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Scope and Editorial Policies

Nigerian Journal of Applied Psychology is primarily meant to publish reports which can make professional as well as laymen utilize psychology principles in making the human organism more mentally and physically healthy. The journal is meant to make it possible for many more people to utilize psychological principles in their day-to-day activities. One of the aims of the journal is therefore to report articles which when read by people may increase their self-understanding, awareness, problem-solving capacities, creativity and improved adaptive and coping behaviour strategies.

The Journal is an Applied Psychology Journal par excellence. The journal publishes reports which may have applications to individuals in the family, educational contexts, health delivery systems, criminal justice systems. Articles which can analyze and help to solve many problems of society are also welcome.

The editorial policy of the journal will use the following order of publication preference.

1. Reports that suggest practical ways of eliminating, reducing or managing certain socially, undesirable behaviour patterns.
2. Programmes that can be self-administered to solve psychological and other behavioural problems.
3. Review articles that expose the various strategies of managing certain maladaptive behaviours.
4. Theoretical or speculative reports for heuristic consideration in problem solving.
5. Book reviews especially review of books that contain some do-it-yourself psychology.

Nigerian Journal of Applied Psychology is considered to include psychology which may be utilized in the following ways for alleviating human problems:

- By an individual
- Education
- Health delivery systems
- Counselling
- Criminal justice systems
- Town and urban planning
- Prisons etc.
- Industry
- Organisational settings
- Agriculture
- Hotel organisation
- Parenting
- Family life education.

General Information and Manuscript Preparation

Manuscript Preparation

1. Two copies of manuscript of typed doubled space on one side of A4 paper submitted along with electronic copy.
2. Each manuscript should contain, Name and address of the author including his institutional affiliation, abstract, introduction, and the body of the paper.
3. Each page should be numbered consecutively in the upper tight hand corner beginning with the Title page.
4. Papers should not exceed 20 pages including references.

Manuscripts

1. The title page contain a concise but informative statement which should not be more than 15 words.
2. Below the Title should be written the author's names in order, first name, middle name and family name last with the highest degrees. The department of the author, and his/her institutional affiliation.
3. Abstract - The abstract of the manuscript should not be more than 150 words. It should be on page 2 of the manuscript. Abstract should state concisely the purpose(s) of the paper, basic segments and general principles to be put across to readers.
4. If the paper is the report of the study, it should include background, methodology, analyses and results.
 - (a) Background includes introduction, and review of literature central to the study.
 - (b) Methodology should include concise explanation of design, sample and sampling procedure, instruments and their psychometric characteristics plus a well-explained procedure.
 - (c) Results should be presented in form of tables to which reference is made in brief descriptions.
5. References should be written in alphabetical orders. The reference list should include only the cited works within the body of the paper. Reference should follow the APA system.

The format to be followed in writing the reference is as below:

- (a) Family name of the author
- (b) The Initials
- (c) The year of Publication
- (d) The title of the paper.
- (e) The journal or book in which paper is published.
- (f) If a journal, the volume and pages.
- (g) If a book, the city and the publisher.

6. Manuscript Submission.

All manuscript should be submitted to the Editor-in-Chief.

Dr D. A. Adeyemo

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Predicting Pre-Service Teachers' Success in Nigeria Certificate in Education (NCE) Mathematics

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Abstract

The success of one hundred and eight-seven final year pre-service teachers in NCE mathematics was predicted with five variables namely, age, SSCE/NECO/GCE mathematics grade, further mathematics grade, hours of mathematics study and average number of books consulted in the study of mathematics. A close ended questionnaire was used to collect data from the pre-service teachers and stepwise discriminant analysis was run. Results revealed that group differences are significant for all the variables except number of books consulted in the study of mathematics while further mathematic grade was found to be the most associated with the function. These results suggest that pre-service teachers who had a good SSCE/NECO/GCE grade in further mathematics are likely to be successful in NCE mathematics. It was therefore recommended that candidates that intend to study mathematics at the tertiary level in general and the Nigeria Certificate in Education (NCE) level in particular must have attempted and passed further mathematics at the Senior Secondary Certificate level.

Keywords: Prediction, pre-service teachers, success in mathematics, Nigeria Certificate in Education.

Introduction

The Federal Government of Nigeria states categorically in its National Policy on Education (FGN, 2004) that, teacher education will continue to be given a major emphasis in all its educational planning because no educational system can rise above the quality of its teachers. One of the purposes of teacher education is to provide highly motivated conscientious and efficient classroom teachers for all levels of the nation's educational system. Another purpose of teacher education is to provide teachers with sound intellectual and professional background adequate for their assignment and to make them adaptable to any changing situation not only in the life of their country, but in the wider world. In order to achieve this purpose, would be teachers need to be equipped with necessary skills and competence to make them function well in their chosen profession through programmes (known as teacher education preparation programmes) to prepare teachers for their life long profession. One of these teacher education preparation programmes is the college of education which is structured to equip teachers for the effective performance of their duties. It is government's aim to make the Nigeria Certificate in Education (NCE) ultimately become the minimum basic qualification for entry into the teaching profession. NCE holders will be placed mainly in the primary and junior secondary schools.

At the primary level, teachers have to teach mathematics which is one of the basic/core subjects at this level, as well as all other subjects, while in some instances mathematics teachers will be treated as specialist teachers moving from one class to the other to teach only mathematics as obtains at the junior secondary school level. These levels of education (primary and junior secondary) which incidentally now make up the nine year basic education in Nigeria require teachers that have sound knowledge

of mathematics since these form the basic foundation for mathematics and make their knowledge of mathematics very crucial. Mathematics has traditionally been a gateway to technological literacy and to higher education, hence, there is need to ensure access to high quality mathematics instruction by all students. Research has shown that too few students leave elementary or middle school with adequate mathematical knowledge, skill and confidence for the nation to be satisfied with the condition of school mathematics (Falayajo, 1998; Kilpatrick, Swafford & Findell, 2001). Research also confirms that teachers' education and experience account for more differences in student achievement than any other factor. Teachers' knowledge of subject matter and teaching methods are key factors in students' achievement (Renaissance Group, 2004). National Council of Teachers of Mathematics (NCTM, 1991) states that teachers' knowledge of content and how to teach it are critical to effective learning. Although, teacher variables like teachers' knowledge of content are not considered in this study as a predictor of the students' success at the pre-service training programme, teachers' knowledge of content helps students' grade in SSCE/NECO/GCE. Apart from students' grades in SSCE/NECO/GCE, other students factors that could predict pre-service teachers' success are pre-service teachers' age, grades in Further Mathematics, average time spent to study mathematics daily, number and depth of textbooks consulted for the practice of mathematics.

Success in mathematics is a function of good study habit, since mathematics is learnt by doing. If a student solves his problems himself in varied textbooks, his problem solving prowess is likely to improve. Some studies have also shown that students' age and achievement in mathematics cannot be divorced. Bluedorn (2001) is of the opinion that young children cannot understand many arithmetic concepts at an early age though they are taught to perform the process. The fact that mathematics is hierarchical in nature with higher concepts building on lower ones makes prior knowledge of certain concepts

related to mathematics achievement. Knowledge of further mathematics helps a great deal in students' success in NCE mathematics. It is assumed that if students have credit and above in Ordinary Level Mathematics, it is likely that they will do well in the NCE mathematics courses. Farombi (1998) observes that amount of time spent in physics tasks has positive influence on students achievement. Since there are strong correlations between students achievement in Physics and Mathematics, it is likely that amount of time spent by the students in their mathematics has effect on their success in NCE Mathematics.

Purpose

The study is aimed at predicting the success of study teachers in NCE mathematics with the following variables: age, SSCE mathematics grade, hours of mathematics practice, SSCE further mathematics grade, and number of books consulted in the study of mathematics. The dependent variable is mathematics success at two levels (successful, not successful). The predicting variables are the five independent variables.

Research Question

Can success (successful and not successful) in NCE mathematics be reliably predicted from knowledge of individual's age, hours of mathematics practice, SSCE mathematics/further mathematics grade, mathematics textbooks consulted in the study mathematics?

Sample

All final year mathematics major study of the three government (one Federal and two State owned) Colleges of Education in Lagos State Nigeria took part in the study. In all there were one hundred and eighty seven (187) of them who participated in the study.

Instrumentation

Two research instruments were used for data collection.

1. A closed ended questionnaire for the pre-service mathematics teachers which sought the basic information required for the independent variables. The questionnaire was constructed by the authors and given to evaluation experts for face validity. Each of the items was measured at interval level. The instrument had Cronbach's coefficient alpha of 0.76.
2. Mathematics Cumulative Grade point Average Sheet. This sheet was used to record the pre-service teacher's mathematics cumulative grade point average as at the end of their second year. This information was supplied by the institutions.

Results

A discriminant analysis was conducted to determine whether five variables, namely: age, hours of mathematics practice, SSCE mathematics grade, further mathematics grade and number of books consulted in the study of mathematics could predict the success (successful versus not successful) status in mathematics of pre-service NCE mathematics teachers.

As shown in table 1, one function was general and was significant; Wilk's Lambda =0.998; χ^2 (5, N=216) =490.53, $P < .005$, indicating that the function of predictors (age, number of hours of mathematics practice, SSCE mathematics grade, SSCE further mathematics grade and average number of mathematics textbooks consulted in the study of mathematics) significantly differentiated between successful and not successful pre-service mathematics teachers.

Table 1 (Wilk's Lambda)

Test of function (s)	Wilk's Lambda	Chi-square	Df	Sig.
1	.098	490.532	5	.000

Successful status was found to account for 90.25% ($\eta^2 = 9.9502 = 0.9025$) of variance in the function. See table 2.

Table 2 Eigen value

Function	Eigen value	% of variance	Cumulative %	Canonical correlation
1	9.169	100.0	100.0	.950

Tables 3 and 4 present the group means and the ANOVA results. Group difference are significant ($p < 0.05$) for age ($p = 0.016$), SSCE/NCEO/GCE mathematics grade ($p = 0.021$), further mathematics grade ($p = 0.000$), and average time spent to study mathematics daily ($p = 0.034$).

Table 3 (Group Statistics)

Pre-service teachers' success in mathematics		Mean	Std. deviation	Valid N (list wise)	
				Unweighted	Weighted
Successful	Pres-service teachers' age	1.97	.616	93	93.000
	SSCE/NCEO/GCE grade	1.59	.536	93	93.00
	Further Mathematics grade	2.08	.695	93	93.000
	Average time spent to study math daily	1.55	.927	93	93.000
	Textbooks Consulted for the study of mathematics	1.96	.487	93	93.00070
Not successful	Pre-service teachers age	2.16	.546	123	123.000
	SSCE/NECO/GCE grade	1.76	.544	123	123.000
	Further Mathematics grade	4.96	.198	123	123.000
	Average time spent to study Math daily	1.33	.607	123	123.000
	Textbooks Consulted for the study of mathematics	1.94	.618	123	123.000
Total	Pre-service teachers' age	2.08	.593	216	216.000
	SSCE/NECO/GCE grade	1.69	.547	216	216.00
	Further Mathematics grade	3.72	1.509	216	216.000
	Average time spent on study math daily	1.42	.768	216	216.000
	Textbooks Consulted for the study of mathematics	1.95	.564	216	216.000

Table 4 (Tests of Equality Means)

	Wilk's Lambda	F	df1	df2	Sig.
Pre-service teachers' age	.973	5.843	1	214	.016
SSCE, NECO, GCE mathematics grade	.975	5.405	1	214	.021
Further Mathematics grade	.101	1913.293	1	214	.000
Average time spent to study math daily	.979	4.552	1	214	.034
Average number of books Consulted for the study of mathematics	1.000	0.32	1	214	.858

Standardized functions coefficients and correlation coefficients revealed that the variable, SCCE/NECO/GCE further mathematics grade was the most associated with the functions. See table 5.

Table 5: (Correlation coefficient and Standardized Function Coefficient)

	Correlation coefficient	Standardized function coefficient
Further mathematics grade	.987	1.056
Pre-service teachers' age	.055	-.071
Mathematics grade	.052	-0.54
Average time	.048	.142
Average number of books	.004	0.10

The original classification results showed (as can be seen in table 6) that 98.9% of the successful pre-service teachers were correctly

classified, while 100% of the not successful pre-service teachers were correctly classified. For the overall sample, 99.5% of the original grouped cases were correctly classified.

Table 6 (Classification Results)

		Pre-service teachers' success in mathematics	Predicted membership group		Total
			Successful	Not successful	
Original	Count %	Successful	92	1	93
		Not successful	0	123	123
		Successful	98.9	1.1	100.0
		Not successful	0	100.0	100.0
Cross validated	Count %	Successful	92	1	93
		Not successful	0	123	123
		Successful	98.9	1.1	100.0
		Not successful	0	100.0	100.0

- a. Cross validation is done only for those cases in the analysis. In cross validation, each case is classified by the function derived from all cases other than that case.
- b. 99.5% of original grouped cases were correctly classified
- c. 99.5% of cross-validated group class were correctly classified

Group means for the functions indicate that those that are successful had a function mean of - 3.423 and those that were not successful had a function mean of 2.588 (see table 7).

Table 7 (Functions of Group Centroids)

Pre-service teacher's success in mathematics	Function
Successful	-3.466
Not successful	2.621

These results suggest that pre-service NCE teachers who had a good grade in SSCE/NECO/GCE further mathematics are likely to be classified as being successful in NCE mathematics.

Discussion

Students' age is significant to the prediction in students' success in Mathematics. The findings reveal that matured students performed better than younger students. The reason could be that these matured students are internally motivated to solve mathematical problems than the younger students who often have to be told what they need to do. The study is consistent with the result of NECO (2007) where age is a positive predictor of students' achievement in Mathematics. However, the findings in this study is not in agreement with the findings of DEMENCER (2002) where it was found that students' age had negative impact on students learning achievement in Mathematics. Variation in this study and that of DEMENCER (2002) is likely to be because of the type of students that participated in the study. Older (pre-service in the NCE programme) students were used in this study while the study of DEMENCER was based on grade 8 pupils. Younger children, most often, are given more attention than older ones.

Another significant predictor of students' success in Mathematics is the average time devoted to solving mathematical problems. For student to perform well or achieve in schools, effective learning time must be increased (Somoye, 2005). To increase effective learning time, two out of the four different suggestions made by Scheerens (1992) are likely to increase students' success in Mathematics as considered in this study. The suggestions were to give more homework and increasing the learning time for a certain subject (Mathematics) by reallocating the total learning time among the rest subjects. If more time is devoted on solving Mathematical problem, it has a chain reaction on all other subjects as it is unlikely that a student who does very well in Mathematics finds other subjects difficult.

The number of textbooks related to Mathematics significantly contributed to students' success in the subject. The positive correlation shows that the success level of students in Mathematics increases as they possess these textbooks and converse is also true the success is lowered as the number of textbooks possessed by the students is few.

Grades in Ordinary level Mathematics and Further mathematics are found to significantly predict students' success in NCE Mathematics. It is logical to think that if the foundation of mathematical concepts laid at the secondary school is on a shaky ground the building erected at the NCE level will not only crumble but there will be a serious disaster which is likely to affect the students in all areas of life (social, psychological and emotional). That is why this study found a strong relationship between the success of NCE Mathematics as students passed their Ordinary level Mathematics and Further mathematics.

Conclusion and Recommendations

The success of pre-service NCE teachers' in mathematics was predicted by variables, namely; age, SSCE mathematics grade, SSCE further mathematics grade, hours of mathematics study and average number of mathematics text books consulted in the study mathematics. Wilk's lambda showed that variables significantly differentiated between successful and not successful pre-service mathematics teachers, standardized function and correlation coefficients revealed that SSCE/NECO/GCE further mathematics grade was the most associated with the function. All stake holders in teacher education with particular reference to the Nigerian Certificate in Education should therefore take this result into consideration. All students that intend to study mathematics at tertiary level in general and NCE mathematics in particular must have attempted and even passed further mathematics at the senior secondary school.

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