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COMPARATIVE PERFORMANCE OF FRESHMEN COLLEGE STUDENTS IN ALGEBRA

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Abstract: This study aimed to compare the performance in Algebra of the freshmen college students of the Abra State Institute of Sciences and Technology for school year 2013-2014. Performance of the respondents were gauged using an achievement test and the descriptive method of research was used in analyzing and interpreting the data of the study.

The level of performance of the students do not differ whether they come from the different colleges of the institution. It was also found out that their weakness lay in almost all the content areas.

The findings of this study will inform educators to strengthen mathematical concepts where students are weak. Continuous assessment on the strengths and weaknesses of students in the achievement test is encouraged to measure the progress of students.

Keywords: Mathematical Performance, Comparative Performance, Algebra, Freshmen Students

INTRODUCTION

Mathematics has always been one of the major learning areas in the field of education from elementary to the tertiary level because it plays a vital role in our lives. Man needs sufficient competence in the basic mathematical concepts. Nowadays, in almost every field of endeavor, one finds mathematics in some forms, not only useful but also necessary. Mathematics is the study of numbers and patterns. With the help of Mathematics, men have built spaceships, modern computers, large buildings, and longer bridges. It is used by persons in banks, in factories, and in department and grocery stores.

Like any other developing country, the Philippines banks on an educated society, one that can actively participate in national development, that can put to good use, and enjoy the benefits, and be able to sustain the fruits of such efforts. It is already an accepted theory that the strength of the nation is premised on its human resources, educated with the base in Mathematics in turn, is the key to nation building.

Our present educational system is destined to improve the quality of life. The role of education in shaping the lives of our future generation is vested in schools and institutions through formal and non-formal system. The philosophy is to provide an education that is complete, meaningful and relevant, one that will prepare and equip every individual to be

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nationalistic, productive, responsible and caring member of the society and we teachers and educators have direct responsibilities in the pursuit of this mission. It is our dream to see these students exit from the school system as our new partners in nation building.

Teaching algebra today must reflect recent developments in the realm of Mathematics. Clearly, one aim of algebra is to acquaint the student with the algebra that is used functionally by the present-day Mathematicians. Therefore the course must include topics not previously in the elementary and intermediate algebra curriculum for example: Set Theories, Structure of Number Systems, Inequalities as well as equations, The Function Concept, and greater attention to the important role of the Coordinate Plane. Needless to say, the development of these topics in a beginning course in Algebra should be appropriate to the mathematical maturity of the student.

College Algebra is not simply a small mathematical world in itself. It has a far reaching role throughout mathematics, including the areas of geometry and trigonometry. Through a heightened emphasis, a meaning and structure, students of average or less-than-average ability can benefit as much as the superior student.

It should be emphasized that topics of modern algebra are not “substitutions” for topics of traditional algebra. Rather, modern topics provide a more meaningful way of developing understanding basic to the traditional topics.

Of crucial importance in the subject is the spirit and technique used to bring the context to the student. By stressing individual inquiry and participation, and by leading the student through a carefully planned series of discoveries, teacher and text can provide interest in mathematics; understanding of the foundations of mathematics and manipulative skills based on understanding.

This study was undertaken to compare the performance of first year college students of the Abra State Institute of Sciences and Technology in Algebra.

METHODOLOGY

This section presents the procedures and techniques that were used in gathering and analysing the data in the study.

Research Design

This study was concerned with the comparison of the mathematics performance of the first year college students in Algebra, therefore the descriptive correlational research design was utilized.

ISSN: 2278-4012, Volume:8, Issue:1, January 2019

Respondents

The first year college students of the Abra State Institute of Sciences and Technology (ASIST) who were enrolled in College Algebra during the first semester, School Year 2013-2014 served as the respondents of the study.

RESULTS AND DISCUSSIONS

Table 1. Level of Mathematics Performance of the Respondents by Content Area

Content Area	# of Items	CTE		VIT		CTEHT		CAFC		CSIT		As a Whole	
		X	DR	X	DR	X	DR	X	DR	X	DR	X	DR
Operations of Algebraic Expressions	10	4.28	P	5.75	S	5.4	S	3.92	P	5.73	S	5.02	S
Special Products and factoring	10	4.04	S	3.82	P	4.03	S	3.2	P	5.38	S	4.09	S
Fractions	10	5.16	S	5.19	S	3.95	p	3.55	P	4.85	S	4.54	S
Linear Equations	10	3.74	P	3.23	P	2.3	P	1.99	P	3.54	P	2.96	P
Functions and Graphs	10	4.2	P	3.96	P	2.63	P	2.31	P	3.5	P	3.2	P
Over-all	50	20.42	S	21.95	S	18.31	P	14.97	P	23	S	19.81	P

Legend: P – Poor S – Satisfactory NI – Needs Improvement DR – Descriptive Rating

The student-respondents performed “Satisfactorily” in Operations of Algebraic Expressions, Special Products and factoring, and Fractions; and “Poor” on Functions and Graphs, Linear Equations in One Unknown and Systems of equations in Two Unknowns. The overall performance of students is described as“Poor”.

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Table 2. Difficulty Indices of the Content Learning Areas in College Algebra as Measures of Strength and Weaknesses

Content Area	# of Items	CTE		VIT		CTECHT		CAFC		CSIT		As a Whole	
		X	DR	X	DR	X	DR	X	DR	X	DR	X	DR
Operations of Algebraic Expressions	10	43	W	58	S	54	S	39	W	57	S	50	S
Special Products and factoring	10	37	W	32	W	23	W	20	W	35	W	29	W
fractions	10	42	W	40	W	26	W	23	W	35	W	33	W
Linear Equations	10	37	W	32	W	23	W	20	W	35	W	29	W
Functions and Graphs	10	52	S	32	W	40	W	36	W	39	W	40	W
Over-all	50	42	W	39	W	33	W	28	W	40	W	37	W

Legend: S – Strong = .50 and above Weak – less than .50 DR – Descriptive Rating

Students are found to be “strong “ in Operations of Algebraic Expressions but they are “weak” in all learning areas.

Table 3. Summary of One way Analysis of Variance (ANOVA) on the Performance of Students by College

Source of Variance	Degrees of Freedom	Sum of Squares	Mean Squares	Computed
Between Groups	4	7.17	1.79	1.32
Within Groups	20	19.7	.985	
Total	24	26.87		

Ft = 2.87 α = .05

The level of performance of students by college had no significant difference whatever college they belong. They performed the same in College algebra.

Results of the study are corroborated with the following studies:

Agoot(2006) found out that the first year college students of Divine Word College of Vigan have a satisfactory level of performance in College Algebra. The students are strong on the operations of algebraic expressions, exponents, special products and factoring. However, weak on the content area on equations and inequalities.

Aruejo(2006) also found out that the level of performance of student-respondents performed “Very Satisfactory” in Elementary Algebraic Notation, Special products and

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fractions while "Satisfactory" level of performance in Factoring, Fractions and Graphs, Linear equations in One Unknown, and Systems of Equations in two Unknowns.

Aguilar(2004) concluded that the level of Mathematics Performance of the students in intermediate algebra by learning areas, by section and as whole is described as "weak". It shows that no significant relationship that exist with respect to place of residence.

Gagto (2001) in his study regarding the performance of College Algebra of first year students in the University of Northern Philippines- Candon City, revealed that the level of performance was at " Satisfactory" level on the difficulty indices of the content area while "Weak" in the other content area in College algebra.

CONCLUSIONS AND IMPLICATIONS

There were no significant differences on the level of performance of the respondents in Algebra but this will inform educators to strengthen mathematical concepts where students are weak. Continuous assessment on the strengths and weaknesses of students in the achievement test is encouraged to measure the progress of students. More practice exercises and drills should be given to students and remedial teaching is encouraged by teachers at all times.

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