

Assessment of Literacy and Numeracy Levels of Junior Secondary School Students in Rivers State of Nigeria

D.C Inko-Tariah Ph.D

Guidance and Counseling Department, Ignatius Ajuru University of Education, Port Harcourt, Rivers State, Nigeria

Abstract

The study assessed both Literacy and Numeracy levels of Secondary School students in Rivers State of Nigeria. The study adopted a descriptive survey design. One research question and two hypotheses guided the study and a sample of 640 students was selected using stratified random sampling technique. Tests on Literacy and Numeracy were used to collect data. Simple percentage was used to answer the research question, independent t-test used to analyze hypothesis one while one-way ANOVA was used to analyze hypothesis two. Results revealed that students performed better in the Literacy test than the Numeracy test. Female students outperformed the male students in Literacy test while the reverse was the case in the Numeracy test. Both gender and school location made significant differences on students' levels of Literacy and Numeracy.

Keywords: Literacy, Numeracy, Assessment.

Introduction

World illiteracy level according to Wikipedia (2010) is still very high with about 775 million adults not able to read and write. Three quarters of these are in ten countries in descending order: - India, China, Pakistan, Bangladesh, Nigeria, Ethiopia, Brazil, Indonesia and Democratic Republic of Congo. Two thirds of these illiterates are women and very high rates are concentrated in three regions of the world, which are south and west Asia and Sub-Saharan Africa. Literacy skills as National Literacy Trust (2013) noted are essential to attainment in school and to fulfilling potential opportunities throughout life. Literacy and Numeracy skills are needed in every aspect of life and denying a child the right to these skills is denying him/her a good life, skills to proper adjustment, being a useful member of the society and ability to assess useful information to be able to make the right choices.

A person without literacy as Olupotunde (2012) opined lacks real opportunities to effectively engage with democratic institutions to make choices, exercise his/her citizenship rights and act for a perceived common good. Illiteracy dwarfs the mind of an individual due to inability to process information and makes the individual difficult to manage.

Nigeria as a Sub-Saharan country and the most populous black country in the world, has her fair share of illiterates. UNESCO (2013) released a National literacy statistics which recorded that Adult literacy rate (15years and above) in Nigeria is 51%, male literacy rate is 61.38% and 41.4% for females. Adult illiterate population is 41,845,172 million with 60.1% of this number as females. Youths (15-24years) literacy rate is 66.4% with 75.6% as males and 58.0% as females. Youth illiterate population is 9,814,568 million with 62.4% of this as females. The United Nations literacy Decade declaration in 2002 to help governments of the world put in strategies to reduce the number of illiterates all over the world has made impact in some countries, but Olupotunde (2012) looking at the Nigerian situation lamented that it is now known that Millennium Development (Goal 2) of eradicating mass illiteracy among adults and children by the year 2015 is not going to be achieved. It is sad that 10 million children of school age are not in school especially in the Northern part of the country, studies are showing that literacy rates in Nigeria vary widely based on geo-political zones and even from state to state. A state like Borno in the northern zone of the country has 72% of primary age children out of school while in the southern zone it can be as low as 3% Okedara in Edem et al (2011) noted another dimension where most primary school leavers constitute a class of illiterates who have attended school but lack the basic literacy and numeracy skills to function properly and effectively. Edem et al (2011) observed that using a foreign language "English" for communication and for learning in schools has peculiar problems and is mostly responsible for low literacy and numeracy levels among primary school leavers. Okon in Edem et al (2011) lamented that a situation where most of the teachers who teach the language are themselves not proficient and lack the basic skills they are supposed to be teaching is very disheartening.

In a study of "Primary School Teachers Mastery of Primary School Mathematics Content by Odili and Asuru (2010)," It was found that 78% of primary school teachers have low level of mastery of primary school maths. Okeke-Oti and Adaka in 2012 also revealed evidence of lack of necessary competencies such as pedagogical

skills for teaching literacy, number and basic science, managing diverse needs in the class room and using alternative assessment tools to assess pupils learning. The burden of learning and understanding the new language rests on the weak shoulders of the students resulting in poor oral language skills, reading and writing difficulties at the primary education level. Jaiyeoba (2011) added that the reading, writing and numeracy skills that are expected to be acquired at the primary school levels are even disappearing and this is giving a lot of concern to stakeholders in education. In support of this Peter in Adesina(2011) in a write up on “Perceived Impact of Primary Education on the Attainment of Nigeria Vision 2020”, noted that one billion people lack the basic skill to acquire knowledge, they are illiterates because they have no primary education or because the quality of their primary education was too low. A study by Ayemi and Dada (2011) in which they explored educational innovations in Nigeria in the last two decades also showed that children lacked basic numeracy and literacy competencies.

The formal educational system in Nigeria is 9-3-4 where kids are expected to stay in Primary school and junior secondary school for 9 years, Nwakaudo (2013) reported that President Goodluck Jonathan right from the inception of his administration worked at a comprehensive implementation programme to ensure that the nation achieves the goal of eradication of illiteracy. This programme made provision for Almagiri education programme, Girl-child education, and special vocational programme for boy-traders, in the south-south and south-west, radio literacy programme for adults, market education programme for traders and UNESCO train – the – trainer programme being facilitated by the one billion naira deposited with UNESCO by the Jonathan administration. The efforts made so far are expected to have yielded positive results but sadly the rate of illiteracy has remained high and with the present situation of unrest in the north targeting mainly schools and churches it is going to be higher than it is now.

The present President of Kenya, Uhuru Kenyatta as reported by Chai (2013) in his meeting with thousands of Primary school head teachers decried low primary school literacy levels in Kenya, saying it was unacceptable that most children remain both illiterate and innumerate at the end of primary school education. He informed the teachers that by 2018, government will be able to dedicate 32% of its spending through steady annual budgetary increments to the education sector. This is encouraging considering that Kenya is not in the list of ten countries with the highest number of illiterates. It is however sad that Nigeria on the other hand has not complied with UNESCO directives to allocate 26% of her annual budget to education (Mustapha, 2013).

Some countries like United Kingdom as Literacy Trust (2012) reported are recording great leaps in eradication of illiteracy as it was reported that the standard of teaching literacy and numeracy in primary schools around the country is better than ever. Schools are reported to be delivering lessons which are rigorous, creative and innovative and as a result children are motivated and learning takes place in abundance. It is hoped that in the near future Nigerian children in schools will have this kind of motivation so that success stories like the one in UK will be recorded.

Literature on Literacy and Numeracy levels around the world tend to support females outperforming males in literacy skills, but males doing better in numeracy skills. In a study by Westby (2006) on “Gender and Academic Performance in English Communication Courses in a Japanese University”. It was found that females outperformed their male counterparts in literacy skills. Garrette (2011) noted that these days’ males struggle to keep up with their female counterparts in most courses. Peterson and Parr (2012) analyzing students writing performance data obtained from a large nationally representative sampling in New Zealand observed an average effect size for gender of 0.43 favoring girls. The gap they noted was greatest at age 9 where girls scored an average of 80 points. In another study of “Academic Achievement in English: An Analysis through Gender Lens” Karthigeyan and Nirmala (2012) found gender differences in academic achievement of secondary school students in favour of the females. Neiderle and Vesterlund (2013) also found females to be particularly better in literacy skills

For numeracy, most researchers have found the males better than females. Makiki, Ngban and Ibu (2009) in their study of “ Analysis of Students’ Performance in Junior Secondary Mathematics Examination in Bayelsa State of Nigeria found males performed better than females, Eraikhuemem (2009), Bassey, Joshua and Asim (2010), Abubakar and Ogugua (2011) all found significant differences in mathematical ability of students based on gender. Neiderle and Vesterlund (2010) and Hyde and Mertz (2013) are of the opinion that the trend is changing with time. They believe with females taking more numerical courses, there is no more gender difference in numeric proficiencies.

On level of literacy and School location, AcER (2013) in a study of “The Effects of Geographical Location and Students’ Performance” found literacy level of urban or city students to be higher than that of students in rural

schools. Makiki, Ngban and Ibu (2009) in a study of “Influence of Sex, School Location and School Type on Academic Achievement of Secondary School Students in Mathematics” found students in rural areas to outperform those in urban areas and those from private schools performed better than those in public schools.

The low level of literacy and numeracy from primary schools is carried to junior secondary school where these ‘illiterate’ students become a burden to the teachers as some of them cannot even write their names. This group of students most often cannot assess learning materials and pass through secondary education without the necessary literacy and numeracy skills. This can now explain how some graduates go for their compulsory National Youth Service after graduation and cannot fill forms. These corpsers are again sent to teach in schools there by recycling illiteracy. The problem of this study is therefore to access the level of literacy and numeracy of junior secondary school students in Rivers State. The state has been ranked second in literacy level after only Lagos State (indexmundi, 2013 July 10).

Research Question

What are the literacy and numeracy levels of junior secondary school students in Rivers State?

Hypotheses

- HO₁ The level of literacy and numeracy of junior secondary school students do not differ significantly based on gender
- HO₂ Literacy and Numeracy levels of junior secondary school students do not differ significantly based on school location

Methodology

The study adopted a descriptive survey method and a sample of 640 junior secondary one (jss1) students was drawn using stratified random sampling technique. A sample of six local government areas was drawn from the 23 local government areas in Rivers State. Two urban, two semi-urban and two rural local government areas were drawn. The urban government areas are the only urban areas in the state but the semi-urban and rural local government areas were selected randomly. Fifty students were selected from two schools in each urban and semi-urban local government area while forty students were drawn from each of the three schools used in each of the two rural local government areas due to their smaller class sizes.

The literacy and numeracy tests used for data collection were self-constructed and in objective form, each had 36 items drawn from Jss1 English and Mathematics texts books. Face and content validities of the tests were established while split half method was used to establish reliability of the tests. Reliability coefficients of 0.73 and 0.82 were calculated for the literacy and numeracy tests respectively. Simple percentage was used to answer the research question, independent t-test was used to analyze hypothesis one and one-way ANOVA used to analyze hypothesis two. Analysis was based on the scores of 600 students who answered the questions and filled the personal data section correctly

Results

Research Question:

What are the literacy and numeracy levels of students?

Table I Percentage Presentation of Literacy and Numeracy Levels of Students

	Passed	Failed	Total
Literacy	246 (82%)	54 (18%)	300 (100%)
Numeracy	180 (60%)	120 (40%)	300 (100%)

Result on table I shows 246 students representing 82% to have passed the literacy test while 54 students representing 18% failed. The table also shows 180 students representing 60% to have passed the numeracy test while 120 representing 40% to have failed.

Hypothesis One

H_{O1} : Literacy and Numeracy levels do not differ significantly based on gender

Table II: t-Test Analysis of Gender and Literacy and Numeracy Levels of Students

Literacy

Gender	N	X	SD	df	t-Cal	t-critical	P-value
Male	300	23.77	6.44	598	9.737	1.96	0.000
Female	300	28.59	5.66				

Numeracy

Gender	N	X	SD	df	t-Cal	t-critical	P-value
Male	300	22.65	2.88	598	13.993	1.96	0.000
Female	300	18.78	3.83				

Result on table two shows a mean score of 23.77 for male to be lower than 28.59 for females indicating that females outperformed the males in the literacy test.

Table three however shows a mean score of 22.65 for males to be higher than 18.78 for females indicating that the males outperformed the females in the numeracy test.

Table Two(2) shows the calculated t-value of 9.737 is higher than the critical value of 1.96 and P value of 0.000 indicating that a significant difference exists in the performances of male and female students in the literacy test based on gender

Table Three(3) shows the calculated t-value of 13.993 is higher than the critical value of 1.96 and P value of 0.000 indicating that a significant difference exists in the performances of male and female students in the numeracy test based on gender.

H_{O2} Literacy and Numeracy levels of students do not differ significantly based on school location

Table IV and V: ANOVA Analysis of School Location and Students Levels of Literacy and Numeracy

Literacy

Sources of Variation	Sum of Squares	df	Mean Square	F	P-value
Between Group	392.98	2	196.647	4.672	0.000
Within group	25106.22	597	42.054		
Total	25499.198	599			

Numeracy

Sources of Variation	Sum of Squares	df	Mean Square	F	P-value
Between Group	247.393	2	123.679	8.346	0.000
Within group	8828.872	597	14.789		
Total	9076	599			

Table Four (4) shows a highly significant difference since ($f_{2, 597}=4.672$; $P\text{-value}= 0.000 < 0.05$). This implies that there is a significant difference between school location and Literacy level of students. Table Five (5) also

shows a significant difference since ($f_2, 597 = 8.346$; $P\text{-value} = 0.000 < 0.05$). This implies that there is a significant difference between school location and numeracy level of students.

Discussion

Results show a better student performance in the literacy test than the numeracy test. With 246 passes in literacy as against 180 in numeracy. The result on literacy level is in disagreement with Jaiyeoba (2011), Okeke-Oti and Adaka (2012) and UNESCO (2013) who all recorded low literacy levels but in agreement with their findings on low numeracy levels. This result could be attributed to quality of teachers in the schools as it was noted that in all the schools used, there were more qualified English teachers than Mathematics teachers.

The significant differences found in Literacy and Numeracy levels based on gender are in line with the findings of Westby (2006), Garrette (2011), Peterson and Parr (2012) and Neiderle and Vestelund (2013) who all found significant differences in performances of students in Literacy tests and Eraikhuema (2009), Bassey, Joshua and Asim (2010) and Abubakar and Ogugua (2011) who found significant differences in the performances of students in numeracy tests. Neiderle and Veeterlund (2010) and Hyde and Mertz (2013) however found no significant differences in the performances of students in numeracy tests based on gender.

The significant difference found in performance in literacy test could be because girls are known for faster language development than boys, while boys develop better numerical skills as they have more times for games that involve numbers than girls. Again, they are encouraged to do more calculations than girls.

Results also showed significant differences in levels of literacy and numeracy based on school location. This is in agreement with that of AcER (2013) that reported significant difference in literacy levels of students in favor of those in urban area. This is understandable as students in urban areas have better learning facilities, libraries, more qualified teachers and even more educated parents. Most educated parents speak English language to their children at home which will be an advantage over the child in the rural areas where they converse in their native languages or pidgin English.

Significant difference found in the level of numeracy of students based on school location also agrees with the findings of Makiki, Ngban and Ibu (2009) who found significant differences in favor of students from urban areas, they found the students from the urban areas to be better in mathematics. The present result could also be due to better learning facilities, more stimulating environment and higher socio-economic status of parents in the urban area who buy the necessary learning materials and even engage lesson teachers to help their children acquire more numerical skills.

Conclusion

Generally students were found to be more proficient in literacy than numeracy. The literacy level of female students was found to be higher than that of males. While the males outperformed the females in the Numeracy test.

Significant differences were found in Literacy and Numeracy levels of students based on gender and school location

Recommendations

1. Parents and teachers should encourage the development of numeracy skills by providing learning materials and using delivery methods that will make the learning of these skills enjoyable.
2. Male students should be encouraged to be more communicative and expressive.
3. Reading culture should be initiated in children right from their homes.
4. Parents should make reading materials available and read to their children at home .
5. Materials necessary for development of numerical skills should be provided both at home and in schools.
6. Games children enjoy that are numerically based should be made available to them.
7. Girls should be encouraged to develop interest in numeracy as the skills are needed in everyday life.
8. Schools should have well equipped libraries and encourage students to borrow books to read.
9. These skills need qualified teachers to teach them, so not much can be achieved without these teachers.

10. Teachers should be encouraged to teach in rural areas by creating an enabling environment in the rural areas.
11. Schools in the rural areas can call on prominent people in their area to help provide facilities for the schools.

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