

Z-A APPROACH TO ENHANCE PEDAGOGICAL CONTENT KNOWLEDGE OF PROSPECTIVE TEACHERS

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ABSTRACT

Every aspect of everything in nature is subject to change. Education is no exception. New methods of teaching are tested in the field of education to have a fine result. In this research paper the researcher attempts to explain the wonder of physics by a new approach. The aim of this study is to find out the impact of Z-A for the enhancement of pedagogical content knowledge of prospective teachers. The sample consists of 53 prospective teachers from bachelor of education. The pre-test and post test equivalent group design was followed for this study. The data was analyzed using t test. In this study Z-A approach could significantly enhances the pedagogical content knowledge of prospective teachers. Traditional method of teaching could not attribute anything in enhancing the pedagogical content knowledge of prospective teachers. Quality of education depends on the quality of teacher who impart the education.

INTRODUCTION

Science is the system of knowing the universe through data collected by observation and controlled experimentation. Science looks for different kinds of path and relationship such as relationship between different things relationship between the parts of things relationship between the properties possessed by several things etc. After discovering relationships, the science formulates statement that describes them. Man is able to conquer time and distance with the help of science. Science helped to travel in a space beyond the sky. Science improved his life conditions remarkably. Science gave eyes to blind, hearing for deaf, legs to lame. Science improved the quality and quantity of plants and animals. Thus science and scientific invention changed man's whole life by making it costly, comfortable and luxurious. It is changing entire existence of man in important aspects such as health, power, communication and transportation. It helps us to develop scientific attitude in the mind of the learner.

Science results from a process of conceptualization of a subject matter. The task of the science teacher is to help student to understand some of the content knowledge of science. Science learning requires presentation of learning material leading to formation of

concepts. So concepts are to be presented by using a definite strategy like Z-A approach for increasing the content knowledge of the students.

The purpose of teacher education is to produce teacher's who have professional competencies. The role of teachers is no longer confined to teaching alone. They need to be through professionals fully equipped with high academic standard, pedagogical and practical skills. The quality of education we provide to our children depends on the quality of education of teachers

SIGNIFICANCE OF THE STUDY

If science is poorly taught by teacher or badly learnt by pupil, then it is just like the burdening mind with dead information. It generates new superstitions. Science is a subject where a teacher must select an appropriate strategy for teaching by internalizing the knowledge acquired in different concepts because this is the only subject where the students feel as a remedy to their problems, a leisure that they want to keep forever and many other things. So the teacher must equip himself with a skill of analyzing the concept and with an instructional strategy as well. Concept helps to understand the language of science. Thus concepts have wide applicability in science teaching.

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Z-A approach attempts to explain the application part of a particular concept first. The teacher should explain the application of a particular concept first and explain the effects of such applications "Pedagogical content knowledge is an accumulation of common element i.e., knowledge of subject matter, knowledge of curricula, knowledge of Pedagogy. In PCK is knowing what, when and how to teach using a reservoir of knowledge of good teaching practice and experience". From research, it has become clear that multiple strategies are necessary to promote teacher learning.

The present study suggests one way for analyzing the concepts in physics. The teacher can equip himself with the skill of finding main characteristics, arranging them in a meaningful order. The blended learning strategy prepared by researcher will help the teacher to establish rapport with the students. The present study will give innovative ideas and thoughts to curriculum setter's and text book writers.

OBJECTIVES

1. To compare the mean scores of Pedagogical Content Knowledge of prospective teachers of Experimental group in Pre and Post stages.
2. To compare the mean scores of Pedagogical Content Knowledge of prospective teachers of Control group in Pre and Post stages.
3. To compare adjusted mean scores of Pedagogical Content Knowledge of Experimental group and Control group by taking Pre-Achievement as covariate.

HYPOTHESES

1. There is a significant difference in the mean scores of Pedagogical Content Knowledge of prospective teachers of Experimental group in Pre and Post stages.
2. There is a significant difference in the mean scores of Pedagogical Content Knowledge of prospective teachers of Control group in Pre and Post stages.
3. There is a significant difference in adjusted mean scores of Pedagogical Content Knowledge of Experimental Group and

Control Group by taking Pre-Achievement as covariate.

METHODOLOGY RESEARCH DESIGN

The experimental design used in this study was Pre-Test Post- Test Equivalent Group design. The design is illustrated as follows:

G1 O1 X O2

G2 O3 C O4

O1, O3 - Pre Test

O2, O4 - Post Test

X - Application of the experimental treatment

C - Application of the control treatment

G1 Experimental group, **G2** control group

TOOLS FOR THE STUDY

1. Z-A approach Strategies in Physics.
2. Pedagogical Content Knowledge Test for prospective teachers are the tools used for this study.

SAMPLE FOR THE STUDY

The population of the present study covers the prospective teachers of Kerala. But the investigator decided to confine the study to prospective teachers of Palakkad district, since they can consider as representative of prospective teachers. Care was taken to ensure that subjects selected were equivalent in many aspects.

STATISTICAL TECHNIQUES USED

1. Descriptive statistics like mean, median, mode, SD, skewness and kurtosis.
2. Test of significance of difference between mean scores.

TESTING OF HYPOTHESES HYPOTHESIS I

The objective was to compare the mean scores of PCK of experimental group at pre and post stages. The data were analyzed with the help of correlated t-test and results are given

Mean, SD, Correlation and Correlated 't' values of PCK of Prospective Teachers of Experimental group

Testing	Mean	SD	r	Correlated 't' value
Pre Test	23.20	6.245	0.580	4.733**
Post Test	28.16	4.888		

**significant at 0.01 level

From the table it can be seen that the Correlated't' value is 4.733 which is significant at 0.01 level. It reflects that the mean scores of PCK of prospective teachers of the experimental group at pre and post stages differ significantly. Thus the hypothesis that "there is a significant difference in the mean scores of PCK of experimental group at pre and post stages" is not rejected.

HYPOTHESIS 2

The objective was to compare the mean scores of PCK of control group at pre and post stages. The data were analyzed with the help of correlated t-test and results are given in table

Mean, SD, Correlation and Correlated 't' values of PCK of Prospective Teachers of Control group

Testing	Mean	SD	r	Correlated 't' value
Pre Test	21.72	6.736	0.714	1.515
Post Test	23.20	6.076		

From the table it can be seen that the correlated t-value is 1.515 which is not significant. It reflects that the mean scores of PCK of prospective teachers of the control group do not differ significantly at pre and post stages. Thus the hypothesis that "there is a significant difference in the mean scores of PCK of control group at pre and post stages" is rejected.

HYPOTHESIS 3

The objective was to compare adjusted mean scores of PCK of experimental group and control

group by considering pre-PCK as covariate. The data were analyzed with the help of One Way ANCOVA by considering pre-PCK as covariate. The results are given in Table

Summary of One Way ANCOVA of PCK by taking pre-PCK as covariate

Source of Variance	df	Sum of Squares (SSy.x)	Mean Square of Variance (MSSy.x)	Fy.x	Remark
Treatment	1	211.042	211.042	11.913	P<0.01
Error	47	832.593	17.715		
Total	49	1766.880			

** Significant at 0.01 level

Summary of Adjusted Mean Scores of PCK by taking Pre PCK as Covariate

Group	Adjusted Mean Scores of PCK	Standard Error
Experimental Group	27.748	0.845
Control Group	23.612	0.845

Note: Pre Test=22.46

From table, it can be seen that the adjusted F-Value (MSSy.x of Treatment/error) is 11.913 (table value is 7.17) which is significant at 0.01 level with df= 1/47. It shows that the adjusted mean scores of PCK of experimental group and control group differ significantly. Thus the hypothesis that "there is a significant difference between adjusted mean scores of PCK of experimental group and control group by considering pre-PCK as covariate" is not rejected

FINDINGS

1. Z-A Approach Could Significantly enhances the pedagogical content knowledge of prospective teachers.
2. Traditional method of teaching could not attribute anything in enhancing the pedagogical content knowledge of prospective teachers.

CONCLUSION

The major objective of the study was to develop a “Z-A Approach to Enhance Pedagogical Content Knowledge of prospective teachers”. The objectives were tested using different statistical techniques like test of significant difference, analysis of covariance.

From the analysis it was found that the implementation Z-A Approach strategy could significantly enhance the PCK of prospective teachers. The traditional method of teaching could not make any difference in the level of PCK of prospective teachers. The Z-A Approach strategy could significantly enhance PCK of the students in comparison to traditional method when pre-achievement was considered as covariate.

The educational implication suggested by the investigator will be helpful to the authorities to adopt proper steps for improving the qualities of teaching, stay tuned to improve the pupil's academic performance. For improving the academic performance, educators must identify the factors affecting the achievement of students. There are many strategies to improve the achievement of learners. The level of intelligence is different for different learners. This strategy had no effect on the intelligence. Taking into consideration of above finding and the result of the present investigation following suggestion can be brought into effect to improve educational practices Proper programs should be given to student teachers with a view to improve their performance and to equip pedagogical content knowledge. Context of learning in science must be enjoying by reinforcing content with a wide range of examples and application. So that the

student's experience the fraction of learning, emphasis on what and how the student likes to learn

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