Preservice Teachers' Entry Credentials, SATT Performance and Academic Achievement: A Discriminant Analysis

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Abstract

This study ascertains the discriminant model that could best explain preservice teachers' academic achievement. Using the University of Southeastern Philippines Admission Test (USePAT) and Standardized Admission Test for Teachers (SATT) results as predictor variables, a descriptive-discriminant research design was used involving 771 preservice teachers in a span of 3 school years. Variables entered in the discriminant model were *numerical*, *verbal* (SATT constructs), *abstract*, and *general information* (USePAT constructs). It is recommended that the University should revisit the USePAT to determine other measures as entry requirements in lieu of the ratings in the content subjects – English, Math and Science - as these did not figure into the discriminant model.

Keywords: preservice teachers, discriminant model, entry credentials

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In the globalized race for better student achievement, quality of teaching has the greatest systemic effect on students' achievement (Hanushek, 2011 in Wright, 2015). In the study of Alton-Lee (2003 in Wright, 2015), it was found out that teachers contribute 30 percent on average to increases in student achievement; for students with greatest need, the impact is as high as 60 percent. In a nutshell, teachers matter (Wright, 2015).

Zumwalt and Craig (2005 in Hall & West, 2011) note that "policy makers, politicians and government officials, leaders of the business and philanthropic communities, and educators at all levels have worked to raise standards for prospective teachers and upgrade teacher education programs." The efforts have focused on the intellectual ability of teacher candidates. For instance, raising minimum GPA requirements for acceptance into teacher education programs - this effort eliminates teacher candidates with questionable academic performance. Similarly, using college entrance exam scores (in the United States, SATT or Standardized Aptitude Test for Teachers and ACT or American College Test) is a common method to determine a candidate's academic ability.

These reform efforts of increased standards for teacher education program admission help make the teaching profession less of a "dumping ground for low achievers". More recently, teacher tests have been greatly emphasized and utilized to determine the intellectual competence, particularly the subject matter and pedagogical knowledge of those entering the program (Zumwalt & Craig, 2005 in Hall & West, 2011). These efforts aimed to increase the profile of teacher candidates to have better student achievement.

In the United States, teacher preparation accrediting bodies crafted ten principles for assessment, which they hope would reflect the knowledge, skills, and disposition that aspiring teachers should possess. These principles include: (1) *content pedagogy*, or the teachers'

understanding of the central concepts, tools of inquiry, and structures of the discipline they teach as well as their capability to create learning experiences that enable these aspects of subject matter significant for students; (2) *student development*, or the teachers' understanding of how children learn and develop, and their capability to offer learning opportunities that support the children's intellectual, social, and personal development; (3) *diverse learners*, or the teachers' understanding of how students differ in their approaches to learning and their capability to create instructional opportunities that are adapted to diverse learners; (4) *multiple instruction strategies*, or the teachers' understanding and usage of a variety of instructional strategies to encourage student development of critical thinking, problem solving, and performance skills; (5) *motivation and management*, or the teachers' understanding of individual and group motivation and behavior to provide a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation; (6) *communication and technology*, or the teachers' use of their knowledge of effective verbal, nonverbal, and media communication techniques to nurture active inquiry, collaboration, and supportive classroom interaction; (7) *planning*, or the teachers' planned instruction anchored on their knowledge of the subject matter and curriculum goals as well as of the students and community; (8) a*ssessment*, or the teachers' understanding and usage of formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social, and physical development of the learner; (9) *reflective practice*, or the teachers' continuous reflection and evaluation of the effects of their choices and actions on the learning community and their seeking out actively of opportunities to grow professionally; and (10) *school and community involvement*, or the teachers' capability to foster relationships with the school stakeholders to support students' learning and well-being (Interstate New Teacher Assessment and Support Consortium [INTASC], 1992, in Hall & West, 2011).

Closely related to those is teacher's competence, which is dependent on the level of education as well as the professional *training* of teachers (UNESCO World Survey, in Ambag, 2015). In the Philippines Article 1 Section 1 of Republic Act 7722 states that quality preservice teacher education is crucial in quality Philippine education. In response to RA 7722's challenge, the teacher education curriculum was revised, pursuant to CHED Memorandum Order No. 30, s. 2004. The integration of theoretical, methodological and experiential components of the curriculum was the significant change in the design of professional education courses (De Leon, 2010 in Ambag, 2015). Consequently, the Department of Education introduced the National Competency-Based Standards for Teachers (NCBTS). This is a framework that establishes the competency standards for teacher performance for teachers, learners and stakeholders to appreciate the complex set of behaviors, attitudes and skills that each teacher must possess to carry out a satisfactory performance of their roles and responsibilities (DepED, NCBTS Teachers' Strength and Needs Assessment, in Ambag, 2015). The framework is based upon the core values of Filipino teachers and on the principles of effective teaching and learning which are categorized into domains representing the desired features of the teaching and learning process. At present though, the DepEd utilizes the Philippine Professional Standards for Teachers (PPST), based on DepEd Order No. 42, s. 2017. This change is "brought about by various national and global frameworks such as the K to 12 reform, ASEAN integration, globalization, and the changing character of the 21st century learners".

As stated earlier, teacher preparation is crucial, thus USeP (University of Southeastern Philippines), specifically CEd (College of Education) students are demanded to reach a grade of 85% in English, Science and Math as well as in their General Weighted Average (GWA). Moreover, their USePAT (the Admission Test of the University) overall

result score should be 5, with the same minimum rating in English, Science and Math. By their second year in the University, the SATT (Standardized Admission Test for Teachers) is administered to them, although this particular test has no bearing in their standing in the College and the University in general. This study nonetheless intends to find out whether these entry credentials and SATT performance could best explain students' academic achievement. The findings of the study were meant to help administrators enhance the implementation of university policies. This becomes even more urgent in the light of the full implementation of the K to 12 curriculum of DepEd.

The primary concern was to ascertain which variables can best explain preservice teachers' (PSTs) academic achievement. Specifically, it sought to find out: (1) the profile of the preservice teachers' USePAT ratings in English, Math, Science, General Information, Abstract Reasoning, and Overall USePAT; (2) the profile of the preservice teachers' performance in SATT; (3) the profile of the preservice teachers' academic achievement; (4) the significant difference of the students' USePAT ratings and SATT when they are grouped according to their fields of specialization; and (5) the discriminant model that can best explain preservice teachers' academic achievement.

Method

Descriptive-discriminant method was utilized in this study. According to Williams (2007), descriptive research is a basic method that examines a situation as it occurs in its present state. It involves identification of characteristics of a particular occurrence on an observational basis, or the examination of relationship between two or more phenomena. On the other hand, discriminant analysis determines a set of prediction equations centered on independent variables that

are used to categorize individuals into groups. There are two probable objectives in a discriminant analysis: defining a predictive equation to classify new individuals or interpreting the predictive equation to better understand the relations that may occur among the variables (Chapter 440, Discriminant Analysis, n.d.).

The respondents of the study were the preservice teachers who graduated in SYs2013-2016. The study involved 771 PSTs in a span of three school years. The figure below shows the percent distribution of respondents, according to school year and specialization.

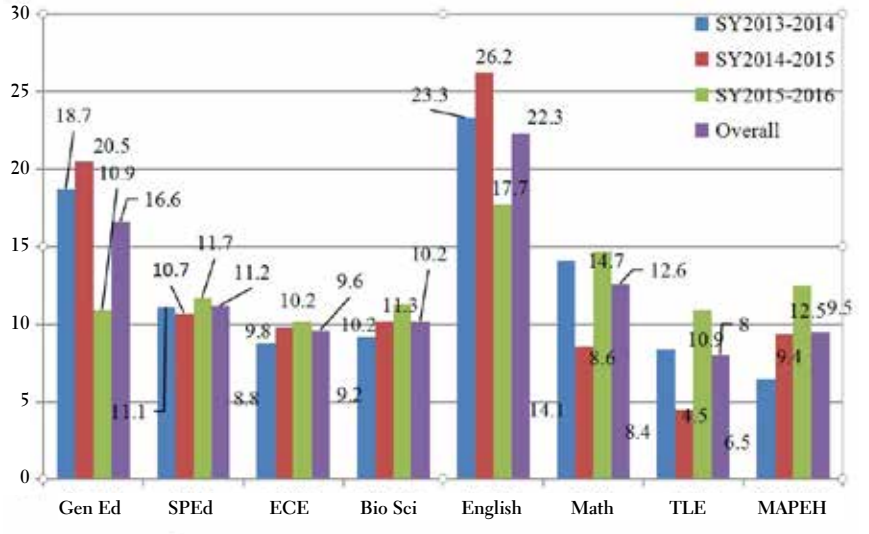

Figure 1
Distribution of respondents by major/specialization per school year

The numerical distribution of respondents involved: 262 PSTs for SY2013-2014; 244 PSTs for SY2014-2015; and 265 PSTs for SY2015-2016. The study considered the total population; however due to incomplete data only 771 student-teachers were tallied as final number of respondents. All preservice teachers in three consecutive years had been asked to be part of the research activity but only 85 percent were

included. They were asked to sign an informed consent for utilization of their records as data for the study.

The study used secondary data of three intact groups across three school years. Scholastic data were measured using the following instruments: USePAT scores in English, Math, Science, Abstract Reasoning, General Information and the Overall scores; SATT scores both from the intellective and non-intellective results; and the academic achievement of the student teachers in terms of their overall weighted average.

The statistical tools used were: *mean* and *standard deviation* to describe the profile of the students' USePAT and SATT ratings; *Pearson product moment correlation* (Pearson *r*) to describe the degree of relationships between the independent and dependent variables; *Analysis of Variance* (ANOVA) to resolve whether or not there is a significant difference when the respondents are grouped according to their field of specialization; *Discriminant analysis* to identify which of the variables could discriminate the student-teachers academic achievement (0=low; 1=average; 2=high).

Results and Discussion

Profile of the preservice teachers' USePAT ratings

Table 1 presents the profile of the preservice teachers' USePAT ratings for three consecutive years. It can be gleaned from Table 1 that the overall USePAT rating in English (Mean=3.17, SD=.487); Math (Mean=3.07, SD=.637); General Information (Mean=3.13, SD=.797); Abstract Reasoning (Mean=2.91, SD=.923); and Overall rating (Mean=3.16, SD=.418) have descriptive equivalents of *average*. However, in Science, the preservice teachers had a descriptive equivalent of *low* (Mean=2.39, SD=.921). It is worth noting that in SYs2013-2014 (Mean=1.96, SD=.726) and 2015-2016 (Mean=1.97, SD=.679), the

preservice teachers' rating in Science had a *low* descriptive equivalent. However, in SY 2014-2015, it had a descriptive equivalent of *average* (Mean=3.29, SD=.645). The result implies that generally, students who were accepted to join the ranks of preservice teachers were *average* students based on their USePAT scores.

Table 1. Profile of the preservice teachers' USePAT ratings

USePAT constructs	SY2013-2014 (n=262)		SY2014-2015 (n=244)		SY2015-2016 (n=265)		Overall n=771)	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
English	3.14	1.814	3.47	.624	3.03	.351	3.17	.487
Math	3.00	.652	3.20	.609	3.01	.630	3.07	.637
Science	1.96	.726	3.29	.645	1.97	.679	2.39	.921
General Information	2.90	.759	3.47	.766	3.04	.757	3.13	.797
Abstract reasoning	3.04	.910	2.50	.818	3.15	.905	2.91	.923
Overall USePAT	3.04	.219	3.40	.590	3.05	.247	3.16	.418

.00-1.50-Very low
1.51-2.50-Low
2.51-3.50-Average
3.51-4.50-High
4.51-5.00-Very high

Profile of the preservice teachers' SATT performance

Table 2 shows the profile of the preservice teachers' SATT intellective ability ratings. The overall score shows a descriptive equivalent of *high average* in Verbal (Mean=3.03, SD=.828), Numerical (Mean=2.88, SD=.793), Reading comprehension (Mean=3.22, SD=.739), Abstract reasoning (Mean=3.44, SD=.674), and Overall intellective ability (Mean=3.23, SD=.696). But in Judging and teaching situation (Mean=2.36, SD=1.141), the preservice teachers had a descriptive equivalent of *low average*.

Table 2. Profile of the preservice teachers' SATT intellective ability ratings

SATT intellective ability	SY2013-2014 (n=262)		SY2014-2015 (n=244)		SY2015-2016 (n=265)		Overall (n=771)	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Verbal	3.29	.711	2.31	.618	3.45	.661	3.03	.828
Numerical	3.03	.736	2.31	.637	3.24	.689	2.88	.793
Judging and teaching situation	2.58	1.240	1.92	.854	2.03	.272	2.36	1.141
Reading comprehension	3.57	.593	2.63	.516	3.41	.718	3.22	.739
Abstract reasoning	3.78	.454	2.79	.470	3.71	.584	3.44	.674
Overall intellective ability	3.59	.551	2.68	.474	3.40	.685	3.23	.696

01-1.50-Low
1.51-2.50-Low average
2.51-3.50-High average
3.51-4.00-High

Table 3 presents the profile of the preservice teachers' SATT non-intellective skills ratings. The following sub-skills: Management (Mean=2.85, SD=1.036), Communication (Mean=2.65, SD=1.055), Teaching (Mean=2.65, SD=1.076), and Overall non-intellective skills (Mean=2.59, SD=1.058) had a descriptive equivalent of *high average*. However, the sub-skills Human relations (Mean=2.43, SD=1.127) and Values (Mean=2.10, SD=1.004) had a descriptive equivalent of *low average*.

Table 3. Profile of the preservice teachers' SATT non-intellective skills ratings

SATT non-intellective skills	SY2013-2014 (n=262)		SY204-2015 (n=244)		SY2015-2016) (n=265)		Overall (n=771)	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Management	3.19	1.030	2.51	.761	2.84	1.151	2.85	1.036
Communication	2.98	1.050	2.37	.839	2.57	1.149	2.65	1.055
Teaching	3.12	1.089	2.47	.782	2.70	1.195	2.77	1.076
Human relations	2.79	1.116	2.11	.883	2.36	1.239	2.43	1.127
Values	2.42	1.050	1.86	.785	2.00	1.058	2.10	1.004
Overall non-intellective skills	2.92	1.071	2.36	.817	2.46	1.157	2.59	1.058

01-1.50-Low
1.51-2.50-Low average
2.51-3.50-High average
3.51-4.00-High

Table 4 shows the profile of the preservice teachers' overall SATT performance. It shows that preservice teachers' overall SATT (Mean=2.95, SD=812) performance had a descriptive equivalent of *high average*.

Table 4. Profile of the preservice teachers' overall SATT performance

	SY2013-2014 (n=262)		SY2014-2015 (n-244)		SY2015-2016 (n=265)		Overall (n=771)	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
SATT	3.29	.792	2.58	.613	2.97	.848	2.95	.812

01-1.50-Low
1.51-2.50-Low average
2.51-3.50-High average
3.51-4.00-High

Significant difference of students' USePAT and SATT rating when grouped according to their major/specialization

Presented in Table 5 is the analysis of variance on the preservice teachers' USePAT rating when they are grouped according to field of

specialization. The data analysis registered a significant difference in English (F=5.890, p-value=.000), Math (F=11.201, p-value=.000), Science (F=5.651, p-value=.000) and General Information (F=5.062, p-value=.000), and Overall (F=3.354, p-value=.002). Post hoc tests revealed that the difference rested on the BSEd-English, Math and Biology students. This means that generally these students have better scores in English, Math, Science, General Information (including the Overall USePAT rating) compared to the rest of the courses. These data reveal that preservice teachers differ significantly in almost all measures of the USePAT. Abstract reasoning did not manifest significant difference, which means that preservice teachers do not differ significantly in this measure.

Table 5. Analysis of Variance (ANOVA) on the preservice teachers' USePAT rating when grouped according to their field of specialization (n=771)

		Sums of squares	df	Mean Square	F	Sig.
English	Between Groups	9.368	7	1.338	5.890	.000
	Within Groups	173.343	763	.227		
	Total	182.711	770			
Math	Between Groups	29.175	7	4.168	11.201	.000
	Within Groups	283.902	763	.372		
	Total	313.077	770			
Science	Between Groups	32.232	7	4.605	5.651	.000
	Within Groups	621.690	763	.815		
	Total	653.922	770			
General Information	Between Groups	21.744	7	3.106	5.062	.000
	Within Groups	468.227	763	.614		
	Total	489.971	770			
Abstract reasoning	Between Groups	8.750	7	1.250	1.473	.174
	Within Groups	647.600	763	.849		
	Total	656.350	770			
Overall	Between Groups	4.022	7	.575	3.354	.002
	Within Groups	130.712	763	.171		
	Total	134.734	770			

Table 6 shows the analysis of variance on the preservice teachers' SATT intellective ability rating when grouped according to field of specialization. Results show that preservice teachers differ significantly in three of the measures of the SATT intellective ability: Verbal (F=5.989, p-value=.000), Numerical (F=4.824, p-value=.000), and Overall Intellective (F=4.025, p-value=.000), Post hoc tests revealed that the difference still rested on BSEd-English, Math and Biology students. This means that these students had better scores in this measure compared to the rest of the students. However, in the following constructs – Judgment and teaching (F=1.087, p-value=.381), Reading comprehension (F=.587, p-value=.767), and Abstract reasoning (F=1.319, p-value=.238), the students did not register significant difference.

Table 6. Analysis of Variance (ANOVA) on the preservice teachers' intellective ability rating when grouped according to their field of specialization

Intellective skills		Sums of squares	df	Mean Square	F	Sig.
Verbal	Between Groups	27.544	7	3.935	5.989	.000
	Within Groups	501.289	763	.657		
	Total	528.833	770			
Numerical	Between Groups	20.556	7	2.937	4.824	.000
	Within Groups	464.466	763	.609		
	Total	485.022	770			
Judgment and teaching	Between Groups	9.748	7	1.393	1.070	.381
	Within Groups	993.108	763	1.302		
	Total	1002.856	770			
Reading comprehension	Between Groups	2.252	7	.322	.587	.767
	Within Groups	418.264	763	.548		
	Total	420.516	770			
Abstract reasoning	Between Groups	4.194	7	.599	1.319	.238
	Within Groups	346.429	763	.454		
	Total	350.623	770			
Intellective	Between Groups	13.305	7	1.901	4.025	.000
	Within Groups	360.260	763	.472		
	Total	373.564	770			

Presented in Table 7 is the analysis of variance on the preservice teachers' non-intellective ability rating when they are grouped according to field of specialization. As can be gleaned from the table, only Values (F=2.367, p-value=.021) registered a significant difference. Post hoc tests revealed that GenEd, SPEd, and ECE students had better scores in Values compared to the rest of the students. The rest of the non-intellective abilities Management (F=1.908, p-value=.066), Communication (F=1.677, p-value=.111), teaching (F=1.331, p-value=.232), human relations (F=1.380, p-value=.211), and the Overall non-intellective ability (F=1.792, p-value=.086) registered no significant difference.

Table 7. Analysis of Variance (ANOVA) on the preservice teachers' non-intellective ability rating when grouped according to their field of specialization

Non-intellective skills		Sums of squares	df	Mean Square	F	Sig.
Management	Between Groups	14.224	7	2.032	1.908	.066
	Within Groups	812.648	763	1.065		
	Total	826.872	770			
Communication	Between Groups	12.991	7	1.856	1.677	.111
	Within Groups	844.155	763	1.106		
	Total	857.147	770			
Teaching	Between Groups	10.763	7	1.538	1.331	.232
	Within Groups	881.418	763	1.155		
	Total	892.182	770			
Human relations	Between Groups	12.241	7	1.749	1.380	.211
	Within Groups	967.069	763	1.267		
	Total	979.310	770			
Values	Between Groups	16.504	7	2.358	2.367	.021
	Within Groups	759.986	763	.996		
	Total	776.490	770			
Non-intellective	Between Groups	13.947	7	1.992	1.792	.086
	Within Groups	848.538	763	1.112		
	Total	862.485	770			

As can be gleaned from Table 8, preservice teachers' overall SATT (F2.655=, p-value=.010) performance registered a significant difference. Post tests revealed that BSEd-English students had better overall SATT performance than the rest of the students.

Table 8. Analysis of Variance (ANOVA) on the preservice teachers' SATT performance when grouped according to their field of specialization (Overall)

		Sums of squares	df	Mean Square	F	Sig.
SATT	Between Groups	12.097	7	1.728	2.655	.010
	Within Groups	496.575	763	.651		
	Total	508.672	770			

Discriminant Analysis

This section presents and interprets the results of the discriminant analysis meant to find out what discriminant model could best explain preservice teachers' academic achievement. The final variables entered in the model were *numerical*, *verbal* (SATT constructs), *abstract* and *general information* (USePAT constructs). Variables not found in the table are non-significant factors (Table 9).

Table 9. Discriminant analysis of variables

Variables Entered/Removed[a,b,c,d]

Step		Wilks' Lambda							
						Exact F			
	Entered	Stats	df1	df2	df3	Stats	df1	df2	Sig.
1	numerical	.904	1	2	768.00	40.603	2	768.00	.00
2	verbal	.869	2	2	768.00	27.921	4	1534.00	.00
3	usepat_ abstract	.858	3	2	768.00	20.326	6	1532.00	.00
4	usepat_ gen_info	.848	4	2	768.00	16.405	8	1530.00	.00

At each step, the variable that minimizes the overall Wilks' Lambda is entered.
a. Maximum number of steps is 40.
b. Minimum partial F to enter is 3.84.
c. Maximum partial F to remove is 2.71.

An eigenvalue (Table 10) indicates the proportion of variance explained. (Between-groups sums of squares divided by within-groups sums of squares). A large eigenvalue is associated with a strong function. The canonical relation is a correlation between the discriminant scores and the levels of the dependent variable. A high correlation indicates a function that discriminates well. The present correlation is not extremely high (1.00 is perfect); function 1 has canonical correlation of .378, while function 2 has canonical correlation of .102 .

Table 10. Summary of canonical discriminant functions

Function		Eigenvalues			
		Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
dimension0	1	.167[a]	94.1	94.1	.378
	2	.011[a]	5.9	100.0	.102

a. First 2 canonical discriminant functions were used in the analysis.

A small lambda (see Table 11) indicates that group means appear to differ. The associated significance value indicates whether or not the difference is significant. Here, the Lambda has significant value (Sig.=0.000); thus, the group appears to differ.

Table 11. Test of functions using Wilk's Lambda

Wilks' Lambda					
Test of Function(s)		Wilks' Lambda	Chi-square	df	Sig.
dimension0	1 through 2	.848	126.158	8	.000
	2	.990	8.012	3	.046

First two factors loaded high in function 2, while the last two loaded high in function 1 (Table 12).

Table 12. Standardized canonical discriminant function coefficients

	Function	
	1	2
usepat_gen_info	.243	-.536
usepat_abstract	.201	.850
satt_verbal	.513	.106
satt_numerical	.567	-.416

Table 13 shows the functions at group centroids. The students' academic achievements were categorized according to high, average and low.

Table 13. Functions at group centroids

final_grade2		Function	
		1	2
dimension0	High	.659	-.063
	average	-.132	.079
	low	-.541	-.190

Unstandardized canonical discriminant functions evaluated at group means

Group covariances of canonical discriminant functions

final_grade2		Function		**1**	**2**
dimension0	High	dimension1	1	1.002	-.052
			2	-.052	1.047
	Average	dimension1	1	.993	-3.995E-5
			2	-3.995E-5	.951
	Low	dimension1	1	1.023	.081
			2	.081	1.107

The pooled within-groups covariance matrix of the canonical discriminant functions is an identity matrix by definition.

Presented in Table 14 is the lesser difference in group's covariance matrix and the relatively equal determinants in the three (3) performance levels. The "Rank" column indicates the number of independent variables considered which is two (2) in this case. Since discriminant analysis assumes homogeneity of covariance matrices between the performance levels, the determinants are relatively equal.

Table 14. Log determinants of the Box's test of equality of covariance matrices

Log determinants		
final_grade2	Rank	Log Determinant
High	2	.045
average	2	-.057
low	2	.119
(identity matrix)	2	.000

The ranks and natural logarithms of determinants printed are those of the group covariance matrices of the canonical discriminant functions.

Table 15 shows the qualification of the entered data to multivariate normality assumptions. Multivariate normality ties back to all variables being normally distributed on a univariate level where the threshold is 0.01. As can be gleaned from Table 15, the p-value=.850 is greater than 0.01, the recommended threshold, thus not significant. The criteria of multivariate normality were met and any normality assumptions were dishonored.

Table 15. Box's M test results

Test results		
Box's M		2.673
F	Approx.	.443
	df1	6
	df2	1409069.577
	Sig.	.850

Tests null hypothesis of equal population covariance matrices of canonical discriminant functions.

Table 16 shows the probability of landing at the three (3) performance levels if USePAT and SATT shall be conducted to the student respondents.

Table 16. Prior probabilities for groups

final_grade2			Cases Used in Analysis	
		Prior	Unweighted	Weighted
dimension0	High	.250	193	193.00
	Average	.589	454	454.00
	Low	.161	124	124.00
	Total	1.000	771	771.00

Figures 2, 3 and 4 show the visual representation of the student respondents' performance level in their final grade in terms of the discriminant variables. The discriminant model when the final grades of the student respondents were analyzed showed that *numerical* and *verbal* (SATT constructs) and *abstract reasoning* and *general information* (USePAT constructs) contribute significantly to the prediction of the performance of the student respondents. The group centroids are more or less distant from each other, thus the errors of classification are unlikely.

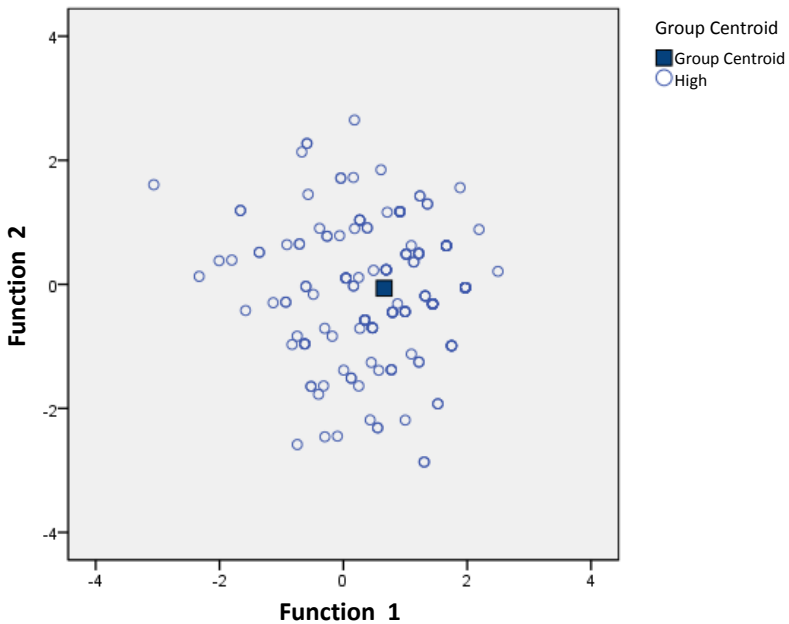

Figure 2
Canonical discriminant functions for students with High Performance

Average performing group tends to show high competence in discriminant function2 variables (USePAT constructs - *general information* and *abstract*).

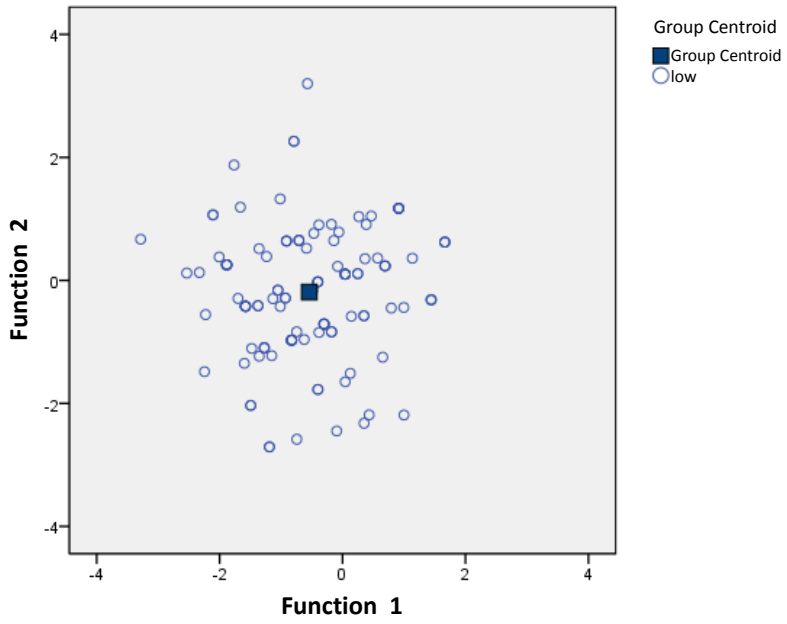

Figure 3

Canonical discriminant functions for students with Low Performance

Low performing group tends to show high competence in discriminant function2 variables (USePAT constructs - *general information* and *abstract*).

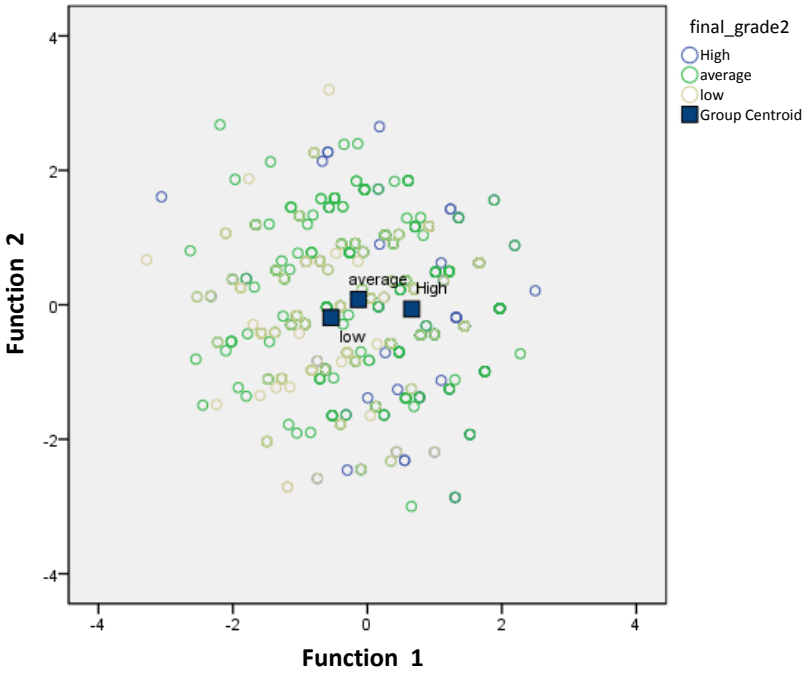

Figure 4

Canonical discriminant functions for students across groups

Average and low performing students tend to show higher rating in the variables under function2 (USePAT constructs - *general information* and *abstract*). High performing group showed higher rating on factors under function1 (SATT constructs - *verbal* and *numerical*).

Presented in Table 17 is the magnitude of the predictability of *numerical* and *verbal* (SATT) and *abstract* and *general information* (USePAT) variables to the final grades of the student respondents.

Table 17. Classification results.

Classification Results[a]							
		final_grade2		Predicted Group Membership			
				High	Average	Low	Total
Original	Count		High	59	134	0	193
		dimension2	Average	38	413	3	454
			Low	7	112	5	124
	%		High	30.6	69.4	.0	100.0
		dimension2	Average	8.4	91.0	.7	100.0
			Low	5.6	90.3	4.0	100.0

a. 61.9% of original grouped cases correctly classified.

Summary of Findings and Recommendations

The following summarized findings from the study were drawn: (a) generally students who were accepted to join the ranks of preservice teachers were *average* students, based on their USePAT scores; (b) they earned *high average* in the SATT constructs, except in Judgment and teaching situation where they were considered *low average*; (c) generally, BSEd-English, Math and Biology students had better ratings in USePAT and SATT; and (d) *numerical*, *verbal* (SATT constructs), *abstract* and *general information* (USePAT constructs) are variables that could discriminate students' academic achievement.

It is recommended that top management of the University should revisit the entry requirements for preservice teachers considering better ratings for English, Math and Science as results for those did not figure

in the discriminant model. Teachers, upon knowledge of these findings should likewise examine the causes of students' having low average in Judgment and teaching situation (SATT constructs), especially so that negative implications might manifest in their future profession. Finally, since discriminant analysis is proven to be a helpful tool in this area of study, future researchers may consider doing a duplicate investigation using the tool, such as finding out which discriminant model could explain achievement in licensure examination for teachers or other education-related research phenomena.

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