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Performance of Teacher Education Students in a College Achievement Test

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Abstract: **The study looked into the performance of the students per year level and LET subject component. The study also identified the subject component where students performed well and poorly. The study also looked into the discrimination and difficulty indices to assess the validity and reliability of the items as instruments to measure achievement. The respondents covered all students who took the examination. The study used the descriptive evaluative design. The instrument used was an achievement test which covered the subjects taken by the students for the current school year. Item analysis was done on the answers of the students. The data were treated statistically using means, percentages and ranking.The performance of the students was measured through the percentage of students who got the correct answer. The indices of difficulty and discrimination were also determined. The examinees registered an Average performance. The First Year examinees registered the highest level of performance. The examinees ranked highest in the Majorship Component of the examination. In the Majorship Areas, the best performance was in English while the least was in Content Courses. Close to one-third of the items are of moderate difficulty. A little more than a half of the items are constructed well.**

Keywords: **performance, achievement test, college students, teacher education.**

I. INTRODUCTION

Good summative testing is important to the educational system (Butt, 2010). Shermis & Di Vesta (2011) posited that student performance, work, and achievement status need to be summarized for school records and all stakeholders, including students, have an interest in the information provided in a summary record of a student's achievement. Gronlund, Linn & Miller (2009) as cited by Gabuyo (2012) presented that a summative test involves procedures which determine the end-of-course achievement for assigning grades or certifying mastery of objectives. Summative tests include achievement tests given at the end of the term.

The University of Eastern Philippines – College of Education (UEP CoEd), the locale of the study, continuously assesses the performance of students annually through a Retention Scheme approved by the University Academic Council. However, there is no system as to whether the students are achieving in the subjects as far as a written examination is concerned. There is no system by which the college could measure achievement of students in the subjects they have taken already. By virtue of Office Order No. 2, series of 2011, the UEP CoEd started to implement the Project TEACH, an acronym which stands for Teacher Education Achievement Test, during the second semester of the school year 2010-2011. The Project is in the form of an achievement test taken by freshmen, sophomore and junior teacher education students. The achievement test aimed not only to assess the retention of knowledge of the students, but also to intensify the preparation of the students for the actual Licensure Examination for Teachers (LET).

As the achievement test was a maiden venture, an evaluation is therefore needed to look into the performance of the students in the project. The study is grounded on the evaluation model of Tyler (1949).Tyler's model is designed to measure the degree to which pre-defined objectives and goals have been attained. It is assumed that the performance of the students in the achievement test will measure the attainment of goals that the educational institution has set for instruction. With this premise, the study looked into the performance of teacher education students in the achievement test. It specifically looked into the performance per year level and per subject component in the licensure examination. Subject components where students performed well and poorly were identified. Finally, the study looked into the

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discrimination and difficulty indices to assess the validity and reliability of the items as instruments to measure achievement.

II. METHODOLOGY

The respondents covered all freshmen, sophomore and junior teacher education students who actually took the examination. The fourth year students were not included since they were already outside the campus for their off-campus student teaching. The study used the descriptive – evaluative design. Descriptive design was employed to describe the level of performance of the students along the different components of the achievement test. Evaluative design was used to analyze the index of difficulty and index of discrimination of the test items.

The instrument used was an achievement test which covered the subjects taken by the students for the current school year. Item analysis was done on the answers of the students. The data were treated statistically using means, percentages and ranking.The performance of the students was measured through the percentage of students who got the correct answer. It is interpreted that the higher is the percentage, the better is the performance. Percentage is interpreted as follows:

81% - 100%	Very High Performance
61% - 80%	High Performance
41% – 60%	Average Performance
21% – 40%	Low Performance
0% – 20%	Very Low Performance

The year level of the students was classified as to whether the student is first year, second year or third year. The LET subject components refer to the three components of the examination, namely General Education, Professional Education and Majorship/Content Courses. The learning area refers to the specific subjects in the curriculum.The indices of difficulty and discrimination were interpreted using the following scales:

Index of Difficulty		**Index of Discrimination**	
Too easy	0.90 – 1.00	High	0.40 above
Somewhat easy	0.80 – 0.89	Satisfactory	0.20 – 0.39
Moderate diff index	0.30 – 0.79	Low	0.16 – 0.19
Somewhat difficult	0.21 – 0.29	Very Low	0.15 below
Too difficult	0.00 – 0.20		

III. RESULTS AND DISCUSSIONS

Levels of Performance of the Students in the Project TEACH:

Table 1a presents the level of performance of the students in terms of year level. Generally, the examinees registered an "Average" performance. Close to half of the students got the items correct. This indicates that there is still a need to improve the performance of the examinees. It was found out that the First Year examinees registered the highest level of performance (M=49.97) with the Second and Third Year examinees following the rank, respectively (M=48.19, M=48.01). This indicates that the first year students fared better in the examination than their other counterparts. This achievement could be attributed to the coverage of the examination of the first year students which include mostly general education subjects while the other year levels take professional education and majorship subjects. However, due to the proximity of the means, the performance is somewhat common among the year levels.

Table 1a Performance of the Examinees by Year Level

Year Level	Average Performance of Students	Interpretation
First Year	49.97	Average
Second Year	48.19	Average
Third Year	48.01	Average

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Table 1b shows the performance of the examinees in the achievement test subjects grouped according to the LET components. It shows that the examinees performed best in Majorship Courses while the least performance was in General Education.

Table 1b Performance of the Examinees by LET Subject Component

Year Level	Average Performance of Students	Interpretation
General Education	47.12	Average
Professional Education	47.72	Average
Content Courses/Majorship	47.95	Average

Learning Areas where Students Performed Well and Poorly:

Table 2a presents the ranking of the performance of the students in the General Education component. Data revealed thatwith a mean of 47.12 percent, the students had an Average performance in the General Education component. The best performance of the examinees was in Introduction to Humanities (M=68.00) while the least performance is in Philippine History (M=30.04). It could be noted that most of the learning areas with poor performance (Economics Education, General Psychology, Logic and Philosophical Analysis, and Philippine History) are under the Social Sciences.

Table 2a Ranking of Performance in the Learning Areas under General Education

Subject Area	Percentage of Students who got Correct	Interpretation	Ranking
Introduction to Humanities	68.00	High	1
Study and Thinking Skills	64.79	High	2
Literature of the World	55.88	Average	3
Basic Computer Education	58.76	Average	4
Komunikasyon sa Akademikong Filipino	55.21	Average	5
Biological Sciences	50.00	Average	6
Writing in the Disciplines	49.62	Average	7
Issues in Contemporary Society	48.86	Average	8
Masining na Pagpapahayag	48.32	Average	9
Basic Mathematics 2	47.15	Average	10
Literature of the Filipinos	46.17	Average	11
Speech and Oral Communication	45.93	Average	12
Philippine Government and Constitution	45.29	Average	13
Basic Mathematics 1	42.17	Average	14
Economics Education	40.22	Low	15
Pagbasa at Pagsulat tungo sa Pananaliksik	38.63	Low	16
Physical Sciences	38.25	Low	17
General Psychology	37.98	Low	18
Logic and Philosophical Analysis	31.14	Low	19
Philippine History	30.04	Low	20
Mean	47.12	Average	

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In the Professional Education component of the achievement test presented in Table 2b, the mean performance was 47.72 which were interpreted as Average. The best performance was in Teaching Profession (M=63.69) while the least performance was in Developmental Reading 2 (M=35.13). Only two Professional Education areas, Facilitating Learning and Developmental Reading 2, registered low performance among the examinees.

Table 2b Ranking of Performance in the Learning Areas under Professional Education

Subject Area	Percentage of Students who got Correct	Interpretation	Ranking
Teaching Profession	63.69	High	1
Guidance and Counseling	60.17	High	2
Child and Adolescent Development	53.35	Average	3
Principles of Teaching 1	52.77	Average	4
Developmental Reading 1	47.45	Average	5
Educational Technology 2	47.80	Average	6
Assessment 1 and 2	47.35	Average	7
Educational Technology 1	46.89	Average	8
Principles of Teaching 2	45.88	Average	9
Curriculum Development	40.88	Average	10
Social Dimensions of Education	40.41	Average	11
Facilitating Learning	38.65	Low	12
Developmental Reading 2	35.13	Low	13
Mean	47.72	Average	

In the different majorship areas, English had the best performance (M=62.21) while Content Courses had the least performance (M=38.46). It could be noted that only English registered a High performance among the examinees.

Table 2c Ranking of Performance of the Majorship Areas

Majorship Area	Average Performance of Students	Interpretation	Rank
English	62.21	High	1
Filipino	56.77	Average	2
Biological Sciences	52.77	Average	3
Physical Sciences	49.73	Average	4
MAPEH	49.54	Average	5
Social Studies	46.62	Average	6
Mathematics	41.35	Average	7
Home Economics	41.20	Average	8
Content Courses	38.46	Low	9

Table 2d presents the ranking of the performance in each of the major ship area. The best performance in English was in Mythology and Folklore (M=90.00) while the least performance is in Introduction to Stylistics (M=34.66). In Filipino, the best performance is in *Pagtataya at Ebalwasyon* (M=86.67) while the least performance is in *PamamahayagangPampaaralan* (M=15.00). In Biological Sciences, the best performance is in Science, Technology and Society (M=83.08) while the least performance was in Molecular Biology (M=23.08). In Physical Sciences, the best performance is in Science, Technology and Society (M=76.67) while the least performance is in Inorganic Chemistry (M=20.00). In MAPEH, the best performance is in Conducting and Choral Works (M=69.10) while the least performance is in Asian Music (M=20.00). In Social Studies, the best performance is in Building Bridges across Social Science (M= 85.00) while the least performance is in Africa (M=10.00). In Mathematics, the best performance is in Math Analysis 2

(M=86.66) while the least performance is in Linear Algebra (M=20.00). In Home Economics, the best performance is in Food Preparation (M=58.61) while the least performance is in Advanced Food (M=13.85). In Content Courses, the best performance is in Building Bridges across Social Sciences (M= 59.69) while the least performance is in Astronomy (M=25.15).

Table 2d Ranking of Performance in the Learning Areas under Majorship

Subject Component	Subject Area	Percentage of Students who got Correct	Interpretation	Ranking
Content Courses	Building Bridges across Social Sciences	59.69	Average	1
	Home Econ and Livelihood Education	55.32	Average	2
	Public Speaking and Debate	50.06	Average	3
	Children's Literature	49.42	Average	4
	Personhood Development	48.18	Average	5
	Foundations of MAPE	43.01	Average	6
	Basic Geography	40.71	Average	7
	Problem Solving	32.62	Low	8
	Geometry	31.95	Low	9
	Inorganic Chemistry	31.23	Low	10
	Physics for Health Sciences	30.12	Low	11
	Analytic Geometry	27.92	Low	12
	Advanced Algebra and Trigonometry	25.97	Low	13
	Pamamahayagang Pampaaralan	25.61	Low	14
	Astronomy	25.15	Low	15
MEAN		38.46	Low	
Home Economics	Food Preparation	58.61	Average	1
	Fundamentals of Nutrition	57.23	Average	2
	Elementary Bookkeeping	56.94	Average	3
	Needlecraft and Handicraft	50.46	Average	4
	Marriage and Family Relations	47.31	Average	5
	Entrepreneurship	45.77	Average	6
	Cosmetology	45.56	Average	7
	Art Appreciation	45.28	Average	8
	Drafting	44.44	Average	9
	Strat in Teaching Home Econ	40.77	Average	10
	Textiles and Clothing Construction	35.68	Low	11
	Food Service Management	27.69	Low	12
	Electricity	20.00	Very Low	13
	Advanced Nutrition	14.43	Very Low	14
	Advanced Food	13.85	Very Low	15
MEAN		41.20	Average	
English	Mythology and Folklore	90.00	Very High	1
	Business Correspondence	86.25	Very High	2
	Campus Journalism	83.50	Very High	3
	English and American Literature	82.50	Very High	4
	Play Production	81.33	Very High	5
	Intro to Linguistics	71.30	High	6
	English for Specific Purposes	70.66	High	7
	Public Speaking	60.00	Average	8.5
	Teaching Listening, Speaking, Reading,	60.00	Average	8.5

	Literature			
	Language Curriculum	50.66	Average	10
	Structure of English	45.00	Average	11
	Translation and Editing	42.66	Average	12
	Literary Criticism	38.66	Low	13
	Action Research	36.00	Low	14
	Intro to Stylistics	34.66	Low	15
MEAN		62.21	High	
Music, Arts, Physical Education, and Health (MAPEH)	Conducting and Choral Works	69.10	High	1
	Personal and Community Health	68.00	High	2
	Integrated Music Theory	67.28	High	3
	Strat in Teaching MAPEH	65.46	High	4.5
	Gymnastics	65.46	High	4.5
	Advanced Individual Sports	61.82	High	6
	Movement Education	60.00	Average	7
	Philippine Folk Dances	56.00	Average	8
	Organization and Administration	52.72	Average	9
	Aquatics	49.10	Average	10
	Foundations of MAPEH	46.67	Average	11
	Safety Education and First Aid	42.00	Average	12
	Special Education	40.00	Low	13
	Action Research	30.91	Low	14
	Western Music	24.00	Low	15
	Advanced Team Sports	23.64	Low	16
	Asian Music	20.00	Very Low	17
MEAN		49.54	Average	
Social Studies	Building Bridges across Social Sciences	85.00	Very High	1
	Asian Studies	77.50	High	2
	North and South America	62.50	High	3
	Action Research	60.00	Average	4
	Economic Strategy	57.50	Average	5
	Sociocultural Anthropology	56.67	Average	6
	Personhood Development	50.00	Average	7
	Micromacro Economics	46.67	Average	8
	Intro to Social Philosophy	45.00	Average	9.5
	World History and Civilization	45.00	Average	9.5
	Philippine Nationalism	36.67	Low	11
	Strat in Teaching	30.00	Low	12.5
	Trends in Social Studies	30.00	Low	12.5
	Basic Geography	28.33	Low	14
	Philippine Geography	25.00	Low	15
	Africa	10.00	Very Low	16
MEAN		46.62	Average	
Biological Sciences	Science Technology and Society	83.08	Very High	1
	Strat in Teaching	80.00	High	2
	Ecology	75.00	High	3
	Cell Biology	69.24	High	4
	Action Research	67.50	High	5
	Inorganic Chemistry	61.54	High	6
	History and Philosophy of Science	54.62	Average	7

	Statistics for Biology	42.50	Average	8
	Physics for Health Sciences	40.00	Low	9.5
	Genetics	40.00	Low	9.5
	Morphology	38.40	Low	11
	Organic Chemistry	33.84	Low	12
	Anatomy and Physiology	30.00	Low	13
	Molecular Biology	23.08	Low	14
MEAN		52.77	Average	
Physical Sciences	Science Technology and Society	76.67	High	1
	Strat in Teaching	74.00	High	2
	History and Philosophy of Science	62.22	High	3
	Analytic Chemistry	62.00	High	4
	Action Research	60.00	Average	5.5
	Organic Chemistry	60.00	Average	5.5
	Optics	58.00	Average	7
	Mechanics	50.00	Average	8
	Electricity and Magnetism	46.67	Average	9
	Statistics for Physical Sciences	40.00	Low	10
	Modern Physics	30.00	Low	11.5
	Thermodynamics	30.00	Low	11.5
	Astronomy	26.67	Low	13
	Inorganic Chemistry	20.00	Very Low	14
MEAN		49.73	Average	
Mathematics	Math Analysis 2	86.66	Very High	1
	Geometry	64.44	High	2
	Logic and Set Theory	52.72	Average	3
	Number Theory	52.22	Average	4
	Advanced Algebra	48.89	Average	5.5
	Strat in Teaching	48.89	Average	5.5
	Math Analysis 3	46.66	Average	7
	Theory of Probability	40.00	Low	8
	Abstract Algebra	37.78	Low	9
	Practical Mathematics	36.67	Low	10
	Trigonometry	33.33	Low	11
	Math Analysis 1	31.11	Low	12
	Action Research	28.89	Low	13
	Statistical Applications	26.67	Low	14
	Differential Equation	24.44	Low	15
	Instructional Materials	23.64	Low	16
	Linear Algebra	20.00	Very Low	17
MEAN		41.35	Average	
Filipino	*Pagtataya at Ebalwasyon*	86.67	Very High	1
	Panitikang Pambata	85.00	Very High	2
	Paghahanda ng Kagamitang Pampagtuturo	76.67	High	3
	Maunlad na Filipino	65.71	High	4
	Pamaraan sa Pagtuturo	63.33	High	5.5
	Teknikal na Pagsulat	63.33	High	5.5
	Panulaang Filipino	61.67	High	7
	Panitikang Bernacular	60.00	Average	8

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	Pagsasaling-wika	58.57	Average	9
	Malikhaing Pagsulat	55.00	Average	10
	Dulang Filipino	52.86	Average	11
	Maikling Kuwento at Nobela	45.71	Average	12
	Action Research	41.67	Average	13
	Introduksyon sa Lingwistika	41.43	Average	14
	Sanaysay Debate at Talumpati	35.71	Low	15
	Pamamahayagang Pampaaralan	15.00	Very Low	16
MEAN		56.77	Average	

Index of Difficulty and Discrimination of the Items:

Table 3a presents the level of difficulty of the items in the Project TEACH broken down into the different subject items. This shows that 462 or 73.92 percent of the items are of moderate difficulty. This means that a big percentage of the items are appropriate enough for the level of the students. The percentages of the items somewhat followed a normal curve. There are only a few very easy or very difficult items while a big percentage of items were average in difficulty.

Table 3a Difficulty Index of the Project TEACH Items

Level of Difficulty	General Education		Professional Education		Majorship		Total	
	f	%	F	%	F	%	f	%
Too easy	0	0.00	3	2.14	5	1.82	8	1.28
Somewhat easy	7	3.33	3	2.14	16	5.82	26	4.16
Moderately difficult	169	80.48	113	80.71	180	65.45	462	73.92
Somewhat difficult	22	10.48	13	9.29	32	11.64	67	10.72
Too difficult	12	5.71	8	5.71	42	15.27	62	9.92
	210	100.00	140	100.00	275	100.00	625	100.00

Table 3b presents the level of discrimination of the items in the Project TEACH broken down into the different subject items. This shows that 298 or 47.68 percent of the items have Very Low discrimination index. This means that these items failed to discriminate the high performers with the low performers. This also indicates that almost half of the items are poorly constructed items.

Table 3b Discrimination Index of the Project TEACH Items

Level of Discrimination	General Education		Professional Education		Majorship		Total	
	f	%	f	%	f	%	f	%
High	22	10.48	8	5.71	44	16.00	74	27.92
Satisfactory	59	28.10	51	36.43	87	31.64	197	31.52
Low	26	12.38	18	12.86	12	4.36	56	8.96
Very Low	103	49.05	63	45.00	132	48.00	298	47.68
	210	100.00	140	100.00	275	100.00	625	100.00

Table 3c presents the decision on the Project TEACH items. The table shows that 264 or 42.24 percent of the items are to be retained. About one-third (33.76%) of the items are to be rejected while around one-fourth (24.00%) of the items need revision.

Table 3c Decision on the Project TEACH Items

Decision on Test Questions	General Education		Professional Education		Majorship		Total	
	f	%	f	%	f	%	f	%
Reject	62	29.52	44	31.43	105	38.18	211	33.76
Retain	81	38.57	59	42.14	124	45.09	264	42.24
Revise	67	31.91	37	26.43	46	16.73	150	24.00
Total	210	100.00	140	100.00	275	100.00	625	100.00

III. CONCLUSION

The average performance in the achievement testwas common among the students when grouped by year level, although the first year teacher education students fared better than other students in the higher year levels. However, with the percentage of students getting the correct answer being only close to one-half, there is still a need to improve the performance of the students. The examinees performed best in the Major ship areas and least in the General Education subjects. However, there is also commonality among the performance in the three LET components.There is a need to improve instruction in the learning areas particularly Philippine History, Developmental Reading 2, Introduction to Stylistics, Pamamahayagang Pampaaralan, Molecular Biology, Inorganic Chemistry, Asian Music, Africa, Linear Algebra, Advanced Food and Astronomy.There is a need for teachers to come up with innovative strategies to make learning more meaningful and thus, to enhance retention of concepts for the subjects which registered poor performance.

Majority of the items in the achievement test are appropriate for testing and are considered valid. However, only more than a half of the items are constructed well. Close to one-half of the items are to be retained in the examination. There is a need to improve the test construction abilities of teachers. There is also a need to construct items which will approximate the difficulty level of the items given in the actual Licensure Examination for Teachers.

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