PREDICTIVE VALIDITY OF THE GEOGRAPHY FIELD PROJECT SCORE ON STUDENTS' PERFORMANCE IN THE GEOGRAPHY THEORY IN CHOMA, ZAMBIA

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Abstract

The study investigated the predictive validity of students' scores in Geography Field Project on their final scores in Geography Theory examination. The predictors were Geography Field Project in terms of Observation, Recording and Interpretation while the criterion was the score in the final Theory examination in Geography. This study was an ex-post facto type of the descriptive research design because all the variables used had already occurred and therefore were not manipulated. The population consisted of all the grade twelve students from all the thirteen High Schools in Choma District, Zambia, who sat for the Geography examinations in the years 2009, 2010 and 2011. The population for the study consisted of all the 1950 students who sat for Geography examination in all the schools in the years under study. Seven hundred and eighty (780) students were selected and used for the study. The only research instrument used was a format designed for recording all necessary information in respect of students used for the study. The data collected were analysed using the descriptive statistics, regression analysis, Analysis of Variance and multiple comparison. The study revealed that students' performance in Geography Field Project and Geography Theory final Examinations were on the average. Geography Field Project in terms of Interpretation and Observation accounted for 79.7% variance in students' performance in Geography Theory Examination. Interpretation accounted for 79.6% while Observation accounted for 0.1%. The positive beta value shows that the more students were able to interpret and carry out observations; the better was their performance in Geography Theory Examinations. The overall mean score in Geography Field Project accounted for 79.7% variance in performance in Geography Theory Examination. The positive beta value of .560 indicated that the more students

performed in Geography Field Project, the better their performance in Geography Theory Examination. There is no significant difference in the performance of students in Geography Final Examination Scores according to year of examination. It was however observed that there was a continuous decline in performance of students from 2009 through 2011.

Keywords: Predictive validity, Geography Field Project, Geography Theory

Introduction

The purpose of fieldwork is to amplify, reinforce and extend the principal geographical concepts and skills taught in class, provide an in-depth study of a situation and add knowledge, understanding and awareness of the environment. Geography Field Project is based on Discovery learning, which believes that it is best for learners to discover facts and relationships for themselves. Students interact with the world by exploring and manipulating objects. As a result, they may be more likely to remember concepts and knowledge discovered on their own. Discovery learning is effective learning because students participate actively in the learning process rather than passively receiving knowledge as if they were empty vessels to be filled by the instructors.

Geography Fieldwork in general may entail going out and exploring possibilities in the student's environment. It is an "out- door" work or a technique based on learning directly or by observation and deduction. (Lambart & Balderstone 2000).

As in any subject, fieldwork in Geography holds the same principle of learning through direct observation. Namafe (1986: 23) noted that, "field work in local issues could provide active learning experience and records the feeling held by others for the environment. This is in line with the Chinese proverb, which implies that what one hears, they may forget. What they see, they remember. And what they do, they understand.' The principle of Discovery Learning is highly emphasized here.

The Geography field project in Zambian high schools started in 2002. This was introduced by the Ministry of Education (MOE) to help candidates collect data. The teaching of geography in high schools was theoretical, based on knowledge from textbooks and left learners with little knowledge about their local areas. Geography lessons were based on foreign lands, and this deprived learners of studying more about their environment.

In advancing the concept of the Geography Field Project in the Zambian geography curriculum, the MOE through its wing, the Curriculum Development Center (C.D.C) in 2000, launched the Geography Field Project as a component of geography carrying 12 percent of the final examination marks. The main objective of incorporating the project into the Zambian

High Schools Geography Curriculum (ZHSGC) was to address the observations made by various people that the teaching and learning of geography in Zambia had been too theoretical and textbooks based. It was felt, therefore, that introducing the Field Project into the curriculum would add satisfaction to the teaching and learning of geography because it would, among other benefits, break the monotony and boredom that existed in the coverage of the Geography curriculum and add the aspect of discovery learning, (CDC 2000) and Ntalasha , Mweene, Silumesi, Phiri, Solami, Manda, Shabukali, (2004).

It has been argued that the theoretical way of teaching and learning Geography in Zambia left many pupils with little and limited knowledge about their local environment which they were supposed to protect, nurture and sustain. Furthermore, geography with emphasis on the study of foreign lands had effectively alienated the learners from their environment instead of including greater awareness of the environment around them. The Field project contributes to students' work positively. It also creates and increases interest for geography (Ntalasha et al (2004), Manda , Mc Given, Silondwa, (2002).

The Geography Field Project has been running in Zambian High Schools since 2002. The first group of Zambian High School, (ZHS) students to write a report on various geographical topics of their own choice was the graduates of 2004. By implication, the project is been written and examined since then. Grade 12 candidates were expected to submit their written project reports to the Examinations Council of Zambia (ECZ) by 31 October every year. If this was not done, the affected candidates were not eligible to sit for the rest of the geography examination papers (CDC 2000). In other words, the field project is compulsory and so all geography candidates at high school level have to take it.

Teachers in ZHS are expected to begin teaching this component in Grade 10. This would prepare students with processes and skills of doing fieldwork before they embarked on serious project report writing in Grade12. How then, has the inclusion of the Geography project into the Geography curriculum affected the performance of pupils in Geography? This study therefore investigated the predictive validity of students' scores in Geography Field Project on their final scores in Geography Theory examination.

Predictive validity is the extent to which a score on a scale or test predicts scores on some criterion measure. According to American Education Research Association (1999), in the study of predictive validity, the predictors are collected first; then later the criterion measure is collected. These are validated by collecting the scores during the examinee's senior year and high school and then waiting a year (or more) to correlate the scores

with their first year college scores. Thus, predictive validity provides somewhat more useful data about test validity because it has greater fidelity to the real situation in which the test will be used. After all, most tests are administered to find out something about future behavior. In this study, the Geography Field Project scores (predictor) and the Geography Theory final Examination scores or results (criterion) will be correlated.

Another study on predictive validity was an investigation on predictive validity of English and Mathematics Mock results of students in West Africa School Certificate Examination in Ekiti State, Nigeria. This was carried out by Omrin and Ale (2008). Three hundred and sixty students were selected by a simple random sampling technique from 12 public secondary schools in 6 Local Government Areas of Ekiti State, Nigeria. The findings of the study revealed that Mock English and Mathematics helped significantly in predicting the success in academic performance of students in WASCE. However, English Mock result was a better predictor of success in WASCE than Mathematics Mock.

Ojaleye and Ebeh (2002) carried out a study on whether the admission qualification (entry qualification) was a predictor of performance of students in Mathematics (National Certificate in Education, NCE). Six hundred and thirty (630) students of Federal College of Education, Kontagora and the College of Education, Ilorin over a period of ten years (1986-1996) who successfully graduated from both departments formed the sample of the study. Results showed that there was significant relationship between the entry qualification and final grade of students in Mathematics and that the entry qualification was a predictor of final grade of students. They further observed that there was a significant difference between the performance of male and female students at the entry and final grades with males performing better than the female counterparts at the final grades.

In another development, Falaye and Afolabi (1987) in Awoniyi (2010) investigated the predictive validity of the state version of the JSCE for the Senior Secondary School Certificate Examination (SSCE). The study was undertaken to find out whether there was significant relationship between the overall performance of students in the JSCE and their performance in the Senior School Certificate Examination (SSCE). The subjects for the study consisted of 505 students from six purposively selected Secondary Schools in Osun State, Nigeria. Promotion examination scores of the students in Senior Secondary School (SSS) 1 and SSS 2 as well as their SSCE in six major subjects were compared with corresponding JSCE scores using correlation analysis procedures. The results showed that Osun State JSCE was a poor predictor of students' performance in SSCE.

A research on the relationship in the performance of students in Mock School Certificate and WASC Examinations in Chemistry from (1986- 1988)

was carried out by Alemila (1980). He discovered that there was significant relationship between candidates' performance in Mock School Certificate and WASC Chemistry Examination. In the same vein Awoniyi (2010) in her study of entry criteria as predictor of academic success in the faculty of Business undergraduate programs at Solusi University, Zimbabwe discovered that ordinary level mathematics accounted for 25.2% of variance in academic success of students in Finance Department with substantial positive relationship. The present study therefore investigated the predictive validity of students' scores in Geography Field Project on their final scores in Geography Theory examination.

Statement of the problem

Since the introduction of the Geography Field Project into the Geography curriculum in Zambia in 2002, no investigation has been carried out for a valid comparison of the relationship between students' scores in Geography Field Project and their scores in the Geography Theory final Examinations. This study therefore, sought to determine the predictive validity of the Geography Field Project on students' performance in Geography for the years 2009, 2010 and 2011.

Research Questions

The researchers sought answers to the following research questions:

1. What is the performance of students in Geography Field Project and Geography Theory final Examinations?
2. To what extent do the scores in Geography Field Project in terms of Observation, Recording, and Interpretation predict students' performance in Geography Theory final Examinations?
3. To what extent do the scores in Geography Field Project predict students' performance in Geography Theory final Examinations?
4. In which year was there better performance in Geography Theory final Examinations?

Research hypothesis

It was hypothesized that scores in Geography Field Project have no effect on students' performance in Geography Theory final Examination.

Research Methodology

The design used was Ex-post facto type of descriptive research because all the independent variables examined had already occurred and were not manipulated. The data used for the study were the results of 2009, 2010 and 2011 from the Examinations Council of Zambia (ECZ) and the Geography Field Project Scores for the same years from the thirteen High Schools in Choma District, Zambia. The target population for the study comprised of all the 1,950 grade 12 students who took Geography in all the

thirteen High Schools in years 2009, 2010, and 2011. A sample percentage of 40 was adopted for the students and hence 780 students (20 students per school per year) were randomly selected and used for the study.

The only instrument for the study was a format designed by the researchers for recording students' scores in Geography Field Project as well as their corresponding scores in the Geography Theory final Examinations. The data collected were analysed using the descriptive statistics, regression analysis, Analysis of Variance and multiple comparison.

Results

The results of the analysis are presented in succession in line with the research questions.

Research Question 1:

What is the performance of students in Geography Field Project and Geography Theory final Examination?

Table 1 below shows the performance of students in Geography Field Project in terms of observation, recording and interpretation as well as the overall score in Geography Field Project and final examination score in Geography Theory. Each aspect of the Geography Field project is graded out of 33.33% while the overall score in Geography Field Project and the final examination in Geography Theory are out of 88%

Table 1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Observation	778	2.00	32.00	18.9023	6.29381
Recording	778	3.00	32.00	18.5231	6.27779
Interpretation	778	3.00	30.00	18.3329	6.22557
Geography Field Project Score	778	9.00	92.00	55.8329	18.72397
Geography Theory Final Score	776	14.00	78.00	46.6198	13.63936
Valid N (listwise)	776				

From the table, the mean scores of students in Geography Field Project are 18.9023, 18.5296 and 18.3329 for observation, recording and interpretation respectively an indication that the performance of students in these areas was average. The mean scores indicate that students were better in observation than in recording and interpretation. The high standard deviations show that the scores of students in the three areas of Geography Field Projects are heterogeneous.

In the same vein, students obtained an overall mean score of 55.8329 percent in Geography Field Project and a mean score of 57.2249 in the final examination. These shows average performances and students' scores were also found to be heterogeneous.

Research Question 2

To what extent do scores in Geography Field Project in terms of observation, recording and interpretation predict Students' performance in Geography Theory?

Tables 2a and 2b below show the regression analysis for the effect of Geography Field Project in terms of Observation, Recording and Interpretation and the Geography Theory final Examination Score.

Table 2a: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.892[a]	.796	**.796**	6.15867	.796	3027.155	1	774	.000
2	.893[b]	.797	**.797**	6.14727	.001	3.874	1	773	.049

a. Predictors: (Constant), Interpretation
b. Predictors: (Constant), Interpretation, Observation
c. Dependent Variable: Geography Theory Final Score

Table 2a above shows the model summary. From the table, Interpretation and Observation accounted for 79.7% variance in students' score in Geography Theory final Examination. Interpretation accounted for 79.6 % while Observation accounted for 0.1%. The F change of 3027.15 and 3.874 for Interpretation and Observation respectively were found to be significant. This is an indication that the results of the regression analysis are true.

Table 2b: Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	10.803	.687		15.714	.000
	Interpretation	1.953	.036	.892	55.020	.000
2	(Constant)	10.541	.699		15.079	.000
	Interpretation	**1.528**	.219	.698	6.970	.000
	Observation	**.427**	.217	.197	1.968	.049

a. Dependent Variable: Geography Theory Final Score

From table 2b above, the positive beta values of 1.528 and .427 for interpretation and Observation respectively shows that the more students are able to interpret and the more students are able to observe the better is their performance in Geography Theory.

Research Question 3

To what extent do the scores in Geography Field Project predict students' performance in Geography Theory?

Table 3a and table 3b show the regression analysis for the effect of Geography Field Project scores on students' Final Score in Geography Theory final Examination.

Table 3a: Model Summary

	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.893[a]	.797	**.796**	6.15513	.797	3031.535	1	774	.000

a. Predictors: (Constant), Geography Field Project Score
b. Dependent Variable: Geography Theory Final Score

From table 3a, Geography Field Project score accounted for 79.6% variance in students' Geography Theory final Examination Score. The F change was found to be significant, an indication that the more students perform in Geography Field Project, the better is their performance in Geography Theory final Examinations.

Table 3b

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	10.344	.695		14.886	.000
	Geography Field Project Score	**.650**	.012	.893	55.059	.000

a. Dependent Variable: Geography Theory Final Score

From table 3b above, the positive beta value of .650 shows that the better the performance of students in Geography Field Project, the better will be their performance in their Geography Theory final Examination.

Research Question 4

In which year, 2009, 2010 and 2011, was there better performance in Final Geography Examination?

Table 4a and table 4b show the analysis of variance and multiple comparisons for the performance of students based on year of examination.

Table 4a: ANOVA

Final					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	713.229	2	356.615	2.105	.123
Within Groups	131288.407	775	169.404		
Total	132001.636	777			

The ANOVA table (Table 4a) shows that the F change of 2.105 was not significant an indication that there is no significant difference in the performance of students based on year of examination. Table 4b below shows the multiple comparisons.

Table 4b: Multiple Comparisons

(I) year	(J) year	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
2009	2010	1.69676	1.14264	.414	-1.0446	4.4382
	2011	2.24889	1.14264	.148	-.4925	4.9903
2010	2009	-1.69676	1.14264	.414	-4.4382	1.0446
	2011	.55212	1.14374	1.000	-2.1919	3.2962
2011	2009	-2.24889	1.14264	.148	-4.9903	.4925
	2010	-.55212	1.14374	1.000	-3.2962	2.1919

From the table above, the mean difference indicated that students performed better in year 2009 than in 2010 and 2011. In the same vein, the performance of students in 2010 was better than that of 2011. This indicates that there was a decline in performance from 2009 to 2011. This decline may be as a result of other factors other than those considered in this research.

Findings

The following were the findings of the study:

1. Students' performance in Geography Field Project and in Geography Theory final Examinations was found to be average.
2. Geography Field Project in terms of Interpretation and Observation accounted for 79.7% variance in students' performance in Geography Examination, Interpretation accounted for 79.6% while Observation accounted for 0.1%. The positive beta value shows that the more students were able to interpret and carry out observations; the better was their performance in Geography Theory Final Examinations.
3. The overall mean score in Geography Field Project accounted for 79.7% variance in performance in Geography Final Examination. The positive beta value also indicated that the more students performed in Geography

Field Project, the better is their performance in Geography Theory Final Examinations.

4. There is no significant difference in the performance of students in Geography Final Examination Scores according to year of examination. However, the performance of students in 2009 was better than their performance in 2010 and 2011. It was also observed that there was a continuous decline in performance of students from 2009 through 2011.

Conclusion

From the findings of the study, it was evident that performance of students in both Geography Field Project and Geography Theory final Examination was average. It was evident that if students were able to interpret and carry out observations, their performance in Geography Theory final Examination would improve. It was seen that Geography Field Project was a predictor of performance in the Geography Theory final Examination and that there was a general decline in performance in Geography Final Theory Examination Results since the inclusion of Geography Field Project in the Geography Curriculum. The decline may be as a result of other factors other than those considered in this research. Based on the findings it was recommended that the teaching of Geography Field Project be properly monitored in order to enhance the performance of students in Geography.

References:

Awoniyi, D. T. (2010). Entry Criteria as Predictor of Academic Success in the Faculty of Business Undergraduate Programmes: A case of Solusi University. Master of Education in Educational Management Thesis, Faculty of Education, Solusi University, Zimbabwe.

Alemila, (1986). The study of the relationship of the performance of students in Mock and WASE Examination results in Chemistry (1986-1988). Project, Faculty of Education, University of Ilorin.

American Education Research Association, (1999). Standards for educational and psychological testing. Washington, DC: American Educational Research Association

Falaye, B.A & Afolabi, E.R.I. (1987). Predictive Validity of Osun State Junior Secondary Certificate Examination. *Electronic Journal of Research in Education Psychology*. 53 (1), 131-144

Lambert,D., and Balderstone. D. (2000). *Learning to teach Geography in secondary school: A companion to school experience.* London and New York: Routledge Falmer.

Manda, H.P., Mc Given. & Silondwa, G. (2002). *A guide to Field work in Geography for High School.* Lusaka: Maiden Publishing House.

Namafe, C.M. (1986). *Environmental education: A comparative study of modern and Traditional systems in Zambia.* Lusaka: New Horizon Printer

Ntalasha, L. S. et al (2004). High School Geography Textbook of Zambia and the Sub-Region: 10 - 12 Pupils. Online e-book retrieved from http://www.amazon.com/SCHOOL-GEOGRAPHY-TEXTBOOK-ZAMBIA-SUB-REGION/dp/9982130579

Ojeleye, O. & Ebeh, C. (2002). An investigation of a decade of correlation study between the entry qualification grades and NCE final Examination. *The Nigerian Teachers Today*. 10 (1), 88 – 95)

Omirin, M.S. & Ale, V.M. (2008). Predictive Validity of English and Mathematics Mock Examination results of Senior Secondary School students' performance In WASE in Ekiti State, Nigeria. Pakistan Journal of Social Sciences. 5 (2) 139- 141.

Lambart, D & Balderstone, D. (2000). *Learning to Teach Geography in the Secondary School: A Companion to School Experience.* New York: Routledge Flamer.