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FOREWORD

It is with a great pleasure that I introduce the maiden edition of the Journal of Studies in Humanities to the academic community. Coming in the wake of the creation of the Tai Solarin University of Education and her College of Humanities, the publication is thrusting itself into life with the vigour of a new baby. Hardly had we sent a call to the academic community within the university and other sister institutions than we had the unexpected but pleasant experience of receiving a deluge of papers from all the nooks and crannies of academia. Originally designed to take just fifteen or fewer papers, this maiden issue had to have compressed into it the present seventeen. And that is after a further sixteen or so have been set aside for the next issue and some more have been returned to their writers as not being publishable in their present forms.

The College of Humanities embraces four departments; those of Languages [English, French and Yoruba], Religious Studies [Christian and Islamic], History and Diplomatic Studies, and, finally, Fine and Creative Art. In the pipeline are two other departments; those of Theatre and Dramatic Art, and Arabic. However, as a College within a University of Education, all our disciplines cannot but have a clear imprint of the umbrella discipline of Education. The papers here presented bear this imprint of the teaching subject as well as of the discipline of Education.

The main objective of presenting this publication to the academic world is to engender dynamic discourse. Knowledge is an ever expanding phenomenon and it is our intention to contribute to its expansion in our own little way as well as to get other scholars to engage in the exercise. It is thus our intention to receive responses to these papers, either in the form of further papers or merely as rejoinders.

Meanwhile, I should end this by thanking my colleagues in the editorial board as well as the seasoned scholars who have been consulted during the formative days of this publication. We have really tapped from their resources and will continue to do so in our ever continuing efforts to engender the growth of the tree of knowledge in the disciplines of Humanities.

Prof. S. O. Ayodele
Editor – in – chief.
July, 2006.

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Effect Of Indirect and Direct Teacher Influence on Dependent-Prone Students Learning Outcomes in Geometry

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Abstract

Personality factors and teachers' teaching styles are among the many factors that affect students' learning. In the study, the writers examine the effect of direct and indirect teacher influence on dependent-prone students' learning outcomes in geometry at the senior secondary school level. The top 25% (216) based on the scores of 864 on a dependence-prone test were used in the study. The 216 identified dependence-prone students were divided into two groups and each group was exposed to the two contrasting teacher-talk strategies (direct versus indirect). Using both descriptive and multivariate statistical analysis, results showed that treatment contributed significantly to the variations in the dependent-prone students' mean cognitive achievement in geometry. A major implication of this study is that closer supervision through the use of direct influence, an all common antidote to lower achievement in Mathematics and the sciences, may be harmful to dependent-prone students.

Introduction

A typical classroom consists of students with different learning abilities and psychological orientation. Some are extroverts; some are introverts; some have independent personality, while others are of analytic personality among others. So, for effective teaching and learning of school subjects, there is the need for every classroom teacher to identify each of these personality traits in his or her students and then apply the most appropriate teaching style. Whether or not a particular type of student can learn effectively a subject when exposed to a particular style of teaching has interested a number of researchers. Amidon and Flanders (1961); Emeke (1991); Adegoke (2003), Ojo (2003), etc., had shown that when students are classified by the use of test data, they respond differently to highly organized versus loosely organized classroom activities in secondary school courses and to lecturing versus group discussion techniques. This project was concerned with dependent-prone senior secondary school Two (SSII) students exposed to consistently direct versus indirect styles of teaching while learning geometry.

Stroufe, Fox and Pancake (1983), Greenberg and Bornstein (1989), Bornstein, Calabrese, Riggs and Hill (1996), Adegoke (2003) and other educational and clinical psychologists and researchers have studied the reactions of dependent-prone persons in various kinds of experimental situations - academic and medical settings. They concluded that dependent prone individuals are more likely to comply with authority figures and conform to group pressures than the less dependent-prone ones.

In academic setting, these findings suggest that a dependent-prone student might become overly concerned with following the suggestions and directions of a teacher and more dependent on support and encouragement. In the classroom, acts of dependence occur when a student not only complies with teacher influence but solicits such direction more often than necessary. A student who asks a teacher to approve of his or her work to ensure that it is satisfactory before going further is acting dependently. The present project was therefore designed to find out if these concerns inhibit or enhance the learning of geometry by dependent-prone students in senior secondary school Two (SSII) when they were exposed to consistently direct versus indirect styles of teaching.

In order to reduce the effect of intervening variables such as gender and reasoning abilities (numerical and perceptual), they were incorporated to serve as moderator variables in this study.

Research Hypotheses
The following null hypotheses were advanced for testing.

Hypothesis One(Ho1): There is no significant main effect of (a) teacher influence, (b) students' gender, (c) numerical reasoning ability, (d) perceptual reasoning ability on dependent-prone students' cognitive achievement in geometry.

Hypothesis Two (Ho2): There is no significant 1st order, 2nd order and 3rd order interaction effect of (a) teacher influence, (b) students' gender, (c) numerical reasoning ability, (d) perceptual reasoning ability on dependent-prone students' cognitive achievement in geometry.

Methodology

(a) *Research Design:* The study employed pre-test, post-test, control group, non randomized design in a quasi-experimental setting in which treatment (teacher influence--direct vs indirect) was crossed with students' gender (male / female), numerical and perceptual reasoning abilities (high; moderate and low). This is a 2 x 2 x 3 x 3 factorial design.

(b) *Sample:* Eight hundred and sixty four (864) students randomly drawn from 4 randomly selected co-educational secondary schools in Ibadan South East Local Government, Oyo State, Nigeria participated in the study. Based on the scores of the 864 students in the dependence-proneness test, the top 25% (216) were identified and denoted dependent prone students. Their ages ranged from 14 to 19 years (x =16.85 years; S.D = 1.39; male = 105, female 111; high ability =54; moderate ability = 108; low ability = 54).

Intact classes from the four selected schools were used. All the 864 students including the identified and denoted 216 dependent-prone students were present throughout the period of the experimental weeks. Though all the 864 students were present in the intact classes used and were all taught by one of the researchers, analysis of scores in pre and post GAT, NRAT, and PRAT centred only on the mean scores of the identified and denoted 216 dependent-prone students.

Instrumentation: The following four research instruments were employed in the data collection.

1. Dependence-Proneness Test (OPT)
2. Geometry Achievement Test (GAT)
3. Numerical Reasoning Ability Test (NRAT)
4. Perceptual Reasoning Ability Test) (PRAT)

Dependence-Proneness Test: It is a highly valid and reliable 19-item instrument developed to measure the degree of students' dependency on the encouragement, suggestions and directions of the teacher in solving problems when confronted with difficult situations. It was placed on a 5-point Likert scale of from Strongly Agree (SA), to Strongly Disagree (SD) with scores of 5, 4, 3, 2, 1 for positively stated items and reversed for negatively stated items. It has a reliability index of 0.73 (Cronbach Coefficient Alpha).

Numerical Reasoning Ability Test (NRAT): It is a 33-item multiple choice instrument to measure students' ability carry out the processes of recognition of constant variable classification, ordering, and recognition of constant correspondence in dealing with arithmetical number. The modified form of NRAT developed by Berret and Williams (1997) was used, but revalidated. The modified form had a reliability index of 0.88 (KR_{20}) The scores obtained were used to classify dependent-prone students into high, moderate and low ability groups, viz. top 25%, the next 50% and bottom 25% respectively.

Perceptual Reasoning Ability Test (PRAT): The dependent-prone students' ability to carry out the dynamic processes of recognizing correspondence and similarity in sets of spatial figures were assessed by the Raven Progressive Matrices. The scale consists of 60 problems divided into five sets of 12. It has test-retest reliability ranging from 0.83 to 0.93. It is the most commonly and widely used instrument in Nigeria for assessing intellectual ability (e.g Bakare 1979; Abadom, 1986, Gbodi 1998, Adegoke 2003). The scores obtained were used to classify the dependent-prone students into high ability (top 25%), moderate ability (next 50%), low ability (bottom 25%).

Procedure

The intact classes were randomly assigned to the treatment conditions - direct versus indirect. This was followed by the administration of the pre-test - GAT, PRAT and NRAT.

Treatment Conditions

Experimental Group: The treatment in the group involved integrative, inclusive and student-centred approach to teaching. The teacher expanded the students' opportunities for active participation in the teaching and learning of geometric concepts and circle theorems in the classroom during the experimental weeks.

Control Group: The treatment involved dominative, preclusive and teacher centred approach to teaching. The teacher presented the materials -- circle theorems and geometric concepts in form of lecture. The teacher talked most of the time, explained the materials, while the students listened attentively and took notes. The treatments in each of the contrasting groups lasted for four weeks of four periods of thirty-five minutes per period per week. At the end of the treatments, post test of geometry achievement was administered to the students.

Results

Control of teacher influence

The manipulation of direct and indirect teacher influence occurred right after the tape recording each time the teacher came in contact with the students in each of the contrasting groups.

Table 1 presents the classification of teacher-students statements into interaction categories in percentages as recorded by the two trained observers.

Table 1: Summary of the Direct and Indirect Teacher Interaction in the Experimental Groups

		Treatment	
	Category	Indirect	Direct
	Teacher Talk:		
a.	Praise and encouragement	12.93	2.47
b.	Clarification and development of ideas suggested by students	14.59	2.60
c.	Asks questions	29.37	15.24
d.	Gives own opinions and facts (lectures)	14.87	52.40
e.	Gives directions	1.13	9.36
f.	Criticizes students	3.08	10.33
g.	Student talk	18.82	5.10
h.	No one talking	5.21	2.46
	Total tallies on which percentage figures are based	10,548	8,942

The figures in Table 1 show that essential differences between direct and indirect treatments are: (i) the teacher lectures and gives more direction in the direct treatments; (ii) he asks more questions and gets more participation in the indirect treatments; (iii) he praises; encourages and clarifies students' ideas more frequently in the indirect treatments; (iv) and he criticizes students more frequently in the direct treatments.

It is clear that the teacher controlled his behaviour successfully and created the two teacher styles. In the categorization of teacher statements by means of climatic index, as shown in table 1, of the 10,548 statements in the indirect teacher influence group of this study; 56.80% were learner centred while 19.08% were teacher-centred. Of the 8,942 statements in the direct teacher influence group of this study, 20.31% were learner-centred while 72.09% were teacher centred.

Data Analysis

The post-test performance scores in geometry were subjected to analysis of covariance. The Scheffe's test and graphical illustrations were used as post-hoc measures.

Results

The results are now presented in the order of the hypotheses.

Table 2: Summary of Analysis of Covariance (ANCOVA) of Geometry Achievement

Test (GAT) Scores by Treatment, Students' Gender, Numerical and Perceptual Reasoning Abilities

Source of variation	*Sum of squares*	*df*	*Mean square*	*F*	*Significance of F*
Covariates	3092.026	1	3902.026	383.970	0.000*
Main Effects	1578.816	6	263.136	32.676	0.000*
Treatment (T)	475.085	1	475.083	58.996	0.000*
Genders (Gd)	16.396	1	16.396	2.036	0.155
Num. Ab (NA)	1092.991	2	546.496	67.864	0.000*
Per. Ab (PA)	25.421	2	12.710	1.578	0.209
2-Way Interactions	187.639	13	14.434	1.792	0.047*
Tr x Gd	1.415	1	1.415	0.176	0.676
Tr x NA	87.969	2	43.984	5.462	0.005*
Tr x PA	46.475	2	23.238	2.886	0.058
Gd x NA	16.666	2	8.333	1.035	0.357
Gd x PA	0.741	2	0.371	0.046	0.955
NA x PA	23.695	4	5.924	0.736	0.569
3-Way Interactions	21.911	12	1.826	0.227	0.997
Tr x Gd x NA	2.853	2	1.426	0.177	0.838
Tr x Gd x PA	0.214	2	0.107	0.013	0.987
Tr x NA x PA	9.342	2	2.336	0.290	0.884
Gd x NA Pa	7.155	4	1.789	0.222	0.926
4-Way Interactions	17.784	4	4.446	0.522	0.698
Tr x Gd x NA PA	17.784	4	4.446	0.522	0.698
Explained	4898.175	36	136.060	16.896	0.000
Residual	1441.450	179	8.053		
Totals	6339.625	215	29.487		

*Significant at P<0.05

Table 2 shows data on analysis of covariance of geometry achievement test scores by treatment (teacher influence-direct vs. indirect), dependent-prone students' gender, numerical and perceptual reasoning abilities. The table shows a significant main effect of treatment [F(1,215)= 58.996; P<0.05) and numerical reasoning ability [F (2,215) = 67.864. P<0.05] on dependent-prone students' cognitive achievement in geometry. It also shows a significant 1st order (2-way) interaction effect of treatment and numerical reasoning ability [F (2,215) = 5.42' P<0.05] on dependent-prone students' cognitive achievement in geometry. Gender and perceptual reasoning ability as well as their 1st, and 2nd and 3rd order interaction with treatment and other independent variables produced no statistically significant effect on dependent-prone students' cognitive achievement in geometry.

Table 3: Multiple Classification Analysis (MCA) of Geometry Achievement Test (GAT) by Treatment, Students' Gender, Numerical and Perceptual Reasoning Abilities

Grand Mean = 13.875

Variable Category	N	Unadjusted Dev'n	Eta	Adjusted for independent covariates Dev'n	Beta
Treatment					
1. Indirect	108	2.38		1.60	
2. Direct	108	-2.38	0.44	-1.60	0.30
Gender					
1. Male	105	0.14		0.28	
2. Female	111	-0.14	0.03	-0.28	0.48
Perceptual Ability					
1. Low	54	-0.99		0.25	
2. Moderat	108	-0.20		-0.34	
3. High	58	1.41	0,16	0.46	0.07
Numerical					
1.Low	54	-4.76		-3.54	
2. Moder	108	-0.22		-0.15	
3. High	54	5.31	0.66	3.19	0.48
Multiple R Squared					0.737
Multiple R					0.858

Table 3 shows data on Multiple Classification Analysis (MCA) of geometry achievement test scores by treatment, students' gender, numerical and perceptual reasoning ability groups. The Table shows that the experimental group, the indirect teacher influence group had the higher adjusted post-test mean score of 15.475 (13.875 +1.600) while the control group-direct teacher influence had the lower adjusted post-test mean score of 12.275 (13.875-1.600). It is evident therefore that indirect teacher influence has produced increased learning outcomes in the dependent-prone students than the direct teacher influence. The MCA Table also shows that the high numerical ability group had the highest adjusted post-test mean score of 17.065 (13.875 +3.190) followed by moderate numerical ability group with adjusted post-test mean score of 13.725 (13.875-0.150) while the low numerical ability group had the least score of 10.335 (13.875-3.540).

The results from the Scheffe's Test as shown in Table 4 reveals that dependent-prone students in the high numerical ability group performed significantly better than their counterparts in either the moderate or low numerical reasoning ability group. Similarly the moderate numerical reasoning ability group, performed significantly better than those in the low numbers ability group.

Table 4: Scheffe's Multiple Range Comparison on Post-test Mean Score of Dependent-Prone Students in GAT in the Different Numerical Ability Groups with Significant F-ratio (p<0.05)

		Group 1	Group 2	Group 3
Mean	Group			
9.11	Group 1			
13.65	Group 2	*		
19.19	Group 3	*	*	

* Denotes pairs of group significantly different at P<0.05

Table 5 below presents sets of means depicting the interaction effect of treatment (teacher influence) and numerical reasoning ability on dependent-prone students' performance in Geometry Achievement Test (GAT).

Table 5: Sets of Means

Treatment Groups	Numerical Ability Low (1)	Moderate (2)	High (3)
Exp.	9.81	16.52	22.15
Con.	8.41	10.84	16.12

The significant interaction effect of treatment and numerical reasoning ability was disentangled as shown in Figure 1. The graph shows ordinal interaction where across the respective levels of numerical reasoning ability, the mean performance of dependent-prone student exposed to indirect teacher influence while learning geometry was higher than their counterparts that were exposed to direct teacher influence while learning geometry.

Discussion

The measures of geometry achievement indicate that the dependent-prone students learned more in the classroom in which the teacher gave fewer directions, less criticisms, less lecturing, more praises and asked more questions which increased the students' verbal participation.

These findings give credence to the notion that restricting students' freedom of participation in the cycles of classroom activities, increases dependency and consequently decreases achievement; and on the other hand expanding students' freedom of participation in the cycles of classroom learning activities decreases dependency and consequently' increases achievement. Sustained direct influence by a teacher results in increased compliance and when this is maintained over an extended period of time, pattern of dependent behaviour increased with a consequent decrease in achievement.

These findings are consistent with some of the earlier findings and assertions by researchers such as Amidon and Flanders (1961), Rodriques and Bell (1995), Fleer (1996) and Adegoke (2003) who found that students taught by a learner-centered teacher showed superiority over the student of an autocratic teacher in the acquisition and retention of knowledge.

One major implication of these findings is that closer supervision through the use of direct talk teaching strategy, an all common antidote to lower achievement in mathematics, sciences and other highly organized school subjects may after all be more harmful than beneficial to dependent-prone students.

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