings revealed significant joint and relative predictive effects of the context, input, and process variables on girls' achievement in Numeracy. Specifically, educational opportunities that promote equal access to education, availability of instructional resources, quality of teaching, psychosocial well-being, attitudes towards schooling and peace education, and teachers' attitudes contributed significantly to the prediction of Numeracy achievement among girls in IDP camps. The study recommended increased provision of educational resources by government, NGOs, and philanthropists to support effective teaching and learning. It further recommended extending instructional periods to accommodate girls unable to attend morning classes and ensuring strict compliance with minimum educational standards by the Universal Basic Education Commission in IDP settings.

Key words: Context, Input, Process, Girl-child's Numeracy, IDP

Introduction

The education of the girl-child at the Middle Basic level (Primary 5; approximately 10–11 years of age) in Internally Displaced Persons (IDP) camps in North-East Nigeria has attracted increasing scholarly attention because of its importance for

improving learning outcomes in emergency education settings. Wael, Contreras-Gomez, and McMurry (2026) found that the Accelerated Education Programme (AEP) significantly improved numeracy achievement among displaced learners by approximately 0.40 standard deviations immediately after the intervention. However, these gains declined one year after programme completion, highlighting the need for sustained instructional and academic support. Similarly, Gowon, Achor, Korb, Hanior, and Lengman (2026) reported that responsive pedagogy significantly enhanced classroom participation and learning outcomes among internally displaced children in Nigeria. Katnison and Liyas (2021) further observed that post-displacement anxiety adversely affected pupils' academic performance in IDPs camps and recommended the provision of comprehensive psychosocial support services. Likewise, Ubuntu (2026) found that the application of Ubuntu-based social-emotional learning improved school attendance, psychosocial well-being, and early-grade mathematics performance among conflict-affected learners in Cameroon.

Evidence from broader educational research also demonstrates that school-related inputs and instructional quality are important determinants of girls' numeracy achievement. Evans and Yuan (2022), in a systematic review of 267 studies, concluded that qualified teachers, adequate instructional materials, financial support, and structured teaching programmes consistently improved girls' mathematics achievement. Similarly, Gichaga, Kithinji, and Magaju (2024), Bagby, Orfield, and Sloan (2016) and Nyambedha et al. (2017) reported that teacher quality, adequate learning resources, supportive school environments, community participation, mentoring programmes, and after-school interventions contributed significantly to improved mathematics achievement among girls. Furthermore, Winthrop and Kirk (2008) found that gender-responsive teaching, emotionally supportive classrooms, and safe learning environments increased girls' attendance, classroom engagement, confidence, and learning outcomes in conflict and displacement settings. Burde (2014) similarly reported that learner-centred instructional approaches, community participation, and improved access to schooling enhanced pupils' attendance, participation, confidence, and literacy and numeracy achievement among conflict-affected children. In addition, Mendenhall (2017) established that teacher professional development in child-centred pedagogy, psychosocial support, and inclusive classroom management significantly improved learners' participation and academic performance, particularly among vulnerable girls in emergency education contexts. Collectively, these studies suggest that effective teaching practices, adequate educational resources, psychosocial support, community engagement, and sustained educational interventions are critical factors for improving the numeracy achievement of girl-children in IDP camps.

Chiroma (2016), Muhammad and Abdullahi (2022), and Katnison and Liyas (2021) reported that the loss of parents, displacement-related trauma, grief, anxiety, and low self-esteem adversely affect displaced children's concentration, social

adjustment, and numeracy achievement. The significance of inadequate shelter and clothing, finding agreed with Arikewuyo and Babatunde (2020) in their study on the 'Effects of Inadequate Parenting on Education of Northern Nigerian Children; Trauma and Psychological Impact'. Teachers and pupils in IDPs camps often experience trauma and psychological distress due to displacement and conflict. Teachers' attitudes may be influenced by their own emotional well-being and the understanding of the unique challenges faced by the girl-child who may be more vulnerable to specific hardships. Ajayi, Edede and Olodi (2023) who argued that adequate shelter and clothing are fundamental survival needs in IDPs camps. Poor shelter conditions expose displaced children to discomfort, weather hazards, and insecurity, while inadequate clothing affects dignity, health, and participation in educational activities, these conditions reduce children's ability to engage effectively in learning, including numeracy tasks.

Input variables encompass the resources and conditions required to support effective teaching and learning, including qualified teachers, instructional materials, adequate funding, classroom facilities, and opportunities for teachers' professional development. In the context of IDP camps, the availability and adequacy of these inputs are particularly important because resource constraints may limit the quality of educational provision and, consequently, girls' opportunities to develop numeracy skills. Process variables, on the other hand, concern how educational inputs are translated into teaching and learning outcomes. These include teaching strategies, learner participation, classroom management, instructional supervision, continuous assessment, and psychosocial support. Evidence suggests that learner-centred and gender-responsive instructional approaches can enhance learners' engagement and improve numeracy achievement. However, despite the importance of these variables, limited empirical evidence exists on the combined contribution of context, input, and process variables to the numeracy achievement of girl children in Nigerian IDP camps within the framework of the CIPP model. Existing studies have largely focused on access to education, literacy, psychosocial well-being, or general academic performance, with comparatively limited attention to numeracy achievement. This gap makes it difficult to determine how the educational context, available inputs, and implementation processes interact to influence girls' numeracy outcomes in displacement settings. Therefore, this study investigates the extent to which context, input, and process variables individually and jointly predict the numeracy achievement of girl children in IDP camps in North-East Nigeria, with a view to generating evidence for improved educational planning, programme implementation, resource allocation, and intervention strategies.

Umennuihe, Okechukwu, Nwauzoije, Nnubia, (2023) who found that many children lived in overcrowded shelters with poor ventilation and possessed very few clothes. Such poor living conditions negatively affected children's wellbeing and educational participation. The authors recommended improved shelter and welfare facilities to support children's schooling and learning outcomes. Also,

Bahago, (2022) reported severe shortages of physical necessities and educational resources in IDPs camps. Lack of basic needs, including adequate clothing, was identified as a factor limiting school attendance and effective learning among displaced children. Ajayi, Edele and Oloidi (2023) who argued that adequate shelter and clothing are fundamental survival needs in IDPs camps. Umennuihe, Okechukwu, Nwauzoije(2023) found that many children lived in overcrowded shelters with poor ventilation and possessed very few clothes. Such poor living conditions negatively affected children's wellbeing and educational participation. The authors recommended improved shelter and welfare facilities to support children's schooling and learning outcomes. Also, Bahago, (2022) reported severe shortages of physical necessities and educational resources in IDPs camps. Based on the topic "Context, Input and Process Variables as Predictors of Girl-Child Achievement in Numeracy in IDP Camps in the North-East of Nigeria," The objective of the study are to:

1. determine the extent to which context, input, and process variables jointly predict girl-child achievement in numeracy in Internally Displaced Persons (IDP) camps in North-East Nigeria.
2. examine the relative contribution of context, input, and process variables to girl-child achievement in numeracy in Internally Displaced Persons (IDP) camps in North-East Nigeria.

Research Questions

1. To what extent do context, input, and process variables jointly predict the numeracy achievement of girl-children in Internally Displaced Persons (IDP) camps in North-East Nigeria?
2. What is the relative contribution of each of the context, input, and process variables to the numeracy achievement of girl-children in Internally Displaced Persons (IDP) camps in North-East Nigeria?

Methodology

The study adopted an ex-post facto design of survey research type. This research type is appropriate because the study did not manipulate the variables but depended on the existing data that were obtained from the girls, teachers, and camp coordinators, all residing in the IDP camps for quantitative in-depth understanding of the phenomenon at the IDP camps. The population for the study comprises all displaced girl-child; in the middle basic education (between 10 to 11 years of age) and their teachers who have been teaching the classes in the IDP camps in the North-Eastern Nigeria. The reason for the choice of this population is that, they have been involved in the teaching-learning processes in the IDP camps and they are not under the pressure of any external examination that can distract their attention from giving appropriate information to the researchers. This study employed multi-stage sampling procedures. The first stage is the purposive sampling of the three states of Adamawa, Borno and Yobe being the most invaded by the insurgent groups' activities in the six states of North-East geo-political zone of Nigeria, which comprised of Adamawa, Bauchi, Borno, Gombe, Taraba and Yobe. In the second stage, proportionate sampling technique was used to select

camps from each of the three states based on the proportion of current population of each IDP camp and ease of access to get true representation. Thirdly, intact-classes of the pupils in Primary 5 were selected for the study. All the teachers teaching the girl-child in the IDP camps school automatically participated in the study.

Moreover, their clustering in the IDP camps enhanced easy access to first-hand information about the occurrences in IDP camps. The final sample used for the study was 152 girls across the seven (7) camps in the IDP in the North-East Nigeria. Only the current, formal, and functioning IDP camps located in the Borno, Yobe and Adamawa States, Nigeria that were accessible and used for the study. Two instruments, Numeracy Achievement Test (NAT), Inventory and Resources Availability and Utilization Checklist (IRAUC) for Displaced Girls' Scale, were administered. The first instrument is an achievement test developed by the researcher to measure the performance of displaced girls in Primary 5 in IDP camps in basic Numeracy. The instrument has two sections A and B. Section A seeks information on the name of IDP camp, state and gender while section B consists of cognitive items that determine the extent of performance in basic Numeracy of displaced girls in the IDP camps. Test blueprint was followed by drawing up a Table of Specification in constructing the test items. The test which consists of Fifty multiple choice items on Numeracy was done with the assistance of an expert in primary education who helped to draw from the topics in primary 5 Numeracy curriculum from which Twenty-five reliable items were selected and used in the study. Each of the items consisted of four options lettered A to D (Appendix I). Face and content validity of the instrument was ensured by the researchers and basic Numeracy teachers. The instrument was trial tested on a smaller sample of participants that are similar but not part of those sampled for this study while item analysis was established to obtain the difficulty index ($0.3 \leq P \leq 0.6$) and discrimination index of ($D \geq 0.3$). The internal consistency reliability of the items was determined using KR-20 formula, and the reliability co-efficient obtained for this instrument was 0.76.

The second instrument is checklist is designed by the researcher to elicit information from displaced girls on the human and material resources available and utilized in the IDPs camps. It consists of Sections A and B. Section A sought information on the name of IDPs camp and state while Section B elicits information on the human and material resources available and utilized by displaced girls in the IDPs camp. It consists of 30 items with response format of Available/In Use, Not in Use. Utilization: In Use, Not in Use and Not Available scored 2 and 1 respectively. The reliability of this instrument was computed to determine the internal consistency with the use of Cronbach alpha. A reliability co-efficient of 0.95 was obtained.

Six research assistants were trained on the technicalities of how to administer the instruments and to translate them into Hausa, Fulani or Kanuri languages for the

girls who could not speak or understand English language. The researchers saw the camp controller first with the letter of introduction to enable ease of data collection, and also obtained permission from School Heads in the camps before the administration of the instruments to displaced girls as well as their teachers in the IDP camps. Data collection lasted for two months. Data was analyzed multiple with regression analysis.

Results

Research Question One: To what extent do context, input, and process variables jointly predict the numeracy achievement of girl-children in Internally Displaced Persons (IDP) camps in North-East Nigeria?

Table 1: Summary of Regression and ANOVA of Context Input and Process Variables in the Prediction of Girls' Achievement in Numeracy

Multiple R= 0.385						
R Square= 0.148						
Adjusted R Square= 0.124						
Standard Error= 0.787						
Analysis of Variance						
Source of Variance	Sum of Square	df	Mean Square	F	Sig.	
Regression	26.246	7	3.749	6.046	0.000	
Residual	150.687	243	0.620			
Total	176.199	250				

Significant when $p < 0.05$.

Table 1 indicates that there is a significant joint prediction of independent variables context (educational opportunities and specific educational needs), input (resources availability) and process (quality of teachers' teaching, psycho-social well-being, attitude towards schooling and peace education, teachers' attitude) in the prediction of pupils' achievement in Numeracy in IDPs Camps. ($F(7, 243) = 6046$; $R = 0.385$, $R^2 = 0.148$; $p < 0.05$). This implies that when context (educational opportunities and specific educational needs), input (resources availability) and process (quality of teachers' teaching, psycho-social well-being, attitude towards schooling and peace education, teachers' attitude) are taken together, they jointly relate with pupils' achievement in numeracy in IDPs Camps. Table 1 further reveals a multiple regression adjusted $R^2 = 0.124$. This shows that independent variables: context (educational opportunities and specific educational needs), input (resources availability) and process (quality of teachers' teaching, psycho-social well-being, attitude towards schooling and peace education, teachers' attitude) accounted for 0.15 of the total variance in pupils' achievement in Numeracy in IDP Camps, while the remaining 0.85 may be due to other factors and residuals not investigated in the study. The finding implies that there is a significant joint prediction of context input and process variables in the prediction of pupils' achievement in Numeracy in IDP Camps.

Research Question Two: What is the relative contribution of each of the context, input, and process variables to the numeracy achievement of girl-children in Internally Displaced Persons (IDP) camps in North-East Nigeria?

Table 2: Relative Contributions of Context Input and Process Variables in the Prediction of Girls' Achievement in Numeracy

Variables	B	Standardized Coefficients Std. Error	Standardize Coefficients Beta	T	Sig.
(Constant)	1.715	2.195		0.781	0.435
Educational Opportunities that Address or Achieve Equal Access to Education	0.021	0.009	0.155	2.446	0.015
Human and Material Resources Available	0.006	0.007	0.056	0.892	0.373
Teaching Effectiveness	0.079	0.101	0.047	0.783	0.434
Teacher Attitude	0.026	0.012	0.129	2.152	0.032
Peace Education Curriculum Content That address Social Cohesion	0.014	0.010	0.089	1.494	0.137
Psycho-social Well being	0.007	0.012	0.036	0.603	0.547
Attitude to Schooling and Peace Education	0.056	0.011	0.307	5.030	0.000

Table 2 indicates that there is a significant relative contribution of independent variables of: context (educational opportunities that address or achieve equal access to education), Input (teacher attitude), Process (attitude to schooling and peace education) on Achievement in Numeracy of the girl-child in IDP camps. Results indicate that educational opportunities that address or achieve equal access to education ($\beta = 0.155$; $t = 2.446$; $p < 0.05$); teachers' attitude ($\beta = 0.129$; $t = 2.152$; $p < 0.05$) and attitude towards schooling and peace education ($\beta = 0.307$; $t = 5.030$; $p < 0.05$) contributed significantly to Achievement in Numeracy of the girl-child in IDP camps. However, human and material resources available ($\beta = 0.056$; $t = 0.892$; $p > 0.05$); teaching effectiveness ($\beta = 0.047$; $t = 0.783$; $p > 0.05$); peace education curriculum content that addresses social cohesion ($\beta = 0.089$; $t = 1.494$; $p > 0.05$) and psycho-social well being ($\beta = 0.036$; $t = 0.603$; $p > 0.05$) related positively but did not contribute significantly to Achievement in Numeracy of the girl-child in IDP camps. The findings indicate that attitude towards schooling and peace education, educational opportunities that address or achieve equal access to education and teachers' attitude as components of independent variables, made individual contributions of 0.30, 0.16. and 0.13 respectively in the prediction of Achievement in Numeracy of the girl-child in IDP camps and the most influential

among the variables is attitude to schooling and peace education followed by educational opportunities that address or achieve equal access to education.

Discussion of Findings

Findings from this study reveals that there is a significant joint prediction of independent variables context (educational opportunities and specific educational needs), input (resources availability) and process (quality of teachers' teaching, psycho-social well-being, attitude towards schooling and peace education, teachers' attitude) on pupils' achievement in numeracy. This finding appears in this form, because the level of achievement is a function of the interaction among human and material resources. The finding is in consonance with the discovery and assertions of researchers and authors. For instance, the finding support Shehu and Ijaya (2016) who asserted that resource availability is the mainstay of teacher's job performance, which transform to girls' achievement. The success or failure of any nation's educational system depends on the quality and quantity of resources made available to it. Resources are used directly and indirectly for supporting, facilitating, influencing or encouraging knowledge transmission or acquisition, competence and skills. Similarly, educational needs, resource availability, and teacher quality are intertwined and crucial for effective learning. Addressing girl children educational needs require understanding the specific learning requirements of pupils, while adequate resources provide the tools and materials needed to meet those needs. Similarly, high-quality teachers are essential for effective instruction and pupil engagement, particularly when combined with appropriate resources. Okpukpara and Chukwuone, (2011) was also in agreement with this when they alluded that safety and security, protection from violence and secure environment are crucial for psycho-social well-being which positively impact on girl-child education even in crisis driven environment. Salmien, Khanolainen and Lerkkanen (2021) and The World Bank (2005) also advocated for female teachers recruitment because they are comfortable teaching girls in primary schools since female teachers perform significantly better in girl-only schools and therefore advocate for their preferential hiring in the IDPs camps.

This finding supports the view of Opoh (2015) equal educational opportunities as essentials for cognitive development for children educational attainment. Muraina, Baba and Abdulkareem (2022) were also of strong belief that adaptable functional environment is needed for improvement in girls Numeracy. This result corroborates the views of Castro (2020) on the need for strong classroom supplies as essentiality that guide pupil learning. Smith (2010), UNESCO cited in Umaru and Terhemba (2014) and UNICEF cited in Yusuf, (2020), these individual researchers and the international bodies strongly supported and advocated for the adherence and compliance of minimum standard stipulated by the INEE for any IDPs and education in emergencies. Bhabha (2011), Burde (2014), Davies (2008), Sinclair (2001), Smith (2010) Nicolai and Triplehorn (2003) UNESCO (2012) UNICEF (2011)..

The finding further support Shehu and Ijaya (2016) who posited that there has been serious agitation from stakeholders in Nigerian educational sector on the need to look into the factors that could influence performance of school pupils in some state in Northern Nigeria. The study investigated the influence of resource availability on teachers' job performance in early childhood schools. It was discovered that television sets, DVD and cartoon CD, beds/baby cots, electricity supply and fans were unavailable while resources such as play toys, nursery books, classrooms, chairs, tables, chalkboard, crayons, wash bowl and wall chart were available in all the sampled schools and pupils accessibility to these resources enhance their achievement. The study also revealed that resource availability had a positive significant relationship with pupils' achievement in early childhood schools. It was recommended among others: that government and Non-Government Organisations (NGOs) should donate generously to make resources available for early childhood classes; and resource supply should be periodically evaluated by the Ministry of Education and State Universal Basic Education Board.

The findings from this study likewise support Ghulam, Khuram, Naqvi and Nadeem (2015) who posited that the resources should include; textbooks, charts, maps, audio-visual and electronic instructional materials such as computer, multimedia, internet connectivity, radio, tape recorder, television and video tape recorder, these make lesson real and increase pupils' achievement in Numeracy. Okafor in Obidike, Enemuoh and Onwuka, (2019) stated that availability of learning resources and their incorporation into academic activities to emphasise clarity or visualise instructions, help in effective teaching and are useful in the classroom by evoking in the children the same mental image as in the teachers, thereby helping the pupils to retain what they have learnt. Ofoefuna in Osadolor (2017) posited that educational resources are also called instructional materials which teachers needs to incorporate into the teaching learning process to help pupils benefits maximally from learning experience.

Conclusion

It was concluded from the study that, educational opportunities; quality of teachers teaching; psycho-social well being; and attitude to schooling and peace education influenced pupils' achievement in Numeracy in IDPs Camps.

Recommendations

Stakeholders should strengthen girls' education in IDP camps by improving access to quality education, providing psychosocial support, equipping teachers with appropriate resources and training, and promoting safe, inclusive learning environments through community and parental involvement. Effective monitoring and evaluation should guide policy and programme improvements to enhance educational outcomes and support Nigeria's commitment to equitable education under SDG 4.

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