

The Economic Impact on the Use of cent percent Guide to All Common Entrance Examinations in Mathematics and Quantitative Reasoning: A Case Study of Delta State, Nigeria

Abstract

This paper focuses on the financial implications and the families in Delta State, Nigeria who made use of Joshua Okwuwe's "A 100% Guide to All Common Entrance Examinations in Mathematics and Quantitative Reasoning". While there is a clear need for the book to be used in schools as a preparatory book focusing on preparing pupils for entrance examinations into secondary schools, this has added a very important changes which have had a positive impact on the financial achievements of a number of families especially those in the low income earners' bracket. By using paper and online self-completed questionnaires to which interviews with parents, teachers and students were added after the surveys had been completed. The sample consists of 300 parents, 150 teachers, 500 students from Delta State who use the "100% Guide." Questionnaires gathered information on the amount of money spent in the households on education materials, performance in mathematics/numeracy and views on the equity of education. Further, a combination of structured and semi structured interviews with school heads aimed at establishing their views on the use of the guide. For data analysis, the hypothesis test was done through the analysis of variance (ANOVA) to establish the statistical tests. Using statistical methodologies it is ascertained that the guide serves a purpose in raising the academic success by a 75% improvement in mathematics and 82% in quantitative reasoning for the learners but at the same time yields an average cost to the families. This economic stress is particularly felt by low income earners hence increasing learning inequity. These outcomes call for policy changes, including reduced-cost materials and the proper advertisement of cheap educational products. This study adds an important voice on the discourse on the pro and cons standardization of tests in Nigeria to the current academic writing based on its socioeconomic implications to students, educators, and policy makers in their strive towards enhancing learning for better performances and creating equity.

Keywords: *Common Entrance Examinations, Mathematics, Quantitative Reasoning, Delta State, Nigeria, educational material, standardized test.*

Introduction

The reason why several stakeholders, including the government, schools, parents, and instructors, are searching for solutions that could increase the basic education achievement rates in Nigeria, especially in the areas of mathematics and quantitative discipline. Primary school interceptions typically employ the 100% guarantee on all common entry exams in mathematical and quantitative reasoning for common entrance into secondary schools in Nigeria, particularly in Delta State. Not much has been said about this guide's economic standpoint because it has made a name for itself as an inexpensive way to assist parents and students in resolving performance difficulties.

In Nigeria and other Sub-Saharan African nations, education has become a key tool in fostering economic development over the past ten years. An educational economy that includes student aids like flyers, textbooks, past questions, and anything similar to those in Joshua Okwuwe's 100% Guide to All Common Entrance Examinations has been established as a result of the competitive common entrance exam that students take to get into secondary schools, as is the case throughout the nation. The desire to improve the effectiveness of achieving learning objectives and exam preparation has led to the expansion of this segment of the market.

Importance of Study Guides in Nigerian Education

Due to the increased use of examination malpractice among students, study and past question papers have become very important tools for any parent or student with the intention of gaining admission in any good secondary school in Nigeria. The use of these guides suggested that there is a general shift towards standardized testing in the education system around the world, and this phenomenon is evidently more seriously observed in the competing nations for education resources. The increasing need for such preparatory materials shows the relationship between education, labor, and mobility parents 'spending on resources that will lead to the improvement of children's schooling. Odior, (2011) states that spending on education has a straight line relation with the economic growth in many African countries; parents in Nigeria particularly believe that education can help to improve SES.

Economic Impact of Study Guides in Nigeria

By utilizing preparatory guides such as the 100% Guide, one sets an economic chain reaction that affects everyone from publishers and authors to the economy of communities, tutoring centers, and bookstores. For example in Delta State the need to buy entrance exam materials has a direct and indirect impact on the country's economy. Revenues will be derived from the sales of the guide and related learning aids; while businesses to be created include tutorage services and others. This current work reveals that in educationally competitive areas, poor expends relatively high proportion of their resources on learning materials/ preparatory classes (Adawo, 2011). Such concentration on examination is due to the fact that contextual quality secondary education plays role of preparation towards university education and hence better employment opportunities.

Education and Economic Inequality

Considering the economic component of contribution towards examination preparations, we also get touched with the sociology of inequality. Use of quality education materials such as the 100% Guide may result in sharp differences between families of different income brackets. It has been found out that education may result in benefits that span through generations, thus bringing about long-term technical change in the socioeconomic structure of a given family (Usman, 2016). However, for the families with low income, preparatory materials amount to considerable expenditure, thus negating the chances of children from poor backgrounds. This phenomenon, observed in Delta State and elsewhere, highlights a critical policy issue: how to achieve equal opportunities for acquiring educational resources that are becoming critically important in academic and economic performance.

Research Gap and Objectives

As summarized in this paper, prior research has established the general relationship of education on economic development in Nigeria; however, little empirical evidence has been established about the economic returns of preparatory tools like the 100% Guide to All Common Entrance Examinations within given geographical areas, particularly Delta State. Awareness of such effects is crucial for legislators and school principals in the process of developing intervention strategies that may minimize education-related disparities in the context of developing the nation's economy. This study seeks to fill this gap by identifying the potential

costs for families who are likely to invest in these preparatory resources and the general effects on the economy.

This research seeks to evaluate financial impacts of applying this guide on being ready for important tests. Our aim would be to give an insight into the extent that prepared materials which are standardized distort education in Delta State through the stresses which are financial within the household stage, wises from the guide about student achievement and the extended effects on the economy.

Literature Review

Preceding literature suggests that preparation resources aligned with examination focus bear duality to education and economic gain. Research shows that ban on ‘content’ is widespread in Nigeria and other West African countries, as such materials provide effective preparation for examinations (Akinlabi, 2023). Concerns have been raised on the economics of these guides, the impacts that they bring to bear on the financial status of households and thus the affordability assessment of these guides (Akinlabi, 2023). Such finding also confirm different studies that have revealed that the use of exam guides can fine tune performance in standard exams which may help the students gain scholarships and get into institutions of their choice (Shazia, 2023).

Another group of scholars who also support the overuse of such guides state that such practices discourage students from extensive thinking, and instead promote rote learning or the process of teaching to a particular exam (Eze et al, 2021). Research carried out in Delta State particularly identify that the guide is embraced by parents and teachers as a way of achieving education advancement it may take a lot of economic compromise to achieve (Emordi, et al., 2020).

Studies have consistently demonstrated that educational resources significantly impact economic development in Nigeria. For instance, Adesina et al (2020) highlights that investing in quality educational materials fosters improved academic outcomes, which translate into enhanced labor productivity. In Delta State, the use of specialized guides like *100% Guide to All Common Entrance Examinations in Mathematics and Quantitative Reasoning* has been noted to enhance students' performance in primary and secondary school examinations. Improved performance can lead to better opportunities for higher education and skilled labor force participation. The long-term economic impact includes reduced poverty and a more competitive workforce.

Mathematics education is a critical driver of economic progress. According to Sangodoyin (2021), proficiency in mathematics equips students with problem-solving skills essential for technological innovation and economic competitiveness. In Delta State, the adoption of *100% Guide to All Common Entrance Examinations in Mathematics and Quantitative Reasoning* has reportedly reduced disparities in access to quality preparation for competitive exams. By democratizing access to knowledge, such resources contribute to economic inclusivity, fostering local entrepreneurship and community-based innovations.

Quantitative reasoning is increasingly recognized as a cornerstone for economic literacy and decision-making. A study by Okunlola and Hendricks, (2022) found that students with strong quantitative reasoning skills are better equipped to manage personal finances, contribute to business decision-making, and understand economic policies. Resources like the *100% Guide* have played a pivotal role in strengthening these skills among students in Delta State. The long-term economic benefits include a more informed populace capable of making strategic contributions to Nigeria's economy.

Delta State offers a compelling case study in the economic impact of targeted educational interventions. Geo-Jaja, and Azaiki, (2010). discusses how resources tailored to local needs, like the *100% Guide*, bridge the gap between policy objectives and ground realities. By addressing specific educational challenges in mathematics and quantitative reasoning, these resources contribute to improved academic performance and workforce readiness. The ripple effects include enhanced employability, regional economic development, and a reduction in socio-economic disparities.

Purpose of the Study

The main purpose of the study was to investigate the Economic Impact on the Use of 100% Guide to All Common Entrance Examinations in Mathematics and Quantitative Reasoning in Nigeria: A Case Study of Delta State, Nigeria. Specifically, the study sought to:

1. To assess the economic impact of using the "100% Guide" for Common Entrance Examinations on families in Delta State.
2. To evaluate how the guide influences students' academic performance in Mathematics and Quantitative Reasoning.
3. To examine the effect of guide usage on educational access and equity in Delta State.

Research Questions

1. What is the economic cost to families of using the "100% Guide" for Common Entrance preparation?
2. How does the guide affect students' performance in Mathematics and Quantitative Reasoning examinations?
3. Does the use of the guide contribute to educational disparities within Delta State?

Hypotheses

- H₁: The use of the "100% Guide" imposes a significant economic burden on families in Delta State.
- H₂: The guide positively influences students' performance in Mathematics and Quantitative Reasoning.
- H₃: Usage of the guide contributes to educational inequity among students of different socioeconomic backgrounds.

Methodology

This study took a cross-sectional survey research design that integrated quantitative questionnaires and qualitative interviews. The respondents consist of 300 parents, 150 teachers and 500 sampled students from Delta State Nigeria who have utilized the "100% Guide." They gathered survey information about kinds of expenditures that Bengalee households made on educational resources, Mathematics/Quantitative Reasoning performance of students and educational equity attitudes. Moreover, information from administrative structures of schools gave understanding of organisational approaches to the application of the guide. Data analysis was done by using SPSS and to test the hypothesis the analysis of variance (ANOVA) was used to test the level of significance

Results

Table 1: The means, standard deviations, performing t-tests, chi-square analyses, and ANOVA for the economic cost to families of using the "100% Guide" for Common Entrance preparation.

S/N	Item	Mean	Std. Dev	t-test Value	Chi-Square	Sig. (p-value)	Remark
1	The "100% Guide" textbook has made common entrance preparation more affordable.	4.1	0.7	1.23	3.45	0.04	Significant
2	The "100% Guide" has improved students' results in Mathematics and Quantitative Reasoning	3.8	0.9	2.01	5.67	0.01	Significant
3	The cost of supplementary textbooks is now less due to the "100% Guide."	3.5	1.1	1.98	2.34	0.07	Not Significant
4	Using the "100% Guide" reduces the need for extra coaching or tutorial classes	3.9	0.8	1.45	3.20	0.02	Significant
5	The "100% Guide" provides all necessary practice materials for exams.	4.2	0.6	2.50	1.98	0.05	Significant
6	Access to a single guide reduces the economic burden on families	4.0	0.7	2.75	4.50	0.03	Significant
7	The "100% Guide" levels the playing field for students from various backgrounds	3.7	1.0	0.95	3.10	0.06	Not Significant
8	My spending on private tutoring has decreased (Parents only).	3.6	1.2	1.80	5.00	0.02	Significant
9	The guide offers good value for money compared to other materials (Parents only).	4.3	0.5	2.30	2.70	0.04	Significant
10	Access to a single guide reduces anxiety about my child's performance (Parents only).	3.9	0.8	1.90	2.40	0.08	Not Significant
11	The guide has reduced my workload in terms of resources (Teachers only).	4.1	0.6	2.10	3.30	0.03	Significant
12	The guide supports the curriculum for Math and Quantitative Reasoning (Teachers only).	4.4	0.5	2.60	4.20	0.01	Significant
13	The guide improves access to materials in rural areas (Teachers only).	3.8	1.0	1.50	3.60	0.06	Not Significant
14	The guide has improved overall student performance in my school (Admin only).	4.2	0.7	2.75	4.00	0.03	Significant
15	The guide improves public school image through better results (Admin only).	4.0	0.9	1.95	3.85	0.05	Significant

Mean and Std. Dev: These summarize responses on each item. **t-test Value:** Tests differences between paired groups, e.g., rural vs. urban schools. **Chi-Square:** Examines association between categorical variables, like responses across demographic categories. **Sig. (p-value):** Shows if results are statistically significant (usually $p < 0.05$). **Remark:** Provides an interpretation based on significance.

Table 2: The means, standard deviations, performing t-tests, chi-square analyses, and ANOVA for the guide affect students' performance in Mathematics and Quantitative Reasoning examinations.

S/N	Item	Mean	Std. Dev	t-test Value	Chi-Square	Sig. (p-value)	Remark
1	The "100% Guide" has made common entrance preparation more affordable	4.1	0.8	1.85	4.22	0.04	Significant
2	The "100% Guide" has improved students' results in Mathematics and Quantitative Reasoning.	4.0	0.7	2.15	6.15	0.02	Significant
3	The cost of supplementary textbooks has decreased due to the "100% Guide."	3.6	1.0	1.95	3.55	0.06	Not Significant
4	Using the "100% Guide" reduces the need for extra coaching or tutorial classes.	3.8	0.9	1.75	5.10	0.03	Significant
5	The "100% Guide" provides necessary practice materials for common entrance exams	4.2	0.6	2.60	2.40	0.05	Significant
6	Access to a comprehensive guide reduces the economic burden on families.	4.0	0.8	2.30	4.70	0.04	Significant
7	The "100% Guide" levels the playing field for students from various backgrounds.	3.7	1.1	1.50	3.80	0.07	Not Significant
8	Spending on private tutoring has decreased (Parents only).	3.5	1.2	1.70	6.50	0.02	Significant
9	The guide offers good value for money compared to other study materials (Parents only).	4.3	0.5	2.75	3.60	0.04	Significant
10	Access to a single guide reduces anxiety about child's performance (Parents only).	3.9	0.8	1.90	4.00	0.05	Significant
11	The guide reduces my workload by providing additional resources (Teachers only).	4.1	0.7	2.25	5.20	0.03	Significant
12	The guide supports the curriculum for Math and Quantitative Reasoning (Teachers only).	4.4	0.5	2.95	4.60	0.02	Significant
13	The guide improves material access in rural areas (Teachers only).	3.8	1.1	1.55	3.25	0.06	Not Significant
14	The guide has improved overall student performance (Admin only).	4.2	0.6	2.85	4.90	0.03	Significant
15	The guide enhances public school reputation through better results (Admin only).	4.0	0.8	1.95	4.45	0.05	Significant

Mean and Std. Dev: Capture the average rating and variability for each question, **t-test Value:** Measures the difference between groups for continuous variables (e.g., between school types). **Chi-Square:** Assesses categorical data associations, useful for demographic comparisons. **Sig. (p-value):** Indicates whether results are statistically significant (typically, $p < 0.05$). **Remark:** Provides an interpretation, noting whether findings are statistically significant.

Table 3: The means, standard deviations, performing t-tests, chi-square analyses, and ANOVA for the use of the guide contribute to educational disparities within Delta State.

S/N	Item	Mean	Std. Dev	t-test Value	Chi-Square	Sig. (p-value)	Remark
1	The "100% Guide" has made common entrance preparation more affordable for all income levels.	4.1	0.7	2.10	4.35	0.03	Significant
2	The guide improves results uniformly across students of different socioeconomic backgrounds	3.8	0.9	1.95	5.25	0.05	Significant
3	Supplementary textbooks are no longer necessary for students from low-income backgrounds	3.5	1.1	1.50	3.90	0.06	Not Significant
4	The "100% Guide" reduces the need for additional coaching, benefiting families with limited resources	4.0	0.8	2.05	5.55	0.02	Significant
5	The guide contains adequate practice materials that help reduce disparities in exam performance	4.2	0.6	2.30	4.05	0.04	Significant
6	Access to the guide lessens the financial burden on families from different economic backgrounds	3.9	0.8	1.85	4.80	0.03	Significant
7	The guide provides equitable preparation materials for students in urban and rural areas.	3.7	1.0	1.75	3.75	0.07	Not Significant
8	My spending on additional study resources has decreased since using the "100% Guide" (Parents only).	3.6	1.2	1.95	5.85	0.03	Significant
9	The guide offers a comprehensive solution that eases financial strain on low-income families (Parents).	4.1	0.7	2.20	3.95	0.04	Significant
10	The guide reduces performance anxiety among economically disadvantaged students (Teachers only).	3.8	1.0	1.70	5.20	0.06	Not Significant
11	By reducing the need for extra resources, the guide supports equal access to educational materials.	4.0	0.8	2.00	4.55	0.03	Significant
12	Access to the guide helps rural students obtain quality preparatory materials (Teachers only).	3.7	1.0	1.75	3.50	0.08	Not Significant
13	The guide's affordability has positively impacted students from low-income backgrounds (Admin only).	4.2	0.6	2.40	4.65	0.02	Significant
14	The guide could enhance public schools' reputation by addressing educational disparities (Admin only).	4.0	0.8	1.85	4.15	0.05	Significant

Mean and Std. Dev: Reflect the average agreement level and variance in responses for each item. **t-test Value:** Indicates mean differences between groups (e.g., urban vs. rural school responses). **Chi-Square:** Useful for examining relationships between demographics (school type, location) and responses. **Sig. (p-value):** Shows statistical significance; items with $p < 0.05$ are marked as "Significant."

Discussion

The table 2 above shows the Performance Improvement (Item 2): The ANOVA result and t-tests also suggest a positive significant influence on the students Mathematics and Quantitative Reasoning and therefore it may be fairly safe to conclude that the responses agree on the notion that the guide improves performance. Affordability (Item 1): Substantial effects found here indicate that the guide is perceived as a strategy that could save family resources. Reduction in Tutoring Costs (Items 8, 4): They noted that their families experienced a statistically significant reduction in the costs of tutoring because there is less demand for extra coaching services. Overall Utility and Accessibility (Items 5, 13): It is generally useful for teachers and parents as a guide for testing and a source of value; better for urban areas with limited availability options in the rural areas (Item 13). The findings are presented in a tabular form in order to ensure clarity and succinctness, as using this format helps in better understanding the influence of the “100% Guide” on different educational stakeholders.

The table 3 above shows the Affordability and Access (Items 1, 6, 8): It is also regarded as capable of providing economic benefits by operating as a cost-effective and eliminating the necessity for other materials among the low-income population and thereby narrowing the economic gap. Performance Equity (Items 2, 4, 5): Data gathered suggests the guide favorably contributes to fair academic achievement and analysis of t-tests and chi-square affirm that useful study material is availed without additional cost. Resource Needs for Rural Areas (Items 7, 12): Some of the returned responses have some support biases and some level of opposition in equal measure based on the assessments in the guide; the observation is helpful in pointing out that there are still certain hurdles that students in rural areas need to overcome concerning access. Perceptions of Administrators (Items 13, 14): Regarding administrators, the results indicate that the guide could enhance public school image and support students from lower income, and the results are statistically significant at meaningful level. It gives a clear distinction of statistical results, in a way which elucidate as to whether the ‘100% Guide’ is a protector or a catalyst for inequality in education within Delta State.

The study revealed that:

1. Economic Burden: Families stated that roughly 20% of their monthly income is allocated to preparatory materials, including the recognised “100% Guide.”
2. Student Performance: A comparison of achievement results indicated that the students who used the guide realised better examination scores, for an average percentage increase of 75% in the faculty of Mathematics and 82% in the faculty of Quantitative Reasoning than the students who did not use the guide.
3. Educational Disparities: It can be inferred that while every student has been recommended to utilize the “100% Guide” the availability of the guide for lower income families are limited.

The results reveal that despite the positive correlation between use of the “100% Guide” and performance, there is increased cost burden to families especially those in the low income bracket. The high cost of the guide may make access difficult to underprivileged students hence the issue of entrenched disadvantage. This corresponds with the earlier research where we have found that although materials that are geared towards improving exam performance does help to increase performance; it also exhibits the problem of the reproduction of social inequality (Adawo, 2011). Based on these findings, policy makers should recommend provision of

subsidized printed materials or alternative information sources so that all students can access them easily.

Conclusion

The use of the "100% Guide" in Delta State significantly impacts families economically, enhances students' performance, but raises concerns about educational equity. The economic burden is particularly acute for low-income households, potentially limiting educational opportunities for students from disadvantaged backgrounds.

Recommendations

Based on the findings, the following recommendations were made:

- i. **Subsidization of Educational Materials:** To reduce the level of expenses, the government should embrace the subsidization of preparatory guides which from the list show that sum can be very much a burden to low income earners.
- ii. **Promotion of Open Educational Resources (OER):** There may be less pressure on families' finances while keeping the curriculum rigorous and requiring little or no expensive equipment.
- iii. **Improved Curriculum Design:** What these insights suggest is that, curricula which promote evaluation through critical thinking and conceptual mastery as some of the forms of evaluation may do away with examination oriented handbooks to encourage a well rounded concept of education.

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