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Effects of Personalized and Direct Instructions on Pupils' Academic Performance in Ilorin Asa Local Government Area of Kwara State

DR. Usman Tunde SAADU[1], OLASINDE Bilikis Ajoke[2]

[1]***Email:*** ***usman.saadu@kwasu.edu.ng,*** *Department, Early Childhood and Primary Education, Kwara State University Malete. PHONE NO: 08038493554*

[2]***Email****: ajokeolasinde@gmail.com, Department, Educational Foundations, Kwara State College of Education, Ilorin. PHONE NO: 08149915587*

Abstract: *The ability to use simple numerical concepts to reason rationally is known as numeracy. Inadequate teaching methods may be to blame for a student's poor numeracy skills. To come up with a long-term solution to the problem of poor numeracy performance among students. A study conducted in Asa Local Government Area, Kwara State, examined the effects of personalized and direct instruction on the academic performance of students in numeracy. A quasi-experimental research design was used. Stratified random sampling was used. Numeracy teachers validated the instrument. It was determined that instrument had a reliability coefficient of.79 using PPMC. Analysis of Covariance(ANCOVA) was used. Hypotheses were tested at a significance level of 0.5%. For example, researchers found that treatments had a significant main effect on students' academic performance (F (2; 107) = 4.303, P 0.05) It was found that primary school students can benefit from personalized and direct instruction when it comes to numeracy. Teachers in training and those about to enter the profession should be exposed to seminars and workshops where they can learn how to use personalized instruction.*

Keywords: Numeracy, Personalized instruction, Direct instruction, Gender and School type

Introduction

The ability to use simple numerical concepts to reason rationally is known as numeracy. Understanding basic arithmetic like addition, subtraction, multiplication, and division are all part of developing basic numeracy skills. Mathematical equations such as 2 + 2 = 4 would indicate that a person has at least some basic numeric comprehension. There are also significant aspects of numeracy that include number sense, operation sense; computation; measurement; probability and statistics. Mathematically literate people are able to handle and respond to life's challenges numerically (Brooks, 2010).

Math is an essential part of the primary school curriculum, and it occupies a prominent place in any educational institution's curriculum. As the foundation of all academic science, it has contributed significantly to the rebirth of nations and peoples, as well as to the advancement, expansion, and progress of previous civilizations and the present era (Farrajallah, 2017). Teachers' ineffective methods of imparting knowledge are frequently blamed for students' consistently poor math grades (Adunola, 2011). Misconceptions about mathematics as being difficult, anxiety, and fear all contribute to students' poor math performance. Parents' attitudes, interruptions in instruction, and dyscalculia were cited as causes of students' low Numeracy scores by Attwood (2014). Karue and Amukowa (2013) found that the lack of a meaningful library and laboratory, qualified teachers, home environmental factors and family backgrounds, as well as little parental involvement in the education of their children, are the main causes of poor math performance. It is essential to focus on mathematics, science, and technology in order to build a nation that can compete with other developed nations (Akudo, Olaoye, Alabi & Otun, 2017).

Although the importance of mathematics cannot be overstated, the students' attitude towards mathematics remains a significant challenge for educators despite apparent deficiencies in teaching and learning instruction. In recent years, research has shown that students have a phobia of math. Students' active participation in math classes, such as personalization of instruction, is essential in the study of mathematics, which necessitates a carefully crafted curriculum. Personalization as an instructional design has been introduced to allow students to convert textual information to familiar referents in order to facilitate their participation.

Personalised and direct instructions have been found to be two of the cooperative learning/strategies that give students more time to consider their responses and allow them to learn higher-level thinking skills from their peers. In other words, a school's effort to organise the learning environment in a way that takes individual student characteristics and needs, as well as flexible instructional practises, is an example of personalization of instruction and learning. Students' motivation in the classroom can be increased by personalization, according to Bates and Wiest (2004). Personalization of instruction is seen as a learning tool that has a positive impact on student achievement by Cakir and Simsek (2010). According to Awofala (2014), students in the personalised instruction group showed higher levels of self-confidence, enjoyment, usefulness, and motivation, but they also showed lower levels of anxiety when confronted with math word problems..

In a quasi-experimental study involving two groups that were not equivalent and a sample of 177 students drawn from two public secondary schools in Lagos State, Nigeria, Alabi (2020) investigated the impact of individualised instruction on senior secondary school students' learning outcomes and attitudes toward mathematics. In this study, a reliability coefficient of 0.84 was used for the achievement test and a reliability coefficient of 0.78 was used for the questionnaire. To answer research questions and test hypotheses at a 0.05 level of significance, the data were analysed using both descriptive statistics (mean, standard deviation, and bar chart) and inferential statistics (T-test and ANCOVA). Students who received personalised instruction performed better than those who did not, and men performed better than women when attitudes toward learning were taken into account. As a result of these findings, H01, [t= 0.93; p>0.05] is not rejected; H02, [pretest value of F(1, 176)=131.214]; posttest value of F(176)=30.998; p>0.05 is rejected; H03, [gender value of F(1, 176)=0.005]; and H04, [interaction value of F(1, 176)=1.362] are not rejected. Moreover, the results show that H04 is not rejected. Finally, personalised instruction has a positive impact on students' learning outcomes and attitudes in the classroom, according to the research.

With direct instruction, the focus is on what to teach in terms of the curriculum's design and how it should be taught, with particular attention paid to teaching methods. Reviewing previously learned skills and homework, presenting the general principles, guiding practise under teacher supervision, correcting and re-teaching students, and conducting weekly and monthly reviews are six teaching functions of direct instruction (Gagnon and Maccini, 2011)

Direct and indirect instructional strategies are being tested to see how they affect junior high school students' math scores in a quasi-experimental study. Students from an Owerri, Imo State, public secondary school made up the majority of the population. Using simple random sampling (Balloting), 102 students from two intact classes (A and B) were selected. Students in Group A learned mathematics through a strategy known as Direct Instruction, while those in Group B learned through an approach known as Indirect Instruction. It took 10 weeks and 20 sessions to complete the treatment. The study was guided by three research questions and three null hypotheses. At the end of treatment, the subjects were tested on their math skills with the MAT. An evaluation of the MAT's dependability yielded a co-efficient of 0.86. The data was analysed using the mean (x), standard deviation (SD), and t-test. Students' achievement in mathematics improved when they were taught using direct instruction rather than indirect instruction; there was a statistically significant difference between direct and indirect instruction on students' achievement in mathematics; and gender was found to be an important factor in determining the effect of direct and indirect instruction on students' achievement in mathematics (Oladayo, 2012).

Gender is defined as the culturally imposed division of labour between men and women, with the underlying assumption that, due to biological differences such as those between men and women, one gender has an advantage in the classroom. Males and females do not have a significant difference in intelligence that can be attributed to gender differences. That men are viewed as the dominant and even superior sex does not mean that they are better artists than women, he argued. There is a widespread belief that math is a boy's game (Nnamani & Oyibe 2016). According to a meta-analysis, men do better in math tests that require problem-solving than women do (Hyde & Mertzb,2009), but there is no significant difference between the sexes when it comes to understanding mathematical concepts.

Researchers found that girls did better than boys when asked about their weight (Kiminyo, 2005). He put the discrepancies in weight gain between boys and girls down to their different upbringings. While boys were more likely to engage in activities that did not help them develop cognitive abilities related to weight, girls were more likely to spend time in practical periods at school learning how to cook, which necessitates weighing and measuring ingredients. Other research in Nairobi by Kiminyo (2008) found that boys performed marginally better than girls in conversation of numbers and mass. To explain why boys perform slightly better on cognitive tasks, it was stated that boys played with sticks and stones and were therefore more likely than girls to develop these concepts earlier.

Lioyd (2006) also supports this point of view, arguing that public schools that value education tend to leave decisions about educational success and failure up to the general public and their parents. An investigation into the impact of school types and facilities on students' abilities in Ondo state was conducted by Alimi and Alabi in 2012. It was designed to see if there is a correlation between the quality of facilities and the cognitive abilities of students in private and public primary schools. Data were collected through a descriptive survey. The state of Ondo used a proportionate random sampling technique to select 50 schools. School facility descriptive questionnaires for teachers and headmasters were used in the study. Public and private schools in Ondo, Nigeria, have vastly different facilities, according to a recent study. In addition, the study found that there were no significant differences in the cognitive abilities of students in the two schools. It is clear from the preceding that studies on personalised learning and traditional classroom instruction have been conducted independently by some researchers. However, no studies have been conducted that included both personalised and traditional classroom instruction, as well as moderating variables like gender and school type, which were considered in this study and the location where this study covered.

Statement of the Problem

The third-grade math curriculum emphasises the development of students' numeracy abilities. Problem solving, logical reasoning and the ability to use numbers in a variety of contexts are all factors. It is an important part of the elementary school curriculum. Teachers' ineffective methods of imparting knowledge are frequently blamed for the poor academic performance of most students in numeracy. Misconceptions about mathematics as being difficult, anxiety, and fear all contribute to students' poor math

performance. Perhaps the teachers' ineffective use of classroom principles and practises is to blame for poor numeracy performance at this level of education. Therefore, a study was conducted to examine the impact of individualised and direct instruction on the academic performance of students in Asa Local Government Area of Kwara State, Nigeria.

Research Hypotheses

The following research hypotheses are formulated for the study;

Research Hypothesis One: There is no significant main effect of treatments on pupils' academic performance in Numeracy in Asa Local Government Area of Kwara State.

Research Hypothesis Two: There is no significant effect of gender on pupils' academic performance in Numeracy in Asa Local Government Area of Kwara State.

Research Hypothesis Three: There is no significant effect of school type on pupils' academic performance in Numeracy in Asa Local Government Area of Kwara State.

Research Hypothesis Four: There is no significant interaction effect of treatments and gender on pupils' academic performance in Numeracy in Asa Local Government Area of Kwara State.

Research Hypothesis Five: There is no significant interaction effect of treatments and school type on pupils' academic performance in Numeracy in Asa Local Government Area of Kwara State.

Research Hypothesis Six: There is no significant interaction effect of gender and school type on pupils' academic performance in Numeracy in Asa Local Government Area of Kwara State.

Research Hypothesis Seven: There is no significant interaction effect of treatments, gender, and school type on pupils' academic performance in Numeracy in Asa Local Government Area of Kwara State.

Methodology

A quasi-experimental research design was used in this study. Two public and two private schools were selected using a stratified random sampling method. Before and after scores were gathered using the Numeracy Performance Test (NPT). We used it twice: once as a screening tool before treatment and again following treatment. It was given to both experimental and control groups based on some of the topics that students were exposed to in the curriculum. Some Early Childhood and Primary Education department lecturers and numeracy teachers at the schools where the instrument was tested were involved in the validation process. Using the test-retest method, these were established in two weeks. As a result, the instruments' reliability coefficient was calculated using the Pearson Product Moment Correlation (PPMC), which came out to be.79. Researchers and research assistants administered the six-week treatment. Before treatment began, the students selected the topics for the pretest, which was then used to develop the pretest. After that, the experimental group received personalised, direct instruction on the selected topics, while the control group received conventional instruction. Each group retook the test after completing the teaching and learning activities. Using Analysis of Covariance, researchers analysed the data they had gathered (ANCOVA). The significance level for all of the hypotheses was set at 0.05.

Results

Research Hypothesis One: There is no significant main effect of treatments on pupils' academic performance in Numeracy in Asa Local Government Area of Kwara State.

Table One: Showing the summary of Analysis of Co-variance (ANCOVA) on the significant main effect of treatments on pupils' academic performance in Numeracy in Asa Local Government Area of Kwara State

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	2219.170[a]	12	184.931	1.702	.076
Intercept	46842.515	1	46842.515	431.060	.000
Pretest	266.286	1	266.286	2.450	.120
Treatment	935.264	2	467.632	4.303	**.016**
Gender	104.318	1	104.318	.960	.329
Schooltype	9.917	1	9.917	.091	.763
Treatment * Gender	73.837	2	36.918	.340	.713
Treatment * Schooltype	54.898	2	27.449	.253	.777
Gender * Schooltype	92.428	1	92.428	.851	.358

Treatment * Gender * Schooltype	67.075	2	33.538	.309	.735
Error	11627.497	107	108.668		
Total	769100.000	120			
Corrected Total	13846.667	119			

Asa Local Government Area of Kwara State, Nigeria, has a significant main effect on students' academic performance in Numeracy, as shown in Table 1. Students' academic performance in Kwara State's Asa LGA's Numeracy had a significant main effect of treatments (F (2; 107) = 4.303, P< 0.05). In light of the results, the hypothesis is deemed invalid because the significant value (.016) falls below the 0.05 threshold. Personalised and direct instruction had a significant impact on the academic performance of students in Asa Local Government Area, Kwara State, Nigeria, in Numeracy

Table Two: Summary of Bonferroni's Post Hoc pairwise Comparison of the scores within the three Groups

Treatment	Mean Score	Experimental 1	Experimental 2	Control Group
Personalised Instruction	81.479	*		
Direct Instruction	80.028		*	
Conventional	69.667			*

Experiment 1 involves using personalised instruction, whereas experiment 2 involves using direct instruction, with conventional methods serving as the controls. Due to the differences between Personalised Instruction, Direct Instruction, and Conventional Group, Table 2 reveals the significant main effect of Table 1. Personalised Instruction and Direct Instruction were found to be more effective methods of teaching than the conventional method, according to this study..

Research Hypothesis Two: There is no significant main effect of gender on pupils' academic performance in Numeracy in Asa Local Government Area of Kwara State.

Data in Asa Local Government Area, Kwara State, shows a significant main effect of gender on students' academic performance in Numeracy (see table 1). Students' academic performance in Numeracy in Kwara State's Asa Local Government Area (F (2; 107) =.960, P > 0.05) did not show any significant main effect of gender. Because the significant value (.329) is greater than 0.05, the hypothesis cannot be rejected based on the results. Numeracy performance was not affected by gender in Asa Local Government Area of Kwara State, Nigeria, according to this study.

Research Hypothesis Three: There is no significant effect of school type on pupils' academic performance in Numeracy in Asa Local Government Area of Kwara State.

Asa Local Government Area of Kwara State has a significant main effect of schooltype on students' academic performance in Numeracy, as shown in Table 1. Numeracy students in Asa Local Government Area of Kwara State were not significantly affected by their school type (F (2; 107) =.091, P > 0.05) As a result, since the significant value (.763) is greater than 0.05, the hypothesis is not ruled out. This means that in the Asa Local Government Area of Kwara State, the school type had no significant impact on students' academic performance in Numeracy.

Research Hypothesis Four: There is no significant interaction effect of treatments and gender on pupils' academic performance in Numeracy in Asa Local Government Area of Kwara State.

In the Asa Local Government Area of Kwara State, treatment and gender have a significant interaction effect on students' academic performance in Numeracy, as shown in Table 1. In Kwara State's Asa Local Government Area, there was no significant interaction effect between treatments and gender on students' academic performance in Numeracy (F (2; 107) =.340, P > 0.05). Because the significant value (.713) is greater than 0.05, the hypothesis cannot be rejected based on the results. Numeracy performance in Kwara State's Asa Local Government Area was unaffected by treatment or gender, according to this study.

Research Hypothesis Five: There is no significant interaction effect of treatments and school type on pupils' academic performance in Numeracy in Asa Local Government Area of Kwara State.

Asa Local Government Area of Kwara State has a significant interaction effect between treatments and school type on students' academic performance in Numeracy, as shown in Table 1. Numeracy students in Asa Local Government Area of Kwara State did not show a significant interaction effect between treatments and school type (F (2; 107) =.253, P > 0.05). As a result, since the significant value (.777) is greater than 0.05, the hypothesis is not ruled out. Treatments and school type had no significant impact on the academic performance of students in Numeracy in Asa Local Government Area of Kwara State, Nigeria, according to this study

Research Hypothesis Six: There is no significant interaction effect of gender and school type on pupils' academic performance in Numeracy in Asa Local Government Area of Kwara State.

Table 1 shows that gender and school type have a significant impact on the academic performance of students in Kwara State's Asa Local Government Area. In the Asa Local Government Area of Kwara State, there was no significant interaction effect between gender and school type on students' academic performance in Numeracy (F (2; 107) =.851, P > 0.05). Because the significant value (.358) is greater than 0.05, the hypothesis cannot be rejected based on the results. This means that in the Asa Local Government Area of Kwara State, neither gender nor school type had a significant impact on students' academic performance in Numeracy.

Research Hypothesis Seven: There is no significant interaction effect of treatments, gender, and school type on pupils' academic performance in Numeracy in Asa Local Government Area of Kwara State.

Numeracy students in Kwara State's Asa Local Government Area show a significant interaction between treatment, gender, and school type. In Kwara State's Asa Local Government Area, there was no significant interaction between treatment, gender, and school type on students' academic performance in Numeracy (F (2; 107) =.309, P > 0.05). Because the significant value (.735) is greater than 0.05, the hypothesis cannot be rejected based on the results. These findings show that students' academic performance in Numeracy in Kwara State's Asa Local Government Area was not affected by their treatment, gender, or type of school, despite this.

Discussion of Findings

Pupils in Asa Local Government Area of Kwara State had significantly better academic performance in Numeracy after receiving either individualised or group-based instruction (F (2; 107) = 4.303, P 0.05), according to one of the study's findings. The findings of Alabi, (2020), who studied the impact of personalised instruction on students' learning outcomes and attitudes in mathematics education at Lagos State's senior secondary school, are in agreement with this conclusion. Students who received personalised instruction performed better than those who did not, and men performed better than women when attitudes toward learning were taken into account. Also not rejected are H01, [t= 0.93; p>0.05]; H02, F (1, 176) pretest value = 131.1214; p0.05; F(1, 176) posttest value = 30.998; p0.05; H03, gender F(1, 176) = 0.005; p > 0.05 and H04, F(1, 176) interaction value = 1.362; p > 0.05. Finally, personalised instruction has a positive impact on students' learning outcomes and attitudes in the classroom, according to the research. Mathematical achievement in junior high school students was studied by Oladayo (2012), who compared the effects of direct and indirect teaching methods. The study found that direct instruction had a greater impact on students' achievement in mathematics than indirect instruction; there was a significant difference between direct and indirect instruction on students' achievement in mathematics; and gender was a significant factor in determining the effect of direct and indirect instructional strategy on students' achievement in mathematics, in favour of the males.

One of the findings stated that there was no significant main effect of gender on students' academic performance in Numeracy in Asa Local Government Area of Kwara State (F (2; 107) =.960, P > 0.05). According to Hyde and Mertzb, (2009), women perform better in computation and there is no significant gender difference in understanding math concepts. Kiminyo (2008) also found that boys performed slightly better than girls, but the difference was insignificant. In contrast, a meta-analysis by Hyde & Mertzb, (2009) found that males perform better on problem-solving math tests.

Numeracy students in Kwara State's Asa Local Government Area were found to have no significant main effect of school type (F (2; 107) =.091, P > 0.05) on their academic performance. The findings of Alimi and Alabi (2012), who studied the impact of school type and facilities on the skills of students in Ondo state, support this view. Private schools in Ondo state have significantly better facilities than public schools, according to the study. Students' cognitive abilities in the two kinds of schools were found to be similar, according to the research results as well

Conclusion

To summarise, it can be concluded from the preceding discussion that primary school students benefit from personalised instruction and direct instruction in all subjects, especially numeracy, over the conventional method of teaching and learning.

Recommendations

The following suggestions were made in light of this finding:

1. In order to improve students' academic performance in numeracy, teachers should attend a workshop on how to use personalised instruction and direct instruction in the classroom
2. Teachers in training and those about to enter the profession should be exposed to seminars and workshops where they can learn how to use personalised instruction and direct instruction.
3. Gender and school type should not be used to determine a student's academic performance because research has shown that neither of these factors is critical to a student's ability to succeed in school.

Reference

Adunola, O. (2011),"The Impact of Teachers' Teaching Methods on the Academic Performance of Primary School Pupils in Ijebu-Ode Local cut Area of Ogun State," Ego Booster Books, Ogun State, Nigeria.

Alabi,I.A (2020).Effect of Personalised Instruction on Students' Learning Outcomes and Attitude in mathematics Education at Senior Secondary School, Lagos State, Nigeria. International Journal of Innovative Research and Development · January 2020 DOI: 10.24940/ijird/2020/v9/i1/JAN20060

Alimi N. & Alabi, H. (2012). School types and Academic performance of students in senior Secondary Schools In ondo, Nigeria. *Journal of international Education studies,*

Akudo, O. K., Olaoye, A. A., Alabi, I. A. & Otun I. W. (2017) Tiered instruction and students achievements for mathematical growth and sustainable development ABACUS, *Journal of Mathematical Association of Nigeria (MAN)Vol. 42, No 2. Pp. 242.*

Attwood, T. (2014). Why are Some Students so Poor at Maths? Retrieved on 19th October 2014 from https://www.senmagazine.co.uk/articles/articles/senarticles/why-are- some-people-so-poor-at-maths

Awofala, A. O.A. (2014). Examining personalisation of instruction, attitudes toward and achievement in mathematics word problems among Nigerian senior secondary school students. *International Journal of Education in Mathematics, Science and Technology, 2(4), 273-288.*

Bates, E. T., Wiest, L. R. (2004). Impact of personalization of mathematical word problems on student performance. The Mathematics Educator, 14(2), 17–26.

Brooks, M. P. (2010). Are individual differences in numeracy unique from general mental ability? Acloser look at a common measure of numeracy. Individual Differences Research. 4. 8: 257–265.

Cakir, O., & Simsek, N. (2010). A comparative analysis of the effects of computer and paper-based personalization on student achievement. *Computers & Education, 55*(4), 1524–1531. https://doi.org/10.1016/j.compedu.2010.06.018

Farrajallah, A. E. (2017) The Impact of Employing the (Think - Pair - Share) Strategy to Gain Some Number Sense Skills and Mathematical Communication Skills Among Fifth Grade Students.

Gagnon, J. and Maccini, P. (2011). Direct Instruction in Middle School Mathematics for Students with Learning Disabilities. The Access Center Improving Outcomes for All Students K-8. Washington. U.S.A.

Karue, N. & Amukowa, W. (2013). Analysis of Factors that Lead to Poor Performance in Kenya Certificate of Secondary Examination in Embu District in Kenya. Retrieved on 19th October,2014fromhttp://www.tijoss.com/TIJOSS%2013th%20Volume/Amukowa.pdf

Kiminyo, (2008).*Parent and gender engagement and leadership*.Research Report No.134. Saskatoon, Canada: Dr. Stirling McDowell Foundation for Research into Teaching.

Kiminyo, M. D. (2005). *General psychology of education Nairobi.* Education Research and Publication Co.

Lioyd, P.C. (2006). Power and Independence: perception of inequality. London: Routledge and Kegan Paul.

Nnamani, S.C. & Oyibe, O.A. (2016). Gender and academic achievement of secondary school students in Social studies in Abakaliki urban of Ebonyi state. British *journal of education*, 4(8), 84-95.

Oladayo, O.T. (2012).. Effects of Direct and Indirect Instructional Strategies on Students‟ Achievement in Mathematics. An International Multidisciplinary Journal, Ethiopia Vol. 6 (4), Serial No. 27, October, 2012 ISSN 1994-9057 (Print) ISSN 2070--0083 (Online),Department of Educational Psychology, Guidance & Counseling, University of Port Harcourt, Rivers State