



EXPLORING THE EFFECT OF MATH CONTENT ENRICHMENT PROGRAMME ON FIRST YEAR PROSPECTIVE STUDENT TEACHERS' OF PEDAGOGY OF MATHEMATICS

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Abstract

The objective of this study was to compare the performance of prospective student teachers' in a Pre and Post Math Aptitude Test during their first year of study at B.Ed., Loyola College of Education, Chennai, India. This article also aims to examine the student's understanding the Mathematical concepts particularly in Life Mathematics, Mensuration, Measurement, Algebra, Direct & Indirect Variations, Ratios & Proportions and Probability. A total of 26 first year prospective student teachers' from the Pedagogy of Mathematics were selected to answer the Math Aptitude Test. The Pre-test was held in the beginning of the first semester prior to Math Content Enrichment Programme, while the Post-test was conducted after the Math Content Enrichment Programme. The results showed that the prospective student teachers' performance in Post-test was better compared to that of Pre-test. However, a statistical analysis of students' performance on each question showed that most students did not understand the basic concepts of Direct & Indirect Variations, Ratios & Proportions and Life Mathematics.

Key words: Prospective student teacher, Math Aptitude Test, Content Enrichment Programme, Pre-test, Post-test

1.Introduction

Through Math Content Enrichment Course, first year prospective student teachers' will experience and explore different strategies to teach mathematics concepts in an interactive fun manner. The strategies are built around the essential mathematical skills which help learners work with concrete materials to be able to understand abstract concepts better. Prospective student teachers will be able to adopt these strategies in the classroom for making mathematical concepts accessible and relevant for learners. The Content Enrichment Course helps Prospective student teachers' to explore simple low cost material like tooth picks, ice cream sticks, bottle cans, counters, playing cards and paper folds to explore concepts in Numbers – computation; Geometry – patterns, symmetry; Measurement – estimation and data handling.

Creative and imaginative students are important than ever in this modern society. This is a result of the rapid development of Science and technology as well as the increased need for Mathematics. Math is used in many facets of daily life, despite the fact that many people view it as an abstract subject. This explains why so many pupils are drawn to it.

The Math Aptitude Test consisted of topics Mathematics such as Life Mathematics, Mensuration, Measurement, Algebra, Direct & Indirect Variations, Ratios & Proportions and Probability.

2. Research Methodology

2.1 Population and Sample

A total of 26 first year Prospective student teachers' from the Pedagogy of Mathematics of Loyola College of Education, Chennai, India were selected to answer the Math Aptitude Test. The Pre-test was held in the beginning of the first semester prior to Math Content Enrichment Programme, while the Post-test was conducted after the Math Content Enrichment Programme,

2.2 Tool used for the study

The Math Aptitude Test consisted of 15 questions each question carrying one mark. A summary of Prospective student teachers demographics is shown in Table: 1

Table 1: Gender wise Distribution

	Male	Female	Total
Pedagogy of Mathematics B.Ed. –First Year	3	23	26

Table 2: Description of content Math Aptitude Test (Questions 1-15)

Content	Question No	No: of Items	Weightage
Life Mathematics	1,3,8	3	20%
Direct & Indirect Variations	2,7	2	13.33%
Measurement	5,11	2	13.33%
Mensuration	6,12	2	13.33%
Ratios & Proportions	10,15	2	13.33%
Probability	4,9	2	13.33%
Algebra	13,14	2	13.33%

3. Results and Discussions

3.1 Overall Result

Figure 1 illustrates the percentage of first year Prospective student teachers' performance for pre and post Math Aptitude test by question and content. The graph shows changes in the percentage of prospective student teachers' obtaining correct answers between the pre and post-tests. Based on the graph, it can be seen that the students had lack of understanding in the topics Direct & Indirect Variations, Ratios & Proportions and Life Mathematics since the percentage of students who were able to answer the questions correctly was low. There may be many factors affecting these results, such as the different backgrounds with respect to study before entering Loyola College of Education and psychological incidences like Math anxiety.

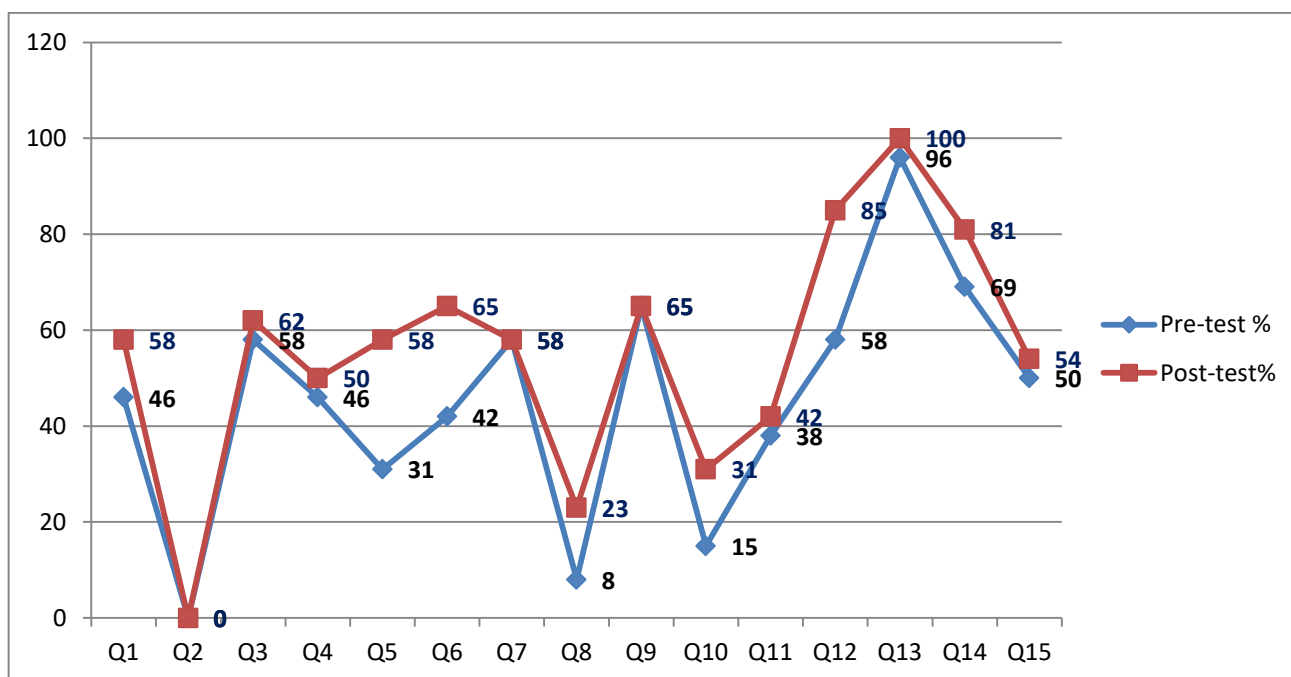


Figure 1 Percentage of first year Prospective student teachers' performance for pre and post Math Aptitude test by question and content

Table3: Paired Samples Statistics: Means & Standard Deviation

	N	Mean	Standard Deviation
Pre-Test	26	6.38	3.10
Post-Test	26	8.38	2.90

Table4: Paired Samples Statistics: Correlation

	r	Sig. Value
Pre-Test - Post-Test	0.530389137	0.000

From the results shown in Table3,the mean for the Post-test score was approximately higher 8 than that of Pre-test ,while the Pearson correlation between pre- and post-tests (Table 4) shows moderate and positive correlation with the value of $r = 0.53$, with a significant value of < 0.05 . This indicates that the prospective student teachers' performance in post-test was better than pre-test after taking the content enrichment programme.

3.2 Statistical Tools

3.2.1

A t-test is a statistical calculation that measures the difference in means between two sample groups. The results from a t-test evaluate the significance of the mean difference to determine whether the outcomes occur by chance.

H₀: There is no significant difference between pre-test and post-test.

Table 5 below shows the critical value, less than 0.05 .Thus the null hypothesis (H₀) is rejected, which also implies that there is significant differences between pre-test and post -test.

Table5: t-Test: Paired Two Sample for Means

	Pre-test	Post-test
Mean	6.384615385	8.384615385
Variance	9.606153846	8.406153846
Observations	26	26
df	25	
t Stat	-3.50202098	
P(T<=t) one-tail	0.000878285	
t Critical one-tail	1.708140761	
P(T<=t) two-tail	0.001756569	
t Critical two-tail	2.059538553	

Conclusion

This study's main goal was to ascertain how prospective student teachers' Mathematics achievement related to one another. The test had seven parts: algebraic expression; solving equations; trigonometric function; and, finally, function and domain. The findings indicated that the "pre" and "post" tests had a marginally meaningful difference. The proportion of students who got the proper answers was still low, though.

To comprehend and resolve mathematical problems, knowledge of mathematics is necessary. Without this, pupils will not fully understand how the new content relates to the earlier ideas. The worst scenario is that students would reject all new material or struggle to apply the incorrect notions, which would leave them with a misunderstanding of the contents.

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