Cognitive Constructivist Strategies in enhancing Teaching Competency of Pre-Service Teachers

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Abstract

In recent era, the teacher should be aware of the teaching methodologies for different kind of learners in a single classroom. One teaching method is not suitable for all students. The present study represents the significance of cognitive constructivist strategies such as peer tutoring, problem posing, cognitive apprenticeship and portfolio on developing teaching competency of pre-service teachers. The study was carried out by following pre and post assessment experimental design. 40 pre-service teachers were selected as selected from the DIET, Madurai, Tamilnadu. The findings of the study revealed that the cognitive constructivist strategies developed teaching competency of pre-service teachers

Key Words: Peer tutoring, Portfolio,Problem Posing, and Cognitive apprenticeship.

Introduction

Teaching is the noblest of all professions. It is the most respected profession as teachers shape the life of future citizen of the country. Teachers play a very important role inside and outside the classroom and initiate action for the team formation of society as agents of social change, thereby helping in achieving the goal of national development. There cannot be any two opinions about the fact that teachers should be well equipped with the right type of education. The importance of quality of teachers in the educational process was undoubtedly portrayed by Kothari commission: “of all the different factors which influences the quality of education and its contribution to national development, the quality, competence and character of teachers are undoubtedly the most significant” (Report of the Education commission).

The National Curriculum framework (NCF2005)[1] places different demand and expectations on the teacher, which need to be, addressed both by initial and continuing teacher education. The importance of competent teachers to the nation’s school system can in no way be overemphasized. It is well known that the quality and extent of learner achievement are determined primarily by teacher competence, sensitivity and teacher motivation. It is common knowledge too that the academic and professional standards of teachers constitute a critical component of the essential learning conditions for achieving the educational goals. The length of academic preparation, the level and quality of subject matter knowledge, the repertoire of pedagogical skills the teachers possess to meet the needs of diverse learning situations, the degree of

commitment to the profession, sensitivity to contemporary issues and problems as also to learners and the level of motivation critically influence the quality of curriculum transaction in the classrooms and thereby pupil learning and the larger processes of social transformation.

Cognitive Constructivist Strategies

A thorough knowledge of how students learn would decide the classroom teaching strategies. In a single classroom, there are students with different cognitive style.Teacher should be aware of select the suitable method and strategies to teach for all type of students.One common teaching style will not maximize a student's learning potential. In particular, Pre-service teachers are most important in preparing future nation. Teacher educators should be trained the pre-service teachers for using different type of strategies in their practice teaching. Constructivist pedagogy in mathematics believes that learner can construct knowledge by active participation rather than acquiring knowledge by watching teachers' demonstration in the classroom and to learn to speak and act mathematically participating in mathematical and solving new or unfamiliar problems. (Richards, 1991)

Cognitive constructivist strategies aim to facilitate the students in assimilating new information to prior knowledge, and enabling them to make the appropriate modification to their existing intellectual framework to accommodate that information. In the present study, investigators selected the following Cognitive constructivist strategies were used to develop the teaching competency of selected pre-service teachers from DIET,Madurai, Tamilnadu

- **Peer tutoring** is a flexible, peer-mediated strategy that involves students serving as academic tutors and tutees. Typically, higher performing student is paired with a lower performing student to review critical academic or behavioral concepts[2]
- **Problem Posing Strategy** refers to the generation of a new problem or a question by a learner of a given topic. It has been shown to be an effective strategy for learning of complex material in domains such as mathematics.[3]
- **Cognitive apprenticeship** is a process by which learners learn from a more experienced person by way of cognitive and meta cognitive skills and processes.
- **Portfolio** is a purposeful collection of student work that exhibits the student's efforts, progress and achievements in one or more areas. The collection must include student participation in selecting contents, the criteria for selection, the criteria for judging merit, and the evidence of student self-reflection" .

Statement of the Problem

The title of the study is entitled as "Effect of Cognitive Constructivist Strategies on Developing Teaching Competency of Pre-Service Teachers"

Objectives of the Study

- To assess the level of teaching competency of Pre-service teachers in Mathematics
- To identify the Cognitive Constructivist Strategies on developing teaching competency of Pre-service Teachers in Mathematics
- To find out the effect of the Cognitive constructivist Strategies on developing teaching competency of pre-service teachers.

Hypothesis of the study

- There will be significant mean difference between the pre-assessment and post-assessment of teaching competency among pre-service teachers
- There will be significant mean difference between the pre-assessment mean scores before intervention and post-assessment mean scores after intervention given through cognitive constructivist strategies.

Operational Definitions of the Terms used in the study

Cognitive Constructivist Strategies:

Cognitive Constructivism can be assimilated to trivial constructivism which means Cognitive approach that focuses on mental processes rather than observable behavior. This strategy aim to assist students in assimilating new information to existing knowledge, and enabling them to make the appropriate modifications to their existing intellectual framework to accommodate that information.[4]

Teaching Competency

Competence includes knowledge, skills, attitudes and experiences which have to be target category of profession of education. Ability to perform or carry out defined tasks in a particular context at a high level of excellence.[5] According to Norman(1985) competency is more than knowledge. It includes the understanding of knowledge, clinical, technical and communication skills and the ability to problem solve through the use of clinical judgment.According to Verma(2006)," Competencies in education create an environment that fosters empowerment,accountability,and performance evaluation,which is consistent and equitable.

Pre-service Teacher

The term Pre-service Teacher is refer the student teachers who are enrolled in teacher education programme and working toward teacher Certification.

Delimitation of the Study

- The study was confined to Diploma in Elementary Education Programme (two years) of DIET,Madurai,Tamilnadu.
- The study limited to 40 pre-service teachers in DIET only
- The study confined to cognitive constructivist strategies only

Variables

Independent Variable: Cognitive Constructivist Strategies

Dependent Variable: Teaching Competency

Methodology

Research Design

The present study was experimental type in nature where the researchers attempted to enhance the Teaching competency of Pre-Service teachers through Cognitive Constructivist Strategies.

Sample

Purposive Sampling technique was adopted for collecting required from the population. All the Pre-service teachers of D.El.Ed were selected as sample for the present study. The total sample of the study was 40 Pre-Service teachers.

Tools used in the study

Tool 1: Teaching Competency scale was prepared by the investigators.

Tool 2: Cognitive Constructivist Intervention Strategy Scale was prepared by the investigators.

Both tool 1 and tool 2were validated and reliability of the tool to measure teaching competency is 0.79 and the reliability of the scale to measure cognitive constructivist intervention strategy is 0.81.

Statistical Techniques

The collected data used to calculate Mean,SD, and 't' test .

Procedure

Tool 1 and Tool 2 pre-assessment conducted and both tool were conducted after intervention through cognitive constructivist strategies. The investigators assessed the pre-service teachers while they were teaching mathematics at teaching practice schools.

Analysis of Data

After Pre and post assessment, the collected data were analyzed using the statistical techniques.[SPSS package used for analyzing the data]

Table:1 Level of Teaching competency

Type of Assessment	Low		Average		High	
Pre-assessment	4	18%	13	59%	5	23%
Post Assessment	2	9%	7	32%	13	59%

From the table 1 it is inferred that in the pre –assessment of teaching competency, 4 pre-service teachers out of 22 have low level teaching competency, 5 have high level teaching competency and 13 out of 22 pre-service teachers have average level of teaching competency. On the contrary in the post assessment 13 pre-service teachers have high level teaching competency compare to pre-assessment. Post-

assessment of teaching competency level is higher than the pre-assessment of teaching competency which showed that the effectiveness cognitive constructivist intervention strategies.

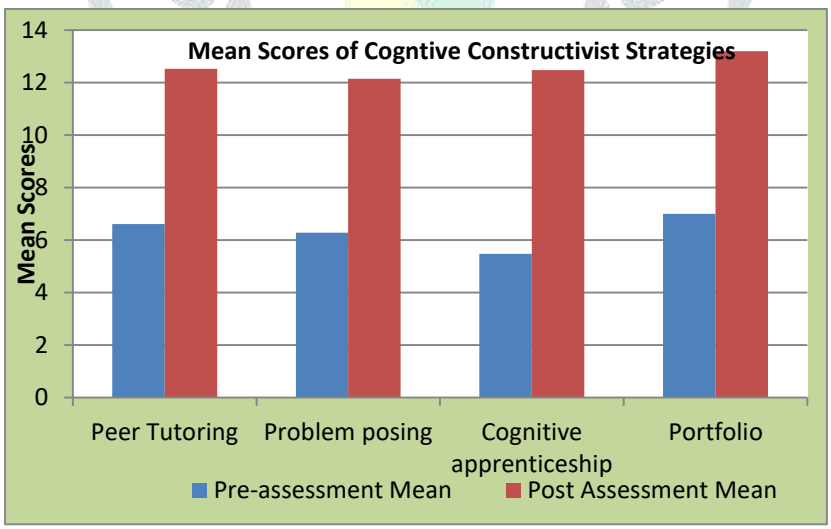
Table: 2 Pre and Post assessment score of Teaching Competency

Type of Assessment	N	Mean	SD	't' value
Pre-assessment	22	79.12	10.15	19.38
Post Assessment	22	100.69	12.03	

From the table 2, it is revealed that post-assessment of teaching competency mean score (100.69) was higher than the mean score (79.12) of pre-assessment of teaching competency. The value of't' (19.38) is greater than the table value at 0.05 level of significance. Hence, pre-service teachers taught through cognitive constructivist strategies gained significantly higher score in teaching competency.

Table: 3 Pre and Post assessment Mean scores of cognitive strategies

Strategy	N	Pre-assessment Mean	Post Assessment Mean
Peer Tutoring	22	6.61	12.52
Problem posing	22	6.28	12.14
Cognitive apprenticeship	22	5.47	12.48
Portfolio	22	7.00	13.19



From the table 3 ,it is inferred that pre-assessment mean scores(6.61) increased in the post-assessment mean scores(12.52) with respect to peer tutoring strategies and also pre-assessment mean scores 6.28,5.47 and 7.00 increased in the post-assessment 12.14,12.48 and 13.19 respectively with regard to problem posing strategy, Cognitive apprenticeship and portfolio strategy. From the table, investigators

concluded that the cognitive constructivist strategies effectively work on the teaching of pre-service teachers. From the above figure showed that the effectiveness of cognitive constructivist strategies in teaching.

Conclusions

The findings of the study revealed that Cognitive Constructivist Strategies has positive effect on the teaching competency of pre-service teachers. The findings suggest that Cognitive Constructivist Strategies could be implemented in the teacher education programme for improving teaching competency of pre-service teachers. The theory and practice of Cognitive constructivist strategy must be included in Teacher Education methodology at all levels.

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