TEACHER EDUCATION ADMISSION TEST RESULTS IN MATHEMATICS: BASIS FOR PEDAGOGICAL ENHANCEMENT

Enriqueta N. Siva
enriqueta.siva@gsc.edu.ph

ABSTRACT College admission test is not an uncommon occurrence in an incoming freshman's journey. It is a measure of his/her aptitude and a guage whether he/she will be admitted in a higher education institution. Guimaras State College (GSC) conducts admission test yearly to all its incoming freshmen. This study looked into the admission test performance of all the 90 incoming freshmen to the College of Teacher Education of the GSC-Salvador campus, specifically looking into the mathematics outcome. It is aimed to determine whether pedagogical enhancement in mathematics is necessary. The study employed a descriptive methodology and utilized mean, percentage and rank as its statistical tool. The 90 incoming freshmen was composed of all the test-takers from 2015 to 2019 which is inclusive of four academic years. The office of the Guidance Counselor provided the data which was used in this study. It was found out in these data that the takers performed as "average" in their mathematics questions, which was composed of basic mathematics, algebra, geometry, trigonometry and statistics. It also showed that the students performed best in trigonometry and poor in basic mathematics. There were salient topics identified in each mathematics area where the students performed either good or poor. The author recommended, based on the outcome, that pedagogical enhancement be employed to improve student learning and performance.

Keywords: Guimaras State College, mathematics performance, pedagogical enhancement, achievement test, Buenavista

INTRODUCTION

In the Philippine setting, a graduating high school student prepares for one of his anticipated activities. College or University admission test is one of the most anticipated activity of the graduating high school students especially in the Philippines. Preparation for the college examinations are popular that the parents even pay for review centers to secure their children's chance to be accepted in a prestigious university. In theory, all students in the Philippines can gain access to higher education if they meet the admission criteria most especially if they meet the tuition and living cost. However, admission requirements remain dependent upon individual higher education institutions (HEIs). Entrance to HEIs is dependent on the possession of a high school certificate of graduation and in many HEIs the result of their own entrance examination (Montalbo, Evangelista, & Bernal, 2018).

In the Philippines, admission to public universities can be very competitive. Universities and colleges, maintain their own admissions criteria, which may include a school administered admissions test, secondary school grades, an interview, and a medical examination. Admission test score is one significant metric in the selection of the students who will be successful in their later professional career and those candidates who are able to study diligently enough to pass all the study requirements. In that sense the selection procedure at admission is selecting in the best candidates (Bank, 2012).

On the other hand, most universities and colleges use high school grade point average instead of the admission test scores to decide which students to accept in an attempt to find the most dedicated students. The basic assumption is that a high school student with a high grade point average will achieve high grades at universities (Sulphey, Alkahtani, & Syed, 2018).

Senator Edgardo Angara (2009) lamented that the decline of science and math skills of Filipinos is part of the overall decline of education in the country. He pointed out that in the National Achievement Tests, for example, 97.9 % of high school students failed, and the average score for English was 50% (Senate of the Philippines, 2009). In the Trends in the International Math and Science Study or TIMMS, administered every four years by the International Association for the Evaluation of Education Achievement (IAEEA) based in Boston College, USA., the performance of the Philippines continues to be poor: 41st in Math and 42nd in Science, out of 42 countries, in the High School level (Macha, Mackie, & Magaziner, 2018).

Guimaras State College is conducting entrance examination to the incoming freshmen and such includes the item in Mathematics. Mathematics plays an instrumental role in the development of all scientific discipline. As distinct as it is, mathematics is thought of as a fundamental part of any curriculum (Gafoor & Kurukkan, 2015). Therefore, a solid background in mathematics is important for successful participation in all programs of Guimaras State College. And all of our students should prove they have attained a minimum level in mathematics through their entrance exam results.

Pedagogical enhancement then can be enforced if the results of their admission examination in Mathematics is low. Analysis of such results is empirical so measures can be affected if found to be really needed. It is on this ground that this study is conducted.

Objectives of the Study

This study was conducted to determine the GSC Teacher Education admission test results in mathematics as basis for pedagogical enhancement during the AY 2015-2019 at Guimaras State College, Buenavista, Guimaras, Philippines. Specifically, this study was conducted to seek answer to the questions (a) what is the performance of the incoming freshmen students of College of Teacher Education on mathematics admission test for the last four years; (b) what is performance of the freshmen students on areas of mathematics when grouped as whole; (c) what is the performance of the freshmen students on areas of mathematics when categorized as to basic mathematics, algebra, geometry, trigonometry, statistics, and calculus; and (d) what pedagogical enhancement can be done to students who are taking Math courses based from their entrance exam results.

METHODOLOGY

This study utilized descriptive research design. The data used were secondary data taken from the office of the Guidance Counselor. The respondents of the study were the 90 incoming freshmen students of College of Teacher Education of Guimaras State College Salvador Campus from Academic Year 2015-2019 gathered through with a use purposive sampling. The study was conducted in the Salvador Campus of the Guimaras State College (GSC), located in the Province of Guimaras, Philippines. Utilizing a purposive sampling method, the subjects of the study were all of the 90 incoming freshmen students who took the College admission test for the academic years 2015 – 2019 and enrolled accordingly to the College of Teacher Education. The data were lifted from the records of GSC's Office of the Guidance Counselor. The data in focus was the admission test given to incoming freshmen, which involved 30 mathematics questions. Statistical tools used were frequency, percentage, mean, and rank.

RESULTS AND DISCUSSION

Figure 1 presents the performance of the incoming freshmen students of college of teacher education on the mathematics admission test result for the last four years. Result revealed that Academic Year 2015-2016 got the highest test result (M=21.42) while Academic Year 2017-2018 got the lowest test result (M=17.37). It shows a downtrend in the mathematics performance means of incoming college freshmen, which is reflective of the worldwide situation for the past two decades (Maltese & Tai, 2011). Thus, Philippines is not alone in this scenario of decline in mathematics performance of its students (Blomeke & Delaney, 2014).

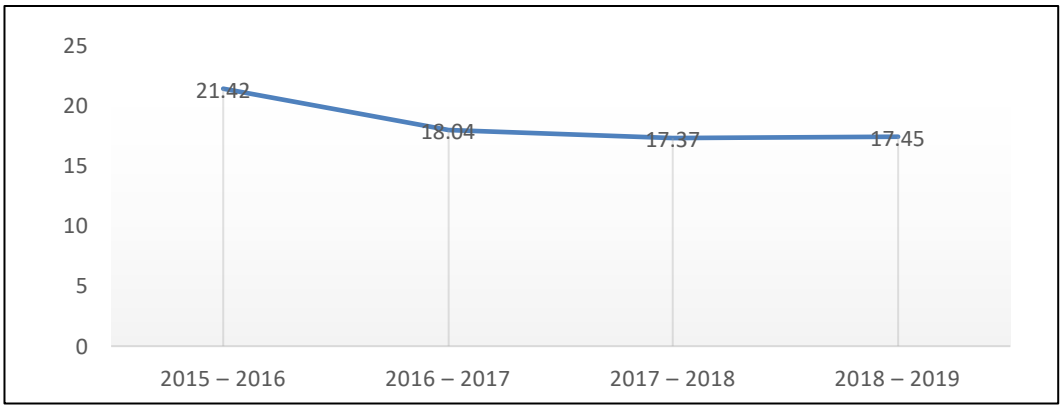

Figure 1. Performance of the incoming freshmen students of the College of Teacher Education from the last four years

Table 1 presents the performance of the incoming freshmen student of college of teacher education on areas of mathematics when grouped as a whole. Result revealed that the trigonometry got the highest percentage of 67 among the areas of mathematics. Followed by geometry (48.91%), Algebra (46.69%), and statistics (45.56%). However, basic mathematics got the lowest test result of 45.43%.

Table 1. Performance of the Incoming Freshmen Student of College of Teacher Education on Areas of Mathematics When Grouped as a Whole

Areas of Mathematics	Percentage	Rank
Basic Mathematics	45.43	5
Algebra	46.69	3
Geometry	48.91	2
Trigonometry	67.00	1
Statistics	45.56	4

Table 2 presents the performance of the incoming freshmen student of college of teacher education on areas of mathematics when grouped according to basic mathematics. Result revealed that 85% of the students got the correct score on item no. 1 "20% of 600 is ____." that rank first. Followed by item no. 14 "What is the Roman Symbol of 239?", that rank second, item no.16 "Reduce 12/48 to the lowest mean.", that rank third. However, item no.8 "The least common multiple of 12, 20, 42, and 56 is ___." got the lowest rank with 13% of correct answer.

Table 2. Performance of the Incoming Freshmen Student of College of Teacher Education on Areas of Mathematics in the subject Basic Mathematics

Items	Percentage of students who got the correct answer	Rank
1	85.00	1
8	13.00	7
9	18.33	6
13	28.33	5
14	80.00	2
16	50.00	3
18	43.33	4
Overall Percentage	45.43%	

Table 3 presents the performance of the incoming freshmen student of college of teacher education on areas of mathematics when grouped according to algebra. Result revealed that item no.17 "Find the 14th term in sequences 5,7,9,11." got the highest percentage of 86.67% of correct answer. Followed by item no.5"The mini cab can carry at most twelve persons. Which is true?" with 60% and item no. 22 "In the expression 2x^2=3x-1, its leading term is __." With 51.67%. However, item no.4 "Express (4a-3b) (4a+3b) as polynomial." got the lowest percentage of 27%.

Table 3. Performance of the Incoming Freshmen Student of College of Teacher Education on Areas of Mathematics when grouped according to Algebra

Items	Percentage of students who got the correct answer	Rank
4	27.00	12
5	60.00	2
6	50.00	4
10	33.33	11
17	86.67	1
19	45.00	7
20	38.33	8.5
21	46.67	6
22	51.67	3
23	48.33	5
29	35.00	10
30	38.33	8.5
Overall Percentage	46.00	

Table 4 shows the performance of the incoming freshmen student of college of teacher education on areas of mathematics when grouped according to Geometry. Result revealed that item no. 25 "If <5=130°, what is m<6?" got the lowest percentage of 25% while item no. 15 "How many rectangular lots 10m by 40m can be contained in a square lot with an area of 160,000 square meters?" got the highest percentage (70%) of correct answer.

Table 4. Performance of the Incoming Freshmen Student of College of Teacher Education on Areas of Mathematics when grouped according to Geometry

Items	Percentage of students who got the correct answer	Rank
2	49.00	4
3	35.00	6
11	60.00	2
12	46.67	5
15	70.00	1
24	56.67	3
25	25.00	7
Overall Percentage	48.91	

Table 5 shows the performance of the incoming freshmen student of college of teacher education on areas of mathematics when grouped according to trigonometry. Result revealed that the questionnaire have only one item on areas of Trigonometry. Additionally, 67% of students got the correct answer on this item "If one acute angle of a right triangle is 22°, the other acute angle is ___?".

Table 5. Performance of the Incoming Freshmen Student of College of Teacher Education on Areas of Mathematics when grouped according to Trigonometry

Item	Percentage of students who got the correct answer	Rank
7	66.67	1
Overall Percentage	66.67	

Table 6 shows the performance of the incoming freshmen student of college of teacher education on areas of mathematics when grouped according to statistics. Result revealed that item no. 28 "The mean of seven scores is 2.1. Find the sum of the scores." got the highest percentage of 57.67%. Followed by item no. 27 "The score of a student in three tests are 19, 17, and 15. What must be his 4th score to gain an average of 17?". However, item no.26 "The graph used to show the relationship of a part to the whole is _____." got the lowest percentage of correct answer with 41.67%.

Table 6. Performance of the Incoming Freshmen Student of College of Teacher Education on Areas of Mathematics when grouped according to Statistics

Items	Percentage of students who got the correct answer	Rank
26	41.67	3
27	43.33	2
28	57.67	1
Overall Percentage	45.56	

CONCLUSION

The study found that the admission test results of the incoming freshmen of the College of Teacher Education for mathematics for the past 5 years were on average level. It was also noted that among the areas of mathematics, it is trigonometry that ranked 1 where more of the students got the correct answers as opposed to basic mathematics that ranked 5. Considerably, the admission test did not include a question that involved calculus. Basic education curriculum prior to K to 12 does not include calculus and even in the new curriculum (K to 12), not all students need to study calculus among other specialized mathematics areas (Jaudinez, 2019). The study also identified salient topics in each area of mathematics where the incoming freshmen showed their weakness and their strength. For example, in basic mathematics, most of the students got correct answers in questions involving "percentage" while few of them got the correct answers in the topic of "least common multiple". For Algebra, most of them got the questions involving "sequences and series" while most of them got it wrong on questions involving "special products of binomial." Also, specific topics were also identified for geometry, and statistics. With the foregoing, the author deemed it appropriate to recommend some pedagogical enhancement that involves all the areas of mathematics, and taking into consideration the specific topics that the students showed poor performance. These pedagogical enhancement may include the design of learning materials and modes of implementation of these material (Yeh, et al., 2019).

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