

## **EFFECT OF TASK ANALYSIS ON ACADEMIC PERFORMANCE OF VISUALLY IMPAIRED STUDENTS IN MATHEMATICS IN OYO**

By

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### **Abstract**

*This study examined effect of task analysis on academics performance of learners with visual impairment. Survey research design was used in the study. The population of this study was students with visual impairment in Federal College of Education (Special), Oyo. A sample of fifty (50) students with visual impairment was randomly selected for the study. Researchers' self-designed questionnaire was used to seek the opinion of the respondents on the subject matter. Demographic data collected data were analyzed through simple percentage while the two proposed hypothesis were analyzed by chi-square. Findings of the study revealed that, task analysis method teaching mathematical concepts to persons with visual impairment play a vital role. It was also found that, male students with visual impairment perform better than their female counterpart when taught mathematics through task analysis method. It was recommended among other things that mathematics teachers should embrace the use task analysis method to arouse the interest of students with visual impairment. It was also recommended that, female visually impaired students should be encouraged to do mathematics to higher level of education in order to close the existing mathematics gaps between male and female visually impaired students.*

### **1.1 INTRODUCTION**

Mathematics cultivates thinking and reasoning skills. It lays the foundation for systematic thinking through the numerical and spatial aspects of the object (Agrawal 2004). As a subject, mathematics plays an important role in the society and the school curriculum, which is formulated in such a way that mathematics is given a central and significant place in teaching and learning. Mathematics is compulsory right from the primary level to secondary level of education. The Cockcroft report in (1982) stress that there is a great general agreement that every child should study mathematics at school. There is no doubt about the fact that an individual can get on sometimes without knowing how to count, measure, add and subtract. Uses and applications of mathematics in the home, offices, business, industries, agriculture, decision making and even in governance are innumerable. Usman (2012) noted that everywhere we go, everything we do or propose to do, either the structure of mathematics or its application play a vital role and this is why most countries, races and people put emphasis in all aspect of studying, developing, and applying mathematics. Mathematics is also a body of knowledge essential for the achievement of scientific and technology nation.

Ale and Lawal (2010) stated that the line of demarcation between the developed and the underdeveloped nations is based on their level of mathematical attainment and ingenuity. According to them, mathematics is an undisputed agent of national development and wealthy creation. Mathematical knowledge indeed equips individual with the skill to solve a wide range of practical tasks and problems they may encounter in life. There are many practicing task in mathematics and the method to apply to them. But the suitable one is task analysis.

Task analysis is very essential in mathematics and not just mathematics only but in all other disciplines and aspect of life. Task analysis is made systematically (from simple to

complex). Task analysis can be defined as the study of what a user is required to do in terms of actions and or cognitive processes. To achieve a task objective, the idea of task analysis provides some structure for the description of task or activities, which then make it easier to describe how activities fit together, and to explore what implication of this may be for the design of products. This can be particularly useful when considering the design of interfaces to product and how user interacts with them (Kirwn and Ainsworth 1992).

Gender as a predictor of mathematics achievement in Bahurudian and Luster (1998) found the gap between the average scores of males and females was quite small at all three grades and has fluctuated only slightly over the past ten years. There was no significant difference by gender at the fourth-grade level. In Louisiana, neither the scale scores nor the percentage of students scoring at or above the proficient level was significant for gender.

According to Obe (2014) Visual Impairment is the consequence of a functional loss of vision rather than the eye disorder itself. Eye disorder which can lead to visual impairments can include retinal degeneration, albinism, cataracts, glaucoma, muscular problem that result in visual disturbance. Cornea disorder, diabetic, retinopathy congenital disorders and infection.

Eniola (2003) defines the visual impairment as total blindness is the inability to tell light from dark, or the total inability to see.

As Mazuek and Winzer (1994) pointed out, special education has been “individualized and adjusted to accommodate the unique learning needs of students who are in some domain of functioning above or below what is considered normal in their culture and social context.

Therefore, the visually impaired pupils manipulate real objects in learning the skill. The pupils could touch, move, holds the object and feel it tactually for the effectiveness of the concept taught

## **1.2 RESEARCH HYPOTHESES**

The following hypotheses are formulated to guide the studies:

1. There is no significance difference in the achievement of students taught mathematics concept using task analysis method and those taught without task analysis method.
2. There is no significance effect of gender on students’ performance when taught mathematics with task analysis method.

## **1.3 SCOPE OF THE STUDY**

This study is aimed at finding the effect of task analysis on academic performance of College visually impaired students in mathematics.

## **1.4 SIGNIFICANCE OF THE STUDY**

The significance of the study is briefly stated below:

The method will enlighten and encourage the visual impaired students to be independent.

Task analysis can be extremely useful and a strong method in the education of visual impaired students.

Task analysis can also be used to eliminate the preconditions that give rise to errors before they occur.

## **2.0 RESEARCH METHODOLOGY**

### **2.1 RESEACRH DESIGN**

The design for this study was the case study survey research design. This is the type that is used to derive information about a specific person(s) or an existing institution. Sometimes a case study gives an in-depth report of a given social unit in its totality.

## **2.2 POPULATION**

The population used for this study was visually impaired students of Federal College of Education (Special), Oyo.

## **2.3 SAMPLE AND SMAPLING PROCEDURE**

Fifty (50) learners with visual impairment from 200 level and 300 level were randomly selected from the population for this study.

## **2.4 INSTRUMENT**

The main research instrument in order to obtain some information from students of the selected College of education was questionnaire. The questionnaire information demographic data of the respondents and items on effect of task analysis on academic performance of College visually impaired learners in mathematics

## **2.5 VALIDITY OF RESEARCH INSTRUMENT**

The instrument was given both face and content validation by expert in test and measurement.

## **2.6 RELIABILITY OF RESEARCH INSTRUMENT**

The questionnaire was give to a selected number of visually impaired students from Nigeria centre for the blind, Ogbomoso, Oyo state in order to ascertain reliability. A reliability coefficient of 0.86 was achieved by Pearson product moment correlation coefficient.

## **2.7 PROCEDURE OF DATA ANALYSIS**

In testing the two hypotheses proposed, chi-square at 5% significance level was used as test statistic

## **3.0 ANALYSIS OF DATA AND DISCUSSION OF FINDINGS**

### **3.1 ANALYSIS OF DEMOGRAPHIC DATA**

#### **3.1.1 AGE DISTRIBUTION**

<b>AGE</b>	<b>FREQUENCY</b>	<b>PERCENTAGE</b>
15-25	37	74
26-36	13	26
<b>TOTAL</b>	<b>50</b>	<b>100</b>

The table shows that out of 50 respondents, greater population of 37(75%) were within the age range 15-26 years, 13 (26%) were within the age range 26-36

#### **3.1.2 GENDER DISTRIBUTION**

<b>GENDER</b>	<b>FREQUENCY</b>	<b>PERCENTAGE</b>
MALE	22	44
FEMALE	28	56
<b>TOTAL</b>	<b>50</b>	<b>100</b>

The table shows that out of 50 respondents greater 28 (56%) were female while 22 (44%) were male.

### 3.2.1 HYPOTHESES TESTING DISCUSSION OF FINDINGS

#### 3.2.1 Hypothesis One

$H_{01}$ : There is no significance difference in the achievement of students taught mathematical concept using task analysis method and those taught without task analysis method.

#### 3.2.2 Decision Table

Group	Number	df	$\alpha - level$	$\chi^2_{tab}$	$\chi^2_{cal}$	significance
Agree	204	4	0.05	9.488	54.721	Significant. Reject $H_{01}$
Disagree	46					

Since the calculated values falls outside the acceptance region 9.488, we hereby reject the null hypothesis that, there is no significance difference in the achievement of students taught mathematical concept using task analysis method and those taught without task analysis method. This clearly shows that, task analysis method plays an important role in the mathematics education of persons with visual impairment.

#### Hypothesis Two

$H_{02}$ : There is no significance effect of gender on students' performance when taught mathematics with task analysis method.

#### 3.2.4 Decision Table

Group	Number	df	$\alpha - level$	$\chi^2_{tab}$	$\chi^2_{cal}$	significance
Agree	200	4	0.05	9.488	42.50	Significant. Reject $H_{02}$
Disagree	50					

The null hypothesis two is hereby rejected since  $42.50 > 9.488$  at 0.05 level of significance. We therefore conclude that, there is significance effect of gender on students' performance when taught mathematics with task analysis method. A close look at respondents responses show that male visually impaired persons perform better with task analysis that their female counterparts. This is a contradiction to Bahurudian and Luster (1998) that, there was no significant difference by gender at the fourth-grade level.

## 4.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

### 4.1 SUMMARY

Everywhere we go, everything we do or propose to do, either the structure of mathematics or its application play a vital role and this is why most countries, races and people put emphasis in all aspect of studying, developing, and applying mathematics. Mathematics is also a body of knowledge essential for the achievement of scientific and technology nation. It is therefore necessary to take mathematics education of visually impaired persons very serious because they also have right to education at all level.

To achieve a task objective, the idea of task analysis provides some structure for the description of task or activities, which then make it easier to describe how activities fit together, and to explore what implication of this may be for the design of products. Task analysis is therefore a good method of improving mathematics education of students with visual impairment.

It was found in this study that, there significance difference in the achievement of students taught mathematical concept using task analysis method and those taught without task analysis method. This clearly shows that, task analysis method plays an important role in the mathematics education of persons with visual impairment. It was also discovered that, there is significance effect of gender on students' performance when taught mathematics with task analysis method. A close look at respondents responses show that male visually impaired persons perform better with task analysis that their female counterparts.

#### **4.2 CONCLUSION**

Mathematical concepts and the components included in mathematics for children with visual impairment are to be practiced continually to gain mastery over the subject. Unlike other subjects, mathematics warrants enormous amount of attentiveness, reasoning ability, problem solving skills, ability in drawing conclusion etc.

Further, from it was found that most teachers have considered that mathematics as a field beyond the capacity of the visually impaired to master, because its content is rich with visually presented concepts and information. Hence, mathematics teachers and the children with visual impairment need to be aware of novel ideas and task analysis method of teaching mathematics. Adoption of suitable teaching methodologies, proficiency in mathematical Braille Codes and skill in using mathematical devices, knowledge of adaptation technique with relevant instructional strategies supplemented by right teaching-learning materials via task analysis method.

#### **4.3 RECOMMENDATION**

The following recommendations based on the findings of this study were made:

- There should be frequent in-service training for mathematics teachers in the use of several methods to manage the children with visual impairment.
- The use of task analysis method should be encouraged and adopted by mathematics teachers of students with visual impairment.
- Academic gap between male and female students with visual impairment should be bridged. Female students should be encouraged to do mathematics even beyond secondary school level.

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