The predictive validity of common entrance examination and students’ academic performance into Secondary Schools in Bamenda III Subdivision

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ABSTRACT

This study set out to ascertain the extent to which the grade scored in Common Entrance (CE) predicts students’ Academic performance into Secondary Schools (especially Form One) in Bamenda III Subdivision. The sample used for this study was 190 Form One (1) students from Two (2) Government Secondary Schools, One (1) private school and One (1) mission Secondary School in Bamenda III subdivision. Data collection was done through personal administration of questionnaires to students. The data was collected from selected Secondary Schools and from the Regional Delegation of Basic Education. The statistical methods used were descriptive and inferential statistics. The hypotheses were tested at α0.05 level of significance. The Pearson Product Moment Correlation and SPSS version 2.0 were used to analyse data. Findings showed that there was a weak negative correlation coefficient (-0.009) between total CE score and Term One (1) score in English Language with an alpha value of 0.907 which is non-significant (hypothesis 1). Findings on hypothesis 2 showed that there was a weak correlation coefficient (-0.066) between CE English Language score and Term One (1) score in English Language with an alpha value of 0.365 which is non-significant. Also the findings on hypothesis 3 showed that there was a weak correlation coefficient (0.059) between CE Mathematics score and Term One (1) score in Mathematics with an alpha value of 0.419 which is non-significant. This study therefore concludes that CE does not significantly predict students’ academic performance into Secondary schools. The study recommends that, CE results to an extent should not be used as the only criteria for selection and placement of students in Secondary Schools in Cameroon.

Keywords: Predictive validity, academic performance, Common Entrance

INTRODUCTION

The desire to admit students who will succeed academically in higher learning institutions has been a major concern of the ministries of education and institutions of learning across the world. Although the admission procedures may vary from one country to another, academic variables such as High School Grades, Scholastic Aptitude Test (SAT), College Admission Tests, Institute Based Entrance Exams/Tests are usually considered. Non-academic variables like evidence letters of extra-curricular activities, and recommendation letters are either independently or jointly used (Nobel and Sawyer, 2002). These variables are employed with the belief that they have certain stimulus to predict future college students’ academic performance. In this regard, Cameroon has its own experience of applying admission procedures to admit students at Secondary and University levels.

Cameroon has adopted two main official languages, French and English, as well as two different education systems (Anglophone educational system and the Francophone educational system) The CE and FSLC are the Entrance Exams for secondary schools while GCE Advanced Level for the Anglophones and the Baccalaureate for the Francophones are the entrance exams for the universities in Cameroon. The preparation of the CE begins with teachers setting test items on the subject assigned to them. All teachers set the test items ensuring that the following three aspects or criteria are taken into consideration: task, stimulus and outcome. At the level of the zones, all the teachers come together and moderate the test items. The Inspectorate forwards the moderated copy for each subject to the Divisional Delegation for moderation before it is sent to the Regional Delegation of Basic Education. From the Regional Delegation, the test items
are administered at the various examination centres after which selected markers mark, grade, compile the results and published the results of successful candidates.

The academic performance of students into Secondary schools especially in Form One (1) can be influenced by several factors like previous performance in Common Entrance examination, poor foundation, fear, low self-esteem, improper study habits, poor reading skills, maturity level, financial situation in school, gender, students motivation, teacher’s qualification, the type of school attended. College Entrance Assessment is an assessment designed to measure a student’s readiness for college academic success. It includes written entrance exam, interview, hand writing test. The term ‘academic performance’ has been described as the scholastic standing of a student at a given moment (Adeyemi, 2008). The scholastic standing could be explained by the grades obtained in a course or group of courses (Daniel and Schouten, 1970). Predicting student's academic performance is critical for educational institutions because strategic programs can be planned in improving or monitoring student's performance during their period of study in the institution (Zaidah and Daliela, 2007). Secondary schools in Cameroon and in Bamenda III Sub-Division in particular have some basic requirements for admission into Form One (1) though there are some variations from one school to another. In many schools, the common criteria for admission depend on high academic achievement.

Hayamathy, et al (2018) defines entrance examination as an examination that many educational institutions use to select students for admission. Public examination bodies responsible for the award of certificates and placement of students in the Colleges have been facing a lot of criticisms due to the poor output in Common Entrance, cases of carryover of many courses, outright dropout or failure. Several professionals and researchers in education have argued that the glorious days of high academic performance and enviable achievement among Common Entrance pupils have reached an alarming point and called for education summit to rectify the situation.

LITERATURE REVIEW

Reynolds (1998) defines validity as the appropriateness and accuracy of the interpretation of performance on a test, such performance usually expressed as a test score. Validity is the hallmark of quality as far as testing is concern being the single most important criterion for evaluating a test (Koretz, 2008). According to Messick (1989), validity is “an integrated evaluative judgment of the degree to which empirical evidence and theoretical rationales support the adequacy and appropriateness of interpretations and actions based on test scores or other modes of assessment”. Afolabi (2012) described predictive validity as the degree of correlation between the scores on a test and some other measures that the test is designed to predict. Predictions of examinations are meant to reveal how successful teachers’ instructions have been mastered (Omirin & Ale, 2008). Assessment is the process of gathering data. More specifically, assessment is the ways instructors gather data about their teaching and their students’ learning (Hanna &Dettmer, 2004). Educational evaluation is the systematic process of making value judgment of the educational attainments and possibilities of individuals (Obimba, 1989).

Takele (2017) carried out research aimed at examining the validity strength of College Entrance Assessment (CEA) scores, EGSLCE (Ethiopian General School Leaving Certificate Examination) and High School Average Transcript (HSAT) in predicting college students’ academic success as measured by first year CGPA (Cumulative Grade Point Average). The results indicated that 38.5% of the variance in college academic performance as measured by first year CGPA is accounted for by the combined predictor variables (CEA, EGSLCE and HSAT). Implying these three predictor variables contribute 38.5% in predicting college academic achievement. F-test result also indicated that the contribution of these predictor variables in predicting first year college CGPA was found statistically significant F (3,712) =148.689, p<0.05. Of these, CEA scores where final admission decision so far merely relied on accounted 4.9% while EGSLCE and HSAT accounted 3.2% and 30.4%, respectively. Indicating that, HSAT took the largest share of contribution to predict first year CGPA. In the same token, it was found that HSAT has the largest regression coefficient or ‘β weight’ (.510) as compared to CEA (.140) and EGSLCE (0.099). All these evidence showed that HSAT was found a statistically significant best predictor of college academic performance as measured by first year CGPA. Based on the findings it was recommended that admission guide lines needs to be revised and mere reliance on CEA score during final admission decisions need to be terminated. And EGSLCE and HSAT have to be used along with CEA score during final admission decision. When combined predictor variables were considered during the final admission decision, maximum weight needs to be placed for HSAT.
Clayton.(2012) carried out a research on “Do High-Stakes Placement Exams Predict College Success” which was aimed at investigating whether placement exams predicts students success in Mathematics than English Language and who is likely to do well in college- level coursework than others. The results of these findings showed that: Firstly, placement test scores have much more predictive power in Mathematics than in English. Mathematics scores alone explain about 13% of the variation in first college-level Mathematics course grades, while reading/writing scores explain less than 2% of the variation in first college-level English grades. Using placement scores in Maths generates a substantial reduction in severe placement errors and a substantial increase in success rates among those placed directly into college-level. But in English, using placement scores actually increases the number of severe errors and generates only a modest increase in the success rate of those placed directly into college-level. Secondly, placement test scores are better at predicting who is likely to do well in the college-level course than predicting who is likely to fail. For example, placement scores predict 12% of the variation in who gets a B or higher in the college level math course, but only 4% of the variation in who passes versus fails (the corresponding statistics in English were 2% and 0.4%, respectively). Thirdly, the incremental validity of placement tests relative to high school background predictors of success is weak, even in Maths. Adding test scores to a model using high school GPA/units to predict college-level grades increases the proportion of variation explained by about 6% points in Maths (to 18% from 12%) and less than 2% points in English (to 7% from 5.5%).

**METHODOLOGY**

The study was descriptive survey and was made up of 190 Form One (1) students from some selected Secondary schools in Bamenda III of North West Region. The probability (simple random sampling) and non-probability (purposive or judgmental sampling) sampling techniques were used in this study. The purposive sampling technique was used to select the Secondary Schools for the study where there is a good number of Form One (1) students (those who wrote CE into Secondary Schools for the academic year 2018/2019). Simple random sampling technique was used to select the students from the population ensuring that each member of the population has an equal chance of being selected. The simple random sampling minimizes the chances of sampling biases, reduces the chances of systematic errors and the sample is a good representation of the population because inferences drawn from the sample were generalized to the population. The instrument used was a questionnaire for students. It consisted of two sections: section A and B. The reliability of the questionnaire was ensured using the split half method in which the questions were divided into two halves to about 25 students. The two halves were shared into even and odd numbers. Each subject score on the two halves were computed and then correlated. The Spearman Brown Prophecy formula was then used to get the actual reliability coefficient.

\[ r = \frac{2}{1 + \frac{r^2_{xx}}{r^2_{xx}}} \]

where \( r^1_{xx} \) = correlation between two halves

\( r^2_{xx} \) = split half reliability coefficient

The split half reliability coefficient had a value of r=0.8 implying there is a high internal consistency amongst the questionnaire measuring the psychological constructs. The independent variable was CE and the dependent variable was Form One (1) results. Data was collected through personal administration of the questionnaire to the students. Firstly, the researcher after personal introduction guided the Form One students of the schools sampled on how to answer the questionnaire. The respondents were assured of the confidentiality of the exercise. The English Language and Mathematics Form One (1) results for 1st, 2nd and 3rd term of the same students was collected from the teachers in-charge of examinations for the various Secondary schools. The data collected from the questionnaires helped in facilitating the collection of data (CE Results) at the Regional Delegation for Basic Education. The data was analysed using SPSS version 2.0. The Pearson product moment Correlation analysis was used to test the hypothesis and provide answers for the research questions. Data analysis was subjected to both descriptive and inferential statistics.
FINDINGS

Figure 1: Proportion of Female and Male students participants

Figure 1 indicates that out of the 190 students who participated in the study, 120 (63%) of the students were female and 70 (37%) of them were male.

Figure 2: Proportion of students’ participants Grade points scored in Common Entrance

Figure 2 indicates that out of the 190 students, 158 (84%) of the students scored list A, 22 (11%) scored list B and 10 (5%) scored none (that is those who went to Secondary schools without writing CE).

Hypothesis One

H₀₁: The grade scored in Common Entrance does not significantly predict students’ academic performance in Form One (1).

H₁: The grade scored in Common Entrance significantly predicts students’ academic performance in Form One (1).
Table 1: Correlations of grade scored in CE and Students academic performance in Form 1

<table>
<thead>
<tr>
<th>TOTALCE</th>
<th>English language mark term one results</th>
<th>Mathematics term one results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Correlation</td>
<td>1</td>
<td>-.009</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td>.907</td>
</tr>
<tr>
<td>N</td>
<td>190</td>
<td>190</td>
</tr>
<tr>
<td>English language mark term one results</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>-.009</td>
<td>1</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.907</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>190</td>
<td>190</td>
</tr>
<tr>
<td>Mathematics term one results</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>.131</td>
<td>.155*</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.071</td>
<td>.033</td>
</tr>
<tr>
<td>N</td>
<td>190</td>
<td>190</td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).

The findings on Table 1 show a weak negative correlation coefficient (-0.009) between total CE score and Term 1 score in English Language with an alpha value of 0.907 which is non-significant. The findings also show a weak positive coefficient of 0.131 between Total CE score and Term 1 score in English Language with an alpha of 0.071 which is non-significant. This indicates that the Total CE score was not a significant predictor of English Language Term 1 score and also not a significant predictor of Mathematics Term 1 score.

Hypothesis Two

H₂₀: The grade scored in English Language does not significantly predicts students’ academic performance in Form One (1).

H₂₁: The grade scored in English Language significantly predicts students’ academic performance in Form One (1).

The second hypothesis maintained that the CE English Language score did not significantly predicts students’ academic performance in English Language Term 1 in Form 1. To verify this hypothesis CE score was used as the predicting variable while the scorer in Term 1 for English Language were used as the dependent variable respectively.

Table 3: Correlations of Grade scored in CE English Language and English language scores in Form 1

<table>
<thead>
<tr>
<th>Common Entrance English Language</th>
<th>English language mark term one results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Correlation</td>
<td>1</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>190</td>
</tr>
<tr>
<td>English language mark term one results</td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>-.066</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.365</td>
</tr>
<tr>
<td>N</td>
<td>190</td>
</tr>
</tbody>
</table>

The findings on table 3 show a weak negative correlation coefficient (-0.066) between CE English Language score and Term 1 score in English Language with an alpha value of 0.365 which is non-significant. This indicates that the CE English Language score was not a significant predictor of English Language Term 1 score.

Hypothesis Three

H₃₀: The grade scored in Mathematics does not significantly predicts students’ academic performance in Form One (1).

H₃₁: The grade scored in Mathematics significantly predicts students’ academic performance in Form One (1).

The third hypothesis maintained that the CE Mathematics score did not significantly predicts students’ academic performance in Mathematics Term 1 in Form 1.
Table 4: Correlations of Grade scored in CE Mathematics and Mathematics scores in Form 1

<table>
<thead>
<tr>
<th>Common Entrance Mathematics</th>
<th>Common Entrance Mathematics</th>
<th>Mathematics term one results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Correlation</td>
<td>1</td>
<td>.059</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.419</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>190</td>
<td>190</td>
</tr>
</tbody>
</table>

The findings on table 4 show a weak negative correlation coefficient (0.059) between CE Mathematics score and Term 1 score in Mathematics with an alpha value of 0.419 which is non-significant. This indicates that the CE Mathematics score was not a significant predictor of Mathematics Term 1 score.

**H₄**: The grade scored in English language and Mathematics does not significantly motivate students to study in Form One (1).

**H₄**: The grade scored in English language and Mathematics significantly motivate students to study in Form One (1).

The fourth hypothesis maintained that the total score in Common Entrance did not significantly motivate students to study in Form One.

Table 5: Correlations of grade scored in English language and Mathematics as a motivator for students to study in Form One.

<table>
<thead>
<tr>
<th>Total_CE</th>
<th>Total_Mot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Correlation</td>
<td>1</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.949</td>
</tr>
<tr>
<td>N</td>
<td>190</td>
</tr>
</tbody>
</table>

The findings on table 5 show a weak negative correlation coefficient (-0.005) between total English language and Mathematics score and Total motivation, with an alpha value of 0.949 which is non-significant. The results also show a weak positive coefficient of 0.131 between Total CE score and Term 1 score in English Language with an alpha of 0.071 which is non-significant. This indicates that the Total English language and Mathematics score was not a significant motivator for students to study in Form 1.

**DISCUSSIONS**

The grade scored in Common Entrance (CE) and Academic performance in English and Mathematics in Form 1

From the analysis carried out using Pearson Product moment correlation through SPSS version 2.0, the results shows that CE does not predict students’ academic performance in the first term of Form 1 in some Secondary schools under the present study. It does not predicts Student Academic performance in English Language term one in Form 1 with F(1,188) = -0.066, p = 0.365 as seen in hypothesis 2, Mathematics Term one in Form 1 with F(1,188)= 0.059, p = 0.419 as seen in hypothesis 3. The value of p = 0.369 means that English Language Term One(1) is insignificant at the 0.05 level of significance. Also, the p= 0.419 means that Mathematics Term One is insignificant at the 0.05 level of significance. This therefore means that English language and Mathematics are not significant predictors of Student Academic performance in the First Term of Form1 in some Secondary schools in Bamenda III subdivision. It implies that English and Mathematics are not very good preparatory base for students’ academic perfor- mance in Form one. It therefore implies that planning, setting, organization, administration, measurement and evaluation practices together with the motivation of students inclusive could be modified. In a nutshell, the use of grade scores in English and Mathematics as a criterion for selection into Form 1 in some Secondary schools like the case of Bamenda III subdivision could not be considered valid and reliable.

The results indicate that the Common Entrance Examinations in English Language and Mathematics used as a criterion to admit students into Form 1, does not predict students’ academic performance in Form 1. The findings of this research work can be attributed to classical test theory in that the observed score (O) which is
made up of the True score (T) and the error score (E) that is $O = T + E$, and CTT which describes how error score influences a pupil observed score could end up having an error in the scores of the pupil in CE. According to Lord (1980), these random measurement errors can result from several factors such as guessing, fatigue or stress. Other sources of such measurement errors could be the administration of the exams (CE, Form 1 exams), scoring of the exams, coding errors, construction of the test items like vague items, poor language usage, errors due to teacher characteristics, examination malpractices. Therefore, as a result of the above mentioned sources of measurement errors, a pupil will end up having a good/poor grades in CE and poor grades in Form 1 since the random error measurement can either increase or decrease an individual observed scores (See Hypothesis 2 and 3)

Linking the findings to the CIPP evaluation model, CE results does not predict students’ academic performance in English Language and Mathematics Term 1 in Form 1. This can be attributed to the fact that many education stakeholders in Cameroon focus more on the outcome of education while paying less attention to the context, the input and the process of the educational program. As a result, many teachers hardly cover their syllabuses since their teaching is mostly examination oriented. The findings of this research work are however in contrast with the research work by Omirin and Ale, (2008) that investigated the predictive validity of English and Mathematics Mock Examination Results of Senior Secondary School students’ performance in WASCE in Ekiti-state, Nigeria. The findings showed that mock English and Mathematics helped significantly in predicting the success in academic performance of students in WASCE, thus indicating that English language was a better predictor of success than Mathematics

This order of prediction between these two subjects is not convincing taking into consideration the fact that CE examination which is used for the selection of students into Form 1 is design in a way that English language has a greater proportion of questions followed by Mathematics. Mathematics and English Language are all non-significant with correlation coefficients of 0.059 for Mathematics and -0.066 for English Language. The negative correlation coefficient (-0.066) of English Language indicates that as the score for Variable A (Mathematics) increases across cases, the scores on variable B (English language) decrease precisely at a constant rate. According to Clayton (2012), placement test scores have much more predictive power in Mathematics than in English. Mathematics scores alone explain about 13% of the variation in first college-level Mathematics course grades, while reading/writing scores explain less than 2% of the variation in first college-level English grades. Therefore if the results are to be used for placement and selection into Form One, the grades scored in English Language should be given the highest priority followed by Mathematics.

**CE results and students motivation to study in Form 1**

From the analysis carried out using the Pearson Product Moment correlation analysis through SPSS version 2.0 to determine the extent to which grade scored in CE motivates students to study in Form 1, it was observed that: CE score was not a significant predictor of students’ motivation for students to study in Form 1 $F(1, 188) = -0.05$, $P = 0.949$. This finding is linked to the cognitive load theory in that unguided problem-soliving places a heavy burden on working memory, inhibiting the ability of the learner to transfer the information into their long-term memory. The learner may effectively solve the problem, but because their working memory was overloaded they may not recognize and remember the rule that would allow them to quickly solve the same problem again in the future. If working memory is overloaded, there is a greater risk that the content being taught will not be understood by the learner; will be misinterpreted or confused, will not be effectively encoded in long-term memory, and that learning will be slowed down (Martin, 2016)

**CONCLUSION AND RECOMMENDATIONS**

In conclusion, the findings of the study revealed that the grade scored in CE do not predicts students’ academic performance into Secondary schools especially in Form 1. This is supported by Clayton (2012) who opined that placement test scores have much more predictive power in Maths than in English. Mathematics scores alone explain about 13% of the variation in first college-level maths course grades, while reading/writing scores explain less than 2% of the variation in first college-level English grades. The CIPP model deals with products or outcomes not only at the end but also at different points; at the planning, designing, implementation and assessment of the educational program. The study recommends that the results of pupils at CE should not be the ultimate criteria for admission into Form I in Secondary School. Other factors such as socio-cultural background, gender, motivation, teachers’ qualification, learner needs, type of school attended should be considered.
References