

Predictors of LET Performance as Basis for Admission Policy in Teacher Education Curricular Programs

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Monetta C. Valencia (PhD)

College of Education, Bicol State College of Applied Sciences and
Technology, Philippines
monetvalencia@yahoo.com

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Abstract – *The College of Education (COE) graduates' success in the Licensure Examination for Teachers (LET) is crucial to the school performance as required from SUC Levelling, granting of PBB, ISO, and accreditation. This study aims to develop a criterion-referenced admission policy for a state college based on the predictors of LET performance. Quantitative descriptive research method was utilized in the study using documentary analyses. Based on the records of the 2017 Teacher Education Graduates, the possible predictors are HS Grade (HS GRADE), IQ, and other verbal, numerical, psychological, and logical reasoning tests. The Multiple Regression Analysis showed that HS Grade, IQ, Spelling, and Mechanical Reasoning are the significant predictors of LET Performance. The combination of the different values of HS Grade, IQ, S, and MR, when substituted into the multiple regression equation should yield a minimum predicted LET Rating of 75, for freshmen applicants to be granted admission to the COE. This criterion-referenced admission policy for the Teacher Education freshmen applicants would ensure a high performance in the LET Board Examination and would consequently improve the performance of BISCAT as an SUC.*

Keywords: *High School Grade, IQ, Spelling, Mechanical Reasoning*

INTRODUCTION

Education is anchored to the quality of learning that students receive from their teachers. This is the reason why many countries put much effort not only in the assessment of student learning but also in the assessment for learning. Studies included several factors that could contribute to the effectiveness of a teachers.

In a study by Andrew, et. al., he mentioned that the teacher's verbal ability affects the performance of the students. The study showed that low verbal scores of the teachers is one of the reasons of poor student learning [1]. It was also noted that the teacher's previous education is a contributing factor for the significant learning happening inside the classroom as studied using the scores in the Scholastic Aptitude Test (SAT) and American College Test (ACT) [2].

In Asia, with the ASEAN vision and globalization in mind, Singapore holds education as a primary weapon to a graduate's employability and success. To support this, they provide rigid learning styles and measures in the academe [3].

To cope with global education standards, strict measures are initiated in the conduct and monitoring of the teachers' readiness in facing the real world.

The practice of the teaching profession in the Philippines needs the passage of the Licensure Examination for Teachers (LET) as mandated in Republic Act No. 7836 or better known as the "Philippine Teachers Professionalization Act of 1994." This is an act intended to improve the supervision and oversight of teaching practices in the Philippines and to provide the LET and for other purposes.

The country recognizes the essential role of teachers across a responsible and literate citizenry in nation-building and development. To this end, the country shall ensure and encourage quality education through adequate supervision and regulation of the inspection of licenses and the professionalization of teaching practice.

The implementation of K-12 increased the demand for quality teachers. This highlights the importance of the LET as a means of providing teachers who are properly groomed to undertake the various important roles they will have inside the classroom [4].

Such an assessment tests the qualifications of a teacher who, in the practice of the teaching profession, is considered to have gained the expertise, experiences, and attitude required.

The goal of this higher education institution under review is to produce high-quality graduates who, through outstanding applied science and technology education, are highly competitive and socially sensitive to the needs of the community through teaching, research, extension and entrepreneurial enterprises.

Various studies on determining factors that affect LET performance have been undertaken. These studies attempted to investigate the factors that contribute to the success of the graduates in their LET examination. The study made by Chan-Rabanal focused on the academic achievement of the teachers and its relation to their LET performance. The result showed a significant relation between the two [5].

This study further dissects the academic achievement to these possible factors: High School Grades, IQ, Differential Aptitude Test (DAT), and DAT components across programs.

The IQ test could be a contributing factor. The predictors of licensure test success of nursing graduates were determined by a report. Results showed that there are only two significant factors in the College Entrance Examination (CEE) that are significantly associated with the performance of the LET. These are college grade point average and pre-board exam performance. [6].

The study underscored that the students' academic performance in their baccalaureate program and their performance in the pre-board examination are significant bases in determining the success and failure of students' licensure examination performance. This was highlighted in the study made by Goldhaber where teachers whose baccalaureate program centers on the teaching profession are likely to have mastery of the methodologies required for every learning environment [2].

Fondora revealed the impact of the college entrance exam score on the LET results and this prompted her to propose the CEE as a basis for admission in the College of Education [7].

Another study traced the graduates' College Admission Test (Otis-Lennon School Ability Test), Grade Point Average in General Education, Professional Education and Specialization / Content Areas against their actual performance in the LET [8]. Of the variables considered, only the GPA in General

and Professional Education were found significantly influential to the LET performance of the graduates.

In particular, the College of Education (COE) strives to establish licensed graduates conforming to the professional and ethical expectations of the students and the community.

Moreover, LET performance is an important factor that could affect SUC Leveling and the grant of PBB. Hence, it is important that we make sure that our graduates will perform well in the board exams. One way to do this is to make sure that the incoming freshmen have the potentials and abilities necessary to hurdle such challenges.

Therefore, this research aims to determine the predictors of the LET performance and investigate its association with HS achievement and the College Entrance Test. If found significant, then a criterion may be set that can screen applicants prior to their admission to COE. This criterion wants to assure that only those freshmen applicants who will probably pass the LET Exam shall be granted admission to the College of Education.

The LET passers are expected to be well-prepared to be able to contribute to the quality education that the country is aiming for.

A study investigated the relationship of college entrance exam and LET performance of BSEd Science students and found out that academic performance including the college entrance exam has significant relationship with the LET performance [9].

In this study, the predictors and result of the LET will be based on the stimulus-response learning theory of Edward Thorndike particularly the Law of Effect which states that "those behavioral responses (R) that were most closely followed by a satisfactory result were most likely to become established patterns and to reoccur in response to the same stimulus (S)" [4].

OBJECTIVES OF THE STUDY

This study aims to develop a criterion-referenced admission policy for the Teacher Education based on the predictors of LET performance. Specifically, it aims to compare the LET Performance, HS Grades, IQ, Differential Aptitude Test (DAT) and DAT components across programs; determine if there is a significant association between these predictors and the LET Performance; develop a multiple regression model that could predict the LET Performance based on the HS Grades, IQ, and DAT Components; and recommend a criterion-referenced admission policy for

applicants to the Teacher Education curricular programs.

METHODS

This is a quantitative research in which data on HS Average Grades, College Entrance Test Results and LET Ratings were retrieved from the records of the 2017 graduates of BISCASST College of Education.

Subjects

This research started on the list of 2017 graduates of the College of Education. Their names were matched with the September 2017 LET Takers.

Data Gathering Procedure

This research conducted data mining, where it involves the process of sorting through large data sets to identify patterns and establish relationships to solve problems through data analysis. Data mining tools allow organizations to predict future trends.

The first step on data gathering was to get a list of the 2017 College of Education graduates. The second step was to match their names with the September 2017 LET Results. The LET results were requested from the Professional Regulation Commission (PRC). The third step was to retrieve their HS Average Grade and College Entrance Test Result from the Guidance and Testing Center of BISCASST. The College Entrance Test consists of two parts: the IQ part and the DAT part.

The Guidance and Testing Center administers the College Entrance Test for incoming freshmen. This test consists of two major parts: the Otis-Lennon School Ability Test (IQ) and the Differential Aptitude Test (DAT). The DAT has the following components with its respective weight:

1. VR – Verbal Reasoning	20%
2. NA – Numerical Ability	15%
3. AR – Abstract Reasoning	10%
4. CS & A – Clerical Speed and Accuracy	15%
5. MR – Mechanical Reasoning	5%
6. SR – Space Relations	5%
7. S – Spelling	15%
8. LU – Language Usage	15%
Total	100%

Finally, the college admission score is computed as follows: 85% of Average of IQ and DAT + 15% of HS Grades

After all the final admission scores are computed, they are ranked by program. The top 50 in

each program are then granted admission. This system follows a norm-referenced selection procedure, in which there is no standard. The student’s chance of being admitted depends on the performance of his co-examinees. As a result, there is a great possibility that in his later years in the College, the student will not be able to come up with the standards and requirements of the program. Since all the above-mentioned scores are components of the college admission score, then they were all considered as possible predictors of the LET Performance.

Data Analysis

Since the possible predictors are of interval data type, the mean and standard deviation were utilized to compare the performance of the graduates by program. To determine the correlation between each possible predictor and the LET Rating, scatterplots were analyzed and consequently the Pearson correlation coefficients were respectively computed. All correlation coefficients shall be tested using 0.05 significant level. Multiple regression was run to come up with a multiple regression equation that would predict LET Rating based on the significant predictors. And lastly, a simple linear regression was employed to predict the minimum value of each significant predictor that would yield a passing LET Rating. This set of minimum values of the predictors served as the criteria for admission.

RESULTS AND DISCUSSION

The data gathered in this study were used to determine whether the level of performance in the licensure examination can be predicted with factors prior to their admission to college.

Level of Performance in the LET Examination, IQ, DAT, and HS Grades

Table 1 shows the average of the dependent variable (LET Rating) and the independent variables (HS Grades, IQ, and DAT) by program. It also shows the overall average of the indicators across programs. Since DAT is composed of scores under VR, NA, AR, CS & A, MR, SR, S, and LU, their corresponding averages were also shown.

Looking closely at Table 1, it can be noticed that the BSED Math had the highest average (86) in the LET Rating, followed by the BSED Phy Sci (81) and the BSED Eng (81). The BTTE GFDT (70) and the BTTE FSM (69) have the lowest average in the LET Rating.

Table 1. Average LET rating

Variables	Program							
	Overall	BSED Math	BSED Phy Sci	BSED Eng	BSED TLE	BEED	BTTE FSM	BTTE GFDT
LET Rating	76	86	81	81	73	76	69	70
HS Grades	85	88	89	86	83	85	83	84
IQ	76	81	82	80	76	76	72	73
DAT	78	82	79	81	77	78	72	73
VR	67	71	63	75	65	66	63	62
NA	84	92	90	83	83	83	80	81
AR	83	92	89	84	78	85	76	82
CS & A	85	85	88	88	91	86	75	74
MR	73	79	76	76	73	74	66	71
SR	72	76	75	74	71	72	67	72
S	90	94	90	95	87	91	84	84
LU	66	69	67	71	65	66	64	64

For the HS Grades, the BSED Phy Sci has the highest average (89), followed by the BSED Math (88). The BSED TLE (83), BTTE FSM (83), and the BTTE GFDT (84) have the lowest average in HS Grades.

With regards to IQ, the BSED Phy Sci (82) was recorded with the highest average, followed by the BSED Math (81). On the other hand, the BTTE FSM (72) and the BTTE GFDT (73) had the lowest average in IQ.

For the DAT, the BSED Math (82) was recorded with the highest average, followed by the BSED Eng (81). Again, the BTTE FSM (72) and the BTTE GFDT (73) had the lowest average.

Looking into the detailed composition of the DAT, it can be observed that the BSED Math recorded the highest average in NA, AR, MR, and SR.

Surprisingly, the BSED TLE got the highest average in CS & A. However, the BTTE FSM and the BTTE GFDT were consistently recorded having the lowest average scores in all components of DAT which are the VR, NA, AR, CS & A, MR, SR, S, and LU.

The BSED English did well in the DAT particularly in the VR, S, and LU, having recorded with the highest average.

Correlation Between the LET Board Exam Performance and the Predictors

Before going into correlation analysis, scatterplots must be inspected first. Scatter plots are used to show the relationship between two variables. Scatter plots are sometimes called correlation plots because they show how two variables are correlated.

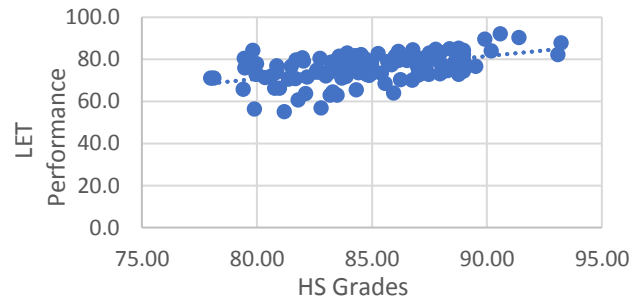


Figure 1. Scatterplot of LET performance and HS grades.

Figure 1 shows the relationship between LET Performance and HS Grades; it seems that LET Performance increases as HS Grades increases. The general trend is strong, and we can see that LET Performance is correlated with HS Grades.

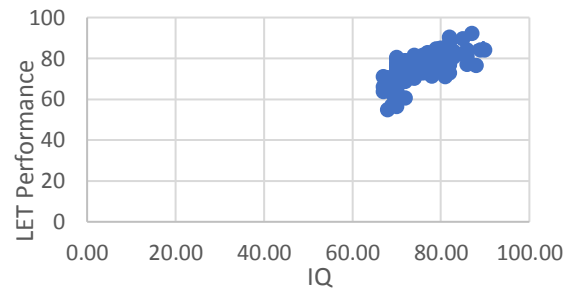


Figure 2. Scatterplot of LET performance and IQ.

Figure 2 shows the scatterplot of LET Performance and IQ. The trend line is rising to the right which indicates a positive correlation between LET Performance and IQ. Higher IQ would generally result to higher performance in the LET.

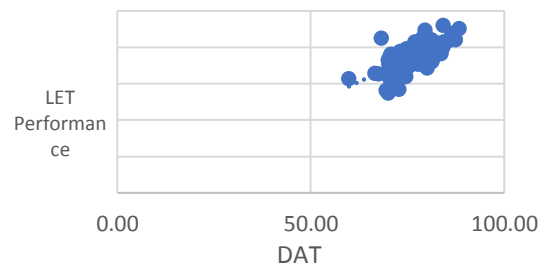


Figure 3. Scatterplot of LET performance and DAT

Figure 3 shows a scatterplot of the LET Performance and DAT. The points tend to rise to the

right which is better shown by its trend line. It can be observed that as DAT increases, the performance in the LET also increases. This behavior in the scatterplot indicates a linear association between the two variables which further strengthens the justification for correlation analysis.

Table 2. Result of Pearson correlation coefficients between the LET rating and the possible predictors.

Predictors	r	Significance	Interpretation
HS GRADES	0.51	significant	moderate correlation
IQ	0.68	significant	moderate correlation
VR	0.33	significant	low correlation
NA	0.52	significant	moderate correlation
AR	0.56	significant	moderate correlation
CS & A	0.31	significant	low correlation
MR	0.54	significant	moderate correlation
SR	0.37	significant	low correlation
S	0.58	significant	moderate correlation
LU	0.44	significant	moderate correlation

Table 2 shows the Pearson Correlation Coefficient between the LET Rating and the predictors (HS Grades, IQ, and DAT). It also shows the correlation coefficients between the LET Rating and the components of DAT. The third column shows the p-values, which are all 0 or less than the r. Hence, all correlation coefficients are significant at $\alpha=0.05$ and $df=119$. On the other hand, all the computed r values are greater than the tabular value of 0.174, which further confirms that all the Pearson correlation coefficients are significant. Therefore, there is a significant linear relationship between the LET Rating and the possible predictors.

The strength of the association is shown in the fifth column. The IQ showed the highest correlation coefficient of 0.68. HS Grades only showed an r of 0.51. Both predictors exhibited moderate correlation with LET Rating.

For the components of DAT, S showed the highest r of 0.58, followed by AR (0.56), MR (0.54), NA (0.52), and LU (0.44). All five components of DAT were found to be moderately correlated with the LET Rating. On the other hand, SR (0.37), VR (0.33), and CS & A (0.31) only showed low correlation with the LET Rating.

How Well the Model Fits

Through the SPSS Statistical Software, the Stepwise Regression Procedure was run to determine the multiple regression model that would predict LET Performance. Table 3 below shows the R, R², adjusted R², and the standard error of the estimate, which further shows how well the regression model fits the data:

Table 3. The R, R², adjusted R², and the standard error of the estimate

R	R ²	Adjusted R ²	Std. Error of the Estimate	Durbin-Watson
.793 ^d	.628	.616	4.1514	2.005

The "R" column represents the value of R, the *multiple correlation coefficient* R can be one measure of the quality of the prediction of the dependent variable; in this case, LET Rating. A value of 0.793 indicates a good level of prediction. The "R Square" column represents the R² value (also called the coefficient of determination), which is the proportion of variance in the dependent variable that can be explained by the independent variables (technically, it is the proportion of variation accounted for by the regression model above and beyond the mean model).

We can see from our value of 0.628 that HS Grade, IQ, S, and MR explain 62.8% of the variability of the dependent variable, LET Rating. These four predictors accounted to 63% of the variation in the LET Rating. This implies that around 37% of the LET Rating may be attributed to other factors such as teachers' competence, curriculum, college academic performance, quality of their LET Review and the like.

Statistical Significance

The F-ratio in the ANOVA table (see below) tests whether the overall regression model is a good fit for the data. Table 4 shows that the independent variables statistically significantly predict the dependent variable, $F(4, 116) = 49.059, p < .0005$ (i.e., the regression model is a good fit of the data).

Table 4. ANOVA.

	df	F	Sig.
Regression	4	49.059	.000 ^e
Residual	116		
Total	120		

Estimated Model Coefficients

The general form of the equation to predict LET Rating from HS Grade, IQ, S, and MR is:

$$\text{Predicted LET Performance} = - 45.484 + 0.534(\text{HS Grade}) + 0.463(\text{IQ}) + 0.266(\text{S}) + 0.231(\text{MR})$$

This is obtained from the Coefficients table, as shown below:

Table 5. Coefficients

Independent Variables	Unstandardized Coefficients	
	B	Std. Error
(Constant)	-45.484	10.622
IQ	.463	.098
HS Grade	.534	.133
S	.266	.073
MR	.231	.078

Unstandardized coefficients indicate how much the dependent variable varies with an independent variable when all other independent variables are held constant. For instance, the unstandardized coefficient, B₁, for IQ is equal to 0.463 (see Coefficients table). This means that for each one-point increase in IQ, there is an increase in LET Rating of 0.463.

Statistical Significance of the Independent Variables

The statistical significance of each of the independent variables were tested. This tested whether the unstandardized (or standardized) coefficients are equal to 0 (zero) in the population. If *p* < .05, we can conclude that the coefficients are statistically significantly different to 0 (zero).

It was shown that all independent variable coefficients are statistically significantly different from 0 (zero).

As a summary, a multiple regression was run to predict LET Rating from HS Grade, IQ, S, and MR. These variables statistically significantly predicted LET Rating, *F* (4, 116) = 49.059, *p* < .0005, *R*² = .628. All four variables added statistically significantly to the prediction, *p* < .05.

Criterion-Referenced Admission Policy

Criterion-Referenced is used to measure a student’s performance against a pre-set criterion. The multiple regression analysis showed that HS Grades, IQ, Spelling, and Mechanical Reasoning are the significant predictors of LET Performance. Based on

these results, a Criterion-Referenced admission policy was formulated that uses the four significant predictors as criteria for admission. If the applicant satisfies the criteria, admission is may be granted to the College of Education.

To satisfy the criteria, the applicant should have a Predicted LET Rating of not lower than 75 based on his HS Grade, IQ, S, and MR, as computed using the equation below:

$$\text{Predicted LET Rating} = - 45.484 + 0.534(\text{HS Grade}) + 0.463(\text{IQ}) + 0.266(\text{S}) + 0.231(\text{MR})$$

It does not matter what the values of HS Grade, IQ, S, and MR are. If the combination of their values will yield the minimum predicted LET Rating of 75, the applicant shall be granted admission. If this shall serve as a criterion for admission, then the COE can be assured of a higher LET Performance of its graduates.

CONCLUSION AND RECOMMENDATION

The study arrived at salient findings showing that HS Grade, IQ, Spelling, and Mechanical Reasoning have a great impact on the LET rating of the students. Those whose predicted LET rating are not lower than 75 are expected to most likely finish the program, graduate on time, and most importantly pass the LET as first-takers.

It is clear that these factors are teacher attributes that affect the learning process of the students. The significance of identifying these at the on-set of qualifying future teachers in the college of education will greatly contribute to the higher percentage of LET passers. Likewise, a positive teacher factor will be assured of the students during the learning process.

Although these findings are not absolute solution to increase learning, these can be part of the criteria in the selection of teachers.

It is therefore recommended that the BISCASST Admission Office adapts the criterion-referenced admission policy output of this research as input in their admission requirements to increase the passing performance of the LET takers of this institution. Likewise, to contribute to the SUC Leveling and to the high professional and ethical standards of graduates that it promotes.

To improve this study, it is further recommended that future researchers may expand the data set to include: (1) Graduates of 2019, 2018, 2016, and 2015; (2) other possible predictors such as the GWA of their 12th Grade academic performance; (3) LET Results

from PRC starting with Sept 2015 to Sept 2019, and (4) College Admission Test Results from 2008-2012. An expanded data set will improve the accuracy of the predicted value.

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