



Research Article

Predictive validity of selected measures of BEED graduates for first-time performance in the licensure examination for teachers

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Universities need to have an assessment that will enable their system to predict the success of their graduates on state examinations. This study aimed to determine the predictive validity of selected measures of teacher education for first-time performance on the licensure examination for teachers in the Philippines. A retrospective research design was employed in the study. The results revealed that the linear combination of selected measures is significantly predictive of the success for the first time licensure performance of graduates. However, only the SASE (System Admission and Scholarship Examination) scores were significant when taking into account the individual measures. The findings provide evidence for the valid use of the admission scores to predict the success of the graduates on the licensure examination.

Keywords: Academic performance, licensure examination for teachers (LET), predictive validity, teachers, state examinations, scholarship examination

1. Introduction

The quality assurance has become the buzzword in the world of higher education today. But within the higher education institutions, the teacher education occupies the central stage due to its function of producing teachers in the basic education and building a solid foundation of the system. One of the leading indicators through which quality assurance evaluates teacher education is through the performance of its graduates in the national board examinations.

To improve the credibility of academic institutions and graduates, governments worldwide mandate for degree holders to undergo screenings and pass licensure examinations. For example, West Virginia State Board of Registration for Professional Engineers (2018) stressed that professional licensure protects the public by enforcing standards that restrict practice to qualified individuals who have met specific qualifications in education, work experience, and exams. There is substantial evidence that proves how various admission policies and academic outcomes play a crucial role to help provide valid measures to reliably predict the success of the students on the program and national board examinations. Some of these are predictive validity studies of training examination to board examination in medicine (Althouse, 2008); curricular variables to board examination in nursing (Kleber, 2011); academic performance to board examination in engineering (Forones, 2012); entrance grades to board examination in accountancy (Aquino, 2013); clinical grades to board examination in dentistry (Pornillos & Castro, 2015); interview scores to board examination in pharmacy (Cameron et al., 2017); performance indicators during the final internship to the board examination in physical therapy (Bayliss et.al. 2017); and others mostly in the field of health sciences.

Additionally, Kleber (2011) studied whether background and curricular variables can predict success on the National Council Licensure Examination for Practical Nurses. There were four hundred 411 sampled students from practical nursing programs. With the use of independent

sample t-tests, correlation and Chi-square, the variables showed statistically significant relationships and differences except on gender, mathematics admission exam, and attempts on the exit examination. The same variables, including the curricular variable such prerequisite, foundation, specialty, and advanced nursing courses; and admission in reading, were not predictors in the logistic model. On the contrary, the logistic model indicated that age made a significant contribution of predicting success on the first attempt in the licensure examination.

Similarly, the authors explored several predictors of performance in the board examination in pharmacy (Cameron et al., 2017). They matched the program admissions data of 223 graduates to licensure outcome measures. Multiple linear regression assessed the predictive validity of interviews, entrance exam scores, and grade point average to the board examination performance. Results found out that the multiple mini interviews, designed to measure non-academic attributes including communication, motivation and, problem-solving skills, was the only admissions tool with significant predictive validity for performance on the national pharmacy certification examination. These findings provided the first report on the predictive validity of multiple mini-interviews from a cohort of undergraduates' performance on pharmacy licensure examinations and thereby strengthened the evidence for its use in health professions selection.

Multiple examples of empirical studies show how some are gathering predictive validity evidence (Brown, 2014). Althouse (2008) conducted a study on the predictive validity of the in-training examination to the performance on the general pediatrics certification examination. The sample included in the certifying examination were first-time takers. Regression models analyzed the predictive value of the training examination. Results indicated that the predictive power of the in-training examination in the first training year is minimal. However, the predictive power of the in-training examination increases each year, providing the utmost power in the third year of training. The study suggested that other factors also must be considered when predicting performance on the certification examination.

However, there is a scarcity of studies on the predictive validity of admission tests and various student outcomes in the teacher education programs for the board examination performance especially with implications in admission and retention policies. Other foreign studies in the field of education do not address the focus of the present research on the board examination score as an outcome variable. For example, Campbell et al. (2013) studied how disposition surveys, clinical practice observation ratings, and portfolio assessments predict later teaching performance. Similarly, Goldhaber et al. (2017) tested the validity of teacher performance assessment scores to the employment in the teaching effectiveness.

In the Philippine setting, one local study (Aquino, 2013) offered an interesting result. It investigated the predictive validity of entrance grades to academic achievement and subsequent performance in the board examination for accountancy. Specifically, the variables tested were the entry grades in English and Mathematics and the college entrance test. The research used correlation and multiple regression. Results show that the predicting variables, taken singly or collectively, have no significant relationship with the dependent variables. Hence, the study concluded that entrance scores are not a predictor of subsequent performance of a student in class and the licensure examination.

In another field of study, Pornillos and Castro (2015) evaluated the predictive validity of undergraduate clinical grades of 157 graduates in the dental licensure examination. The results showed that there is a difference between the clinical grades and practical board subjects grades when tested by paired t-test. Stepwise regression analysis further revealed that only one course was the probable predictor of passing the dental licensure examination with the chance of passing the practical licensure examination and the general dental licensure examination.

Considering the field of teacher education, Diaz et al. (2016) examined the Licensure Examination for Teachers (LET) as the predictor of teaching performance of graduates. However, just like the previous studies above in education, this does not address the concern of the present research on specific measures (admission test and student outcomes) during the pre-service

training in the undergraduate level. Hence, this study aimed to determine the predictive validity of selected measures for the teacher examination in the Philippines.

1.1. Study context

Quality control in the Philippine institutions of teacher education is governed in part by the Professional Regulations Commission. Its role is to provide assurance that students who have completed their professional training are prepared to perform within different professions, including teaching. It oversees the development of professional board examinations and administers what is called licensure examination in fields like education (Arcelo, 2003).

The case of the quality assurance in teacher education in the Philippines is partly seen in the trend of the Licensure Examination for Teachers [LET]. The Licensure Examination for Teachers is a board examination intended for individuals pursuing teaching career enacted to strengthen the regulation and supervision of the practice of teaching in the Philippines (Professional Regulation Commission, 2017).

LET was implemented in the Philippines through the enactment of Republic Act 7836 or otherwise known as the "Philippine Teachers Professionalization Act of 1994" on December 16, 1994. The enactment of the law did not mean that the teachers in the Philippines were not "professional." This is a means to strengthen and improve not just the teachers, but also the quality of education and the whole education system in general.

Over the past three years, records of the national passing rates released by the Professional Regulation Commission [PRC], however, indicated an erratic pattern. In 2012, PRC announced that 25,136 out of 50,997 examinees (49.29%) passed the exam. The next year of 2013, the figure went down the hill as a dismal 19,384 out of 62,160 examinees (31.18%) only passed the exam. The trend did not improve much in the following year of 2014 when only 25,301 out of 70,786 examinees (35.74%) passed the exam.

The Bachelor in Elementary Education Department, College of Education, Mindanao State University, General Santos City [MSU GSC] is among the teacher education institutions struggling hard through quality assurance if performance is considered in the Licensure Examination for Teachers. In 2012, the BEEd department obtained a passing rate of 89.34%; in 2013, it recorded a passing rate of 75.91%; and in the year 2014, it earned a passing percentage of 71.14%. While these numbers indicate that the measurement for first-time takers of the program is performing above the national passing rate, it cannot deny the fact that alongside other teacher education institutions, the institution is nowhere in the map of top performing colleges and universities all over the country. Thus, the researchers delve to find out the predictive validity of selected measures for graduates to perform efficiently in licensure examinations.

1.2. Research Questions

This study evaluated the predictive validity of selected measures of teacher education for first-time performance in the licensure examination. The research questions included for this study were:

RQ 1) What is the background of the BEEd graduates relative to their SASE scores, STI grades, GPA and LET performance?

RQ 2) What is the strength of the relationship of SASE scores, STI grades and GPA with LET performance of the BEEd graduates?

RQ 3) Is there a significant difference in the first time LET performance of BEEd graduates based on their SASE scores?

RQ 4) Is there a significant difference in the first time LET performance of BEEd graduates based on their STI grades?

RQ 5) Is there a significant difference in the first time LET performance of BEEd graduates based on their GPA?

RQ 6) Is the linear combination of selected measures predictive of the success for the first time LET performance of BEEd graduates?

1.3. Hypotheses

The researchers tested the following hypothesis:

H1. There is no significant difference in the first time LET performance of BEEd graduates based on their SASE scores.

H2. There is no significant difference in the first time LET performance of students based on their STI performance.

H3. There is no significant difference in the first time LET performance of students based on their GPA.

H4. The combination of selected measures is not predictive of the success for the first time LET performance of students.

2. Conceptual Framework

Predicting the success of the board examinations is crucial for educators. Numerous studies have been conducted to determine the various predictors for success of the graduates in the licensure examinations across fields. Predictors are valuable measures for evaluating the success of the students in board examinations. However, it is understood that performance in any licensure examination depends on various factors related to admission policies and previous student academic outcomes. Bayliss et al. (2017) stated that predictors in the board examination are no longer current, but relevant such as admission information and performance in identified courses. Thus, understanding and studying the validity of some important measures of the students can be supplemental to the success of the program and of the graduates in taking board examinations.

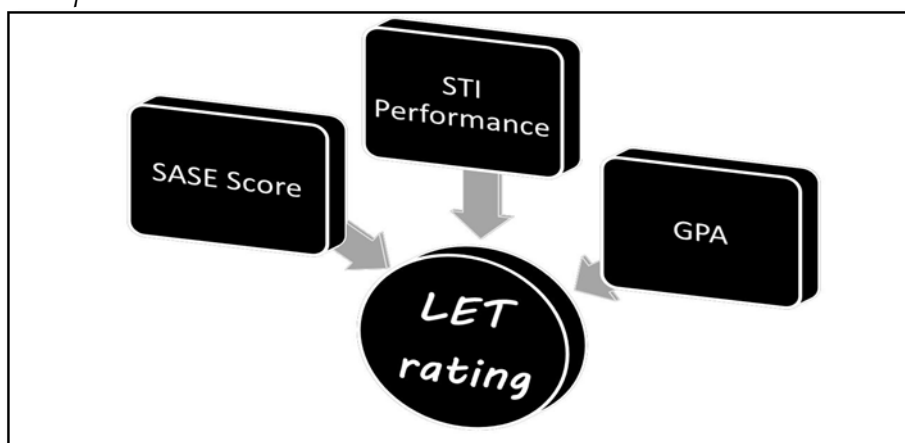
Brown (2014) defined the concept of validity as the extent to which the test measures accurately what it is purported to measure. One type of validity that theorists are most interested in is the criterion validity which refers to how well the scores on a test correlate with measures of a criterion variable. He further reported that one of the two types of criterion validity that theorists proposed, is the predictive validity. Predictive validity refers to the scores in a single test to accurately predict the test takers' performance on a future measure.

Moreover, predictive validity is determined only based on the degree of correlation between the predictor and the criterion (Lewis, 2005). Lewis stated a high relationship does not require necessary standards but also emphasized that sound theory and common sense are beneficial when choosing predictor instruments. Thus, she concluded that evaluating multiple tests for their predictive qualities for the performance, the most valid predictor will be the test that shows the highest correlation.

In this study, the Student Teaching Internship (STI) represents the capstone or culminating experience in the preparation of prospective teachers as emerging leaders who conduct themselves ethically and professionally and to refine the knowledge, skills, and dispositions they have developed as active participants in the teacher education institution (Duke University, 2017). On the other hand, the Grade Point Average (GPA) refers to a number representing the value of the accumulated final grades earned in courses over time which are calculated through adding all accumulated final scores and dividing that figure by the number of results awarded (The Glossary of Education Reform, 2014).

This study hopes to provide evidence for the valid use of System Admission and Scholarship Examination [SASE] Score, Student Teaching Internship [STI] Performance, and Grade Point Average [GPA] to predict the first time performance of the Bachelor of Elementary Education [BEEd] graduates in the LET. The conceptual framework shows the variables of the study. The predictor variables are the SASE Scores, STI Performance, and GPA. The outcome variable, on the other hand, is the LET Performance. The single-headed arrows indicate the relationship of SASE Scores, STI Performance, and GPA to the LET performance. The researchers assumed that the linear combination of SASE Scores, STI Performance and GPA can predict the success for LET performance.

Figure 1
Conceptual Framework



3. Method

3.1. Research Design

This study entailed a retrospective research design as it determined the relationship between one condition and another that occurred in the past. The same design was used in predictive validity studies by Lewis (2005), Hamerslough (2008), Finn and Hanson (2013), and Bayliss et al. (2017). This design was appropriate for this study to determine the accuracy of selected measures, which are SASE Score, STI Performance, and GPA, in predicting the success in the first time performance in LET.

The researchers assembled a unique set of information that includes SASE scores, STI grades, GPA and LET Ratings. Sources were accessed to collect the needed secondary data for this study. These included the admission exam score; the practice teaching performance and general weighted average; and the Licensure Examination for Teachers Performance duly certified by the Philippine Regulation Commission.

The researchers delimited the selected measures in the study to the SASE scores, STI performance and GPA and whether these chosen measures can predict the first-time performance of the graduates in the LET. The SASE score was based on the Mindanao State University System Admission and Scholarship Examination result. The System Admission and Scholarship Examination is a non-negotiable requirement for all forms of admissions, scholarship and study grants administered once a year for graduating high school students who want to enroll in the Mindanao State University (MSU Main - Marawi, 2017). The said entrance examination deals with four types of tests which include aptitude, math, verbal and science test. Furthermore, the STI performance was limited to the final grade in their Practice Teaching course. The researchers obtained the data on the GPA based on their general weighted average upon completion of the requirements of the program. On the other hand, the LET ratings obtained from the Professional Regulations Commission focused on the graduates who immediately passed the examination on their first attempt. At the end of data gathering, there were 86 respondents. The research venue was in the College of Education, Mindanao State University, Fatima, General Santos City.

3.2. Sample

This study followed the cohort of BEEd students who enrolled and graduated in the College of Education, Mindanao State University, Fatima, General Santos City. The criteria for selecting the respondents of this study were the following: students who took the MSU System Admission and Scholarship Exam; students who completed all academic requirements and graduated in 2016; and students who took the Licensure Examination for Teachers on the same year. The population was taken as the best sample for a study. The target population consisted of 104 students. Out of this

number, only 93 participants responded positively for consent. Others did not respond or the researchers cannot contact them. This number of respondents was further trimmed down to 86 students as those whose records are not complete were removed from the final master list.

3.3. Data Collection and Analysis

Following the ethical procedure in conducting the research, the researcher obtained the consent of the students through online communication. The researchers sent letters requesting them to allow the researchers to access their records from different sources. Upon approval of consent of those respondents, the final number of the population of the respondents was drawn. The researchers subsequently asked permission from the respective offices and authorities to obtain the pertinent records of the approving respondents. After securing the needed information, the researchers organized the data and removed those student records that did not include the necessary information. The complete available data were then computed, analyzed and interpreted.

Descriptive statistics provided the minimum, maximum, mean and standard deviation for all the variables. Preliminary analyses were performed to ensure that there is no violation of the assumptions of normality and linearity. The Kolmogorov Smirnov One-Sample Test examined the normality of the data while the Pearson Product Correlation Coefficient tested the linearity of the variables.

After confirming the normality and linearity of the data gathered, the researchers performed parametric statistical tests to answer the questions that aimed to determine the significant difference in the variables involved and they used the t-test for independent samples. Furthermore, multiple regression procedures allowed the researchers to predict the relative individual and collective contribution of the independent variables to the outcome variable. Because several variables in this study were involved, Multiple Linear Regression Analysis was performed to find the possible weighting of the combination of selected measures such as SASE Score, STI Grades and GPA to the outcome variable which is the LET performance. The measures were all tested at 0.05 level of significance. For clearer presentation of the study, shown below are the research questions, variables and statistical treatments that the researchers utilized to test the hypothesis of the study (Table1).

Table 1

Summary of Research Questions, Variables and Statistical Tools

<i>Research Questions</i>	<i>Variables</i>	<i>Statistical Tool</i>
1. What is the background of the BEEd graduates relative to their SASE scores, STI grades, GPA and LET performance?	SASE Score, STI Grades, GWA, and LET Rating	Minimum, maximum, mean, standard deviation
2. What is the strength of relationship of SASE scores, STI grades and GPA with LET performance of the BEEd graduates?	SASE Score, STI Grades, GWA, and LET Rating	Pearson Product, Moment, Correlation Coefficient
3. Is there a significant difference in the first time LET performance of BEEd graduates based on their SASE scores?	LET Rating, SASE, Scores (Passed or Conditional)	t-test for independent samples
4. Is there a significant difference in the first time LET performance of BEEd graduates based on their STI grades?	LET Rating and STI Grades (Master or Novice)	t-test for independent samples
5. Is there a significant difference in the first time LET performance of BEEd graduates based on their GPA?	LET Rating and GPA (High or Low)	t-test for independent samples
6. Is the linear combination of selected measures predictive of the success for the first time LET performance of BEEd graduates?	SASE Score, STI Grades, GWA, and LET Rating	Multiple linear regression analysis

4. Results and Discussion

Descriptive statistics provided for the variables used in this study: SASE scores, STI grades, GWA, and LET ratings (Table 2). Results revealed that SASE scores ranged from 40 to 127 with a mean score of 88.80 and a standard deviation of 16.16. When it comes to STI, the grades ranged from 3.75 to 5.00 with a mean score of 4.50 and a standard deviation of 0.28. Furthermore, results showed that relative to GPA, the grades ranged from 3.19 to 4.34 with a mean of 3.06 and standard deviation of 0.22. On the other hand, LET ratings ranged from 70.20 to 85.40 with a mean of 80.04 and a standard deviation of 3.19.

Table 2
SASE scores, STI grades, GPA and LET performance (N=86)

Selected Measures	Minimum	Maximum	Mean	SD
SASE Scores	40.00	127.00	88.80	16.16
STI Grades	3.75	5.00	4.50	0.28
GPA	3.19	4.34	3.06	0.22
LET Ratings	70.20	85.40	80.04	3.19

Pearson Product Moment Correlation Coefficient was computed to assess the relationship of SASE Scores, STI Grades, and GPA to the LET performance (Table 3). The results revealed that SASE scores, $r = 0.46$, $n = 86$, $p = 0.000$; STI Grades, $r = 0.47$, $n = 86$, $p = 0.001$; and GPA, $r = 0.48$, $n = 86$, $p = 0.000$ have significantly positive relationship to the LET performance.

Table 3
Relationship of SASE Scores, STI Grades, and GPA with LET

Measures	LET
SASE Score	.46**
STI Grades	.47**
GPA	.48**

Note. ** $p < .05$

The result above implied that SASE scores, STI Grades and GPA positively moderately influence the LET performance of the graduates. This result indicates that as SASE Scores, STI Grades and GPA respectively increase, the LET performance also increases.

Past studies in other disciplines offer comparisons. For instance, it showed that there is no significant relationship between entrance exam score to board examination in accountancy (Aquino, 2013); clinical grades to board examination in dentistry (Pornillos & Castro, 2015); and GPA to board examination (Efurd, 2012). On the other hand, other studies also reported that GPA was significantly correlated to board examination performance in physical therapy (Krieger, 2015); internship performance to the general pediatrics certification examination performance (Althouse, 2008); and entrance scores to board examination performance in nursing (Kleber, 2011).

Moreover, results of the independent samples t-test show that mean first time LET performance are significantly different between the students whose SASE scores are passed ($M = 80.95$, $SD = 2.58$) and conditional ($M = 76.15$, $SD = 3.24$); $t(84) = 3.53$, $p = 0.01$. The result implied that on the average, students who achieved passing SASE scores performed better in LET than those who obtained conditional SASE scores (Table 4).

Table 4
LET Rating by SASE Scores

	Passed			Conditional			df	t	p
	M	SD	n	M	SD	n			
LET rating	80.78	.33	68	77.24	3.44	18	84	3.53	0.01**

Note. ** $p < .05$

As far as this study reviewed the related literature, there are no same studies treating Passed and Conditional categories in entrance exam to determine differences in the board examination performance. However, the study of Hamerslough (2008) used pass and fail scores from an examination to predict the probability of the passing the board examination were not statistically significant. Therefore, there is no relationship between scores on the school examination and the success of the students in the board examination.

The independent samples t-test was conducted and results show that mean first time LET performance are significantly different between the students whose STI grades belong to master level ($M = 80.77$, $SD = 3.14$) and novice level ($M = 78.05$, $SD = 2.42$); $t(84) = 2.71$, $p = 0.00$. Based on inference from the results (Table 5), on the average, students who got master STI grades performed better in LET than those who obtained novice STI grades.

Table 5
LET Rating by STI Grades

	STI grades						df	t	p
	Master			Novice					
	M	SD	n	M	SD	n			
LET rating	80.77	3.14	63	78.05	2.42	23	84	2.71	0.00**

Note. ** $p < .05$

The result of this study partly corroborates with the study of Hemann et al. (2015). They found out that students who received a less than passing grade in the internal medicine clerkship and required remediation were eight times more likely to fail in the medical licensing examination.

Furthermore, results of the independent samples t-test show that mean first-time LET performance are significantly different between the students whose GPA is high ($M = 81.88$, $SD = 2.19$) and low ($M = 78.63$, $SD = 3.28$); $t(84) = 3.03$, $p = 0.00$. The result infers that on the average, students who got high GPA performed better in LET than those who have low GPA (Table 6).

Table 6
LET Rating by GPA

	GPA						df	t	p
	High			Low					
	M	SD	n	M	SD	n			
LET rating	81.66	2.19	40	78.63	3.28	46	84	3.03	0.00**

Note. ** $p < .05$

Rogers (2010) cited a study that similarly discovered that GPA was significantly higher for those successful on the board examination in nursing than those who were not successful. He even found out that even the course grades were also higher for those successful on the licensure examination. Taken on this context of the result, this implied that students with higher GPA were those more successful on the board examination compared to those with lower GPA.

To analyze whether the linear combination of selected measures predict the success for the first time LET performance of BEEd graduates, the multiple linear regression analysis was performed to predict the LET first time performance of the BEEd graduates based on their SASE scores, STI grades and GPA (see Table 7).

Table 7
Predictive Validity of Linear Combination of Selected Measures for LET

	R	R ²	Adj. R ²	Std. Error of Estimate
1	.558	.312	.286	2.697

The R^2 coefficient indicates the proportion of variance in the outcome variable accounted for by the combination of those predictor variables. The table shows the Adjusted R^2 for the combination of selected measures is .286. Therefore, the combination of the selected measures of SASE scores, STI grades, and GPA explains the 28.6% of the variance in the LET ratings. The other factors not included in this study explain the remaining variance in the LET ratings.

Table 8

Predictive Validity of Individual Measure for LET

Predictor Variables	B	SE	β	t	p
SASE Score	0.051	.022	.26	2.28	.025**
STI Grades	2.824	1.44	.24	2.20	.053
GWA	2.348	1.95	.16	1.20	.233

Note. ** $p < .05$

Likewise, the multiple linear regression analysis revealed that a significant regression equation was found, ($F(3, 82) = 12.376, p < .000$), with R^2 of .312. The predicted LET rating is equal to $53.527 + 2.348(\text{GPA}) + 2.824(\text{STI}) + 0.051(\text{SASE})$.

The LET rating of the graduates increased .051% for each point of SASE score; 2.824% for each point of STI grade; and 2.348% for each point of GPA. However, in the linear combination of the selected measures, only the SASE score was a significant predictor of the LET performance. This result indicates that entrance examination scores were a significantly better prediction of LET performance in the future board examination. This study partially shows the same results for the cognitive variable, especially the entrance examination score, predicting the success of performance in the board examination, but negated the results for internship performance and grade point average.

In contrast, another study investigated the relationship between cognitive development, motivation, and grade point average of students as predictors for their success on the board examination for athletic trainers (Krieger, 2015). A conveniently sampled seventy four (74) students from eleven colleges and universities decided to participate in the study. Bivariate correlation and stepwise multiple regression assessed the relationship between the variables. The results verified that grade point average, self-efficacy, and test anxiety significantly correlated on their success with the examination. Multiple stepwise regression established that the best overall predictor for success on the board examination was grade point average.

Results above show that there is often inconsistency among the studies. Rogers (2010) explained that the study was not able to predict licensure exam success using GPA, science grades, and prerequisite course grades but using a combination of preadmission variables predicted board exam success but were not a significant predictor in program completion. He continued that the results of the studies in predicting the different measures of success vary among the programs in the same studies.

5. Conclusion

The study examined the predictive validity of selected measures of graduates of BEED for first-time performance in the LET. Prior to further discussion, it is important to note that there are limitations in this study. The SASE score was taken from the Mindanao State University System Admission and Scholarship Examination result. The GPA of the graduates was based on the general weighted average upon completion of the requirements of the program. On the other hand, the LET ratings obtained from the Professional Regulations Commission focused only on the graduates who immediately passed the Licensure Examination for Teachers [LET] on their first attempt. Hence, strictly speaking, the secondary data included for the data analysis of predictive validity was only from respondents who took the SASE, graduated in the BEED on the year 2016, and immediately passed the LET in the same year. Thus, there were 86 respondents who matched the criteria. Despite the limitations, this study can present relevant findings to produce implications for admission and retention policies and improve educational practice.

Based on the findings of this study, the following conclusions are drawn: The overall mean for SASE scores is 88.80; STI grades 4.50; GPA 3.06 and LET ratings 80.04. The SASE scores, STI Grades and GPA have positive relationship to the LET performance of the graduates to a moderate extent. There is a significant difference in the first time LET performance of BEEd graduates based on their SASE scores. There is a significant difference in the first time LET performance of BEEd graduates based on their STI grades. There is a significant difference in the first time LET performance of BEEd graduates based on their GPA. The linear combination of selected measures is significantly predictive of the success for the first time LET performance of BEEd graduates; however, only the SASE scores was significant when taking into account the individual measures.

Some literature on the predictive validity of the cognitive variables showed that they predict academic success. For example, Cameron et al. (2017) revealed that admissions scores have a significant predictive validity for performance on the pharmacy certification examination. Krieger (2015) also established that the best predictor for success on board examination was grade point average. When it comes to internship, Althouse (2008) reported that the predictive power of the in training performance increases each year, providing the greatest power in the third year of training.

When accounting for other cognitive variable such as grade point average not predicting the performance in the board examination, in this study, Siemens (2012) explained in a similar result of his study that one reason could be that a problem with finding the correlations in this study, was because most students passed the licensure examination, thus finding which academic variable is the cause would be difficult.

Another argument would be found in the discussion of Hamerslough (2008) who found out that GPA did not predict board examination scores in dentistry. He justified that this is apparently due to the lack of validity and reliability of the board examination. Because the board examination measures skills that a student learns in school, one would assume that if a student does well in school they will do well on the board examination. On the other hand, if the argument of Althouse (2008) above would also be the basis that the predictive power of the in-training performance is only minimal but increases each year, then it is a logical explanation for this study that internship performance did not predict board examination performance since it was only delimited to internship performance in one year.

One relevant predictive validity study in the discipline of education reported the regression relations between the academic characteristics of pre-service teachers and their performance on the board examination (Zhang & Telese, 2012). These characteristics included grade point average, reading ability, and critical thinking. The results showed that reading and critical thinking ability had a positive relationship with success on a certification examination. The study, however, did not offer implication for admission and retention policies.

6. Implications

Despite the limitations of the study such that this only focused on one academic class of graduates with limited sample size, the study offers academic and policy implications. The university should have practices related to monitoring mechanisms of the students who obtained conditional admission status and students who struggle with their academic standing to constantly measure their performance in school. The existing bridge program and review program of the College of Education may be improved since the results justified that the students in the low performing groups are consistently having significantly lower performance in the licensure examination. Retention policies of the school may also be strengthened. A similar study can be conducted through stepwise linear modelling involving more variables to create a model that determines best combination of entrance requirements for improvement of admission policies. Additional data that include the scores from successive classes of graduates' can also establish the results of the study for policy recommendation. Likewise, this study serves as a resource for administrators to create benchmark assessments that will help them in their instructional decision making. Database of the study is also useful for the curriculum implementers for evaluation purposes of the curriculum.

The heads of the schools should formulate admission criteria and create a selection program for the teacher education programs. This is to ensure that qualified applicants are admitted to the said programs to align its competencies to state standards of proficiency and improve the results of the performance of the graduates in the LET. The study can also serve as a blueprint for test developers in their construction of standardized tests.

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References

- Althouse, L. (2008). The in-training examination: an analysis of its predictive value on performance on the general pediatrics certification examination. *The Journal of Pediatrics*, 153(3), 425–428. <https://doi.org/10.1016/j.jpeds.2008.03.012>
- Aquino, A. (2013). Predictive validity of CET and entrance grades to academic achievement and performance in the CPA board examination. *UE Research Bulletin*, 15(1). Retrieved from <http://ejournals.ph/form/cite.php?id=1747>
- Arcelo, A. (2000). *In pursuit of continuing quality in higher education through accreditation: The Philippine experience*. International Institute for Educational Planning.
- Bayliss J., Thomas R. M., Eifert-Mangine M. (2017). Pilot study: what measures predict first time pass rate on the national physical therapy examination? *The Internet Journal of Allied Health Sciences and Practice*, 15(4), A1. <https://doi.org/10.46743/1540-580X/2017.1693>
- Brown, J. (2014). *Investigating the validity of using NWEA's MAP results to predict PSAT and ACT results* [Unpublished Doctoral Dissertation]. University of Illinois at Chicago, Illinois.
- Cameron, A., MacKeigan, L., Mitsakakis, N. & Pugsley, J. (2017). Multiple mini-interview predictive validity for performance on a pharmacy licensing examination. *Medical Education*, 51, 379–389. <https://doi.org/10.1111/medu.13222>
- Campbell, S., Henry, G., Patriarca, L., Luterbach, K., Lys, D., & Covington, V. (2013). The predictive validity of measures of teacher candidate programs and performance: toward an evidence-based approach to teacher preparation. *Journal of Teacher Education*, 64(5) 439–453. <https://doi.org/10.1177/0022487113496431>
- Diaz, R., Morales, G., Diana, R., Ubina, M., Jocson, J., Gonzales, G., Ilanan, C., Pimentel, C., Tuga, B., Simeon, F., Fernandez, E. V., De Mesa, D. M., Gonong, G., Asuan, M., Papango, M., Pastor, C. J. (2013). LET as predictor of teaching performance: the case of PNU graduates across disciplines. *Normal Lights: Journal on Teacher Education*, 7(2), 19-36.
- Duke University (2017). *Student teaching internship*. Retrieved June 01, 2022 from <https://educationprogram.duke.edu>
- Efurd, M. (2012). *Predictors of academic success for the national board dental hygiene examination and the southern regional testing agency clinical exam* (Publication No: 3544557) [Doctoral dissertation, University of Arkansas]. ProQuest Dissertations and Theses Global.
- Finn, G. & Hanson, E. (2013). The predictive validity of formative anatomy assessments. *The FASEB Journal*, 27(1), 1-10. https://doi.org/10.1096/fasebj.27.1_supplement.lb12
- Forones, A. (2012). Engineering board examination results: a measure of the predictive influence of the general and professional subjects. *UIC Research Journal*, 18(2). Retrieved from <https://ejournals.ph/article.php?id=2137>
- Goldhaber, D. Cowan, J., & Theobald, R. (2017). Evaluating prospective teachers: Testing the predictive validity of the edTPA. *Journal of Teacher Education*, 68(4), 377–393. <https://doi.org/10.1177/0022487117702582>
- Hamerslough, R. (2008). *Predictors of success for passing the National Board Dental Hygiene Examination and the California State Dental Hygiene Board Examination* [Unpublished doctoral dissertation]. La Sierra University, Riverside.
- Hemann, B., Durning, S., Kelly, W., Dong, D., Pangaro, L., & Hemmer, P. (2015). The association OF students requiring remediation IN THE internal medicine clerkship with poor performance during internship. *Military Medicine*, 180(4), 47-53. <https://doi.org/10.7205/MILMED-D-14-00567>

- Kleber, M. (2011). *Determination of Variables Which Predict Success On the National Council Licensure Examination (NCLEX-PN)* (Publication No.3451104) [Unpublished doctoral dissertation, University of Louisville]. ProQuest Dissertations and Theses Global.
- Krieger (2015). *Cognitive development, motivation, and grade point average as predictors of success on the board of certification exam for athletic trainers* (Publication No. 3648796) [Unpublished doctoral dissertation, Aurora University]. ProQuest Dissertations and Theses Global.
- Lewis, C. (2005). *Predictive accuracy of the HESI exit exam on NCLEX-RN pass rates and effect of progression policies on nursing student exit exam scores* [Unpublished doctoral dissertation]. Texas Woman's University, Texas.
- MSU Main - Marawi. (2017). *MSU system and admission scholarship*. Retrieved July 20, 2022 from www.msumain.edu.ph
- Philippine Regulatory Commission. (2017). *Licensure examination for teachers*. Retrieved July 20, 2022 from <https://prc.gov.ph>
- Pornillos, C. & Castro, M. (2012). Predictive validity of the clinical performance of graduates of the university of the east in the practical dental board licensure examination. *UE Research Bulletin*, 17(1). Retrieved from <http://ejournals.ph/form/cite.php?id=11318>
- Rogers, T. (2010). *Preadmission academic achievement criteria as predictors of nursing program completion and NCLEX-RN success* (Publication No. 3395065) [Unpublished doctoral dissertation, West Virginia University]. ProQuest Dissertations and Theses Global.
- Siemens, S. (2012). *Predictors of academic success in allied health programs* (Publication No. 3493003) [Unpublished doctoral dissertation]. ProQuest Dissertations and Theses Global.
- The Glossary of Education Reform. (2014, August 26). *Hidden curriculum*. Retrieved June 15 22, 2022 from <http://edglossary.org/hidden-curriculum>
- West Virginia State Board of Registration for Professional Engineers. (2018). *West Virginia Engineering Law Statute & Rules*. Retrieved July 25, 2022 from www.wvpebd.org
- Zhang, Z. & Telese, J. (2012). Determining a model to predict hispanic preservice teachers' success on the Texas Examination of Educator Standards. *Teacher Education and Practice*, 25(3), 388-401.