"STUDY ON TEACHING COMPETENCIES OF SECONDARY SCHOOL MATHEMATICS TEACHERS AND ACADEMIC ACHIEVEMENT OF SECONDARY SCHOOL STUDENTS IN MATHEMATICS".

Rudramuni E.[1] and Dr. Umadevi M. R.[2]

**[1]Research Scholar And Principal,
Sri Venkateshwara College of Education,
Chitradurga (Karnataka).
[2]Research Guide, Dept. Of Post Graduate studies in
Education, Davanagere University, Davanagere.**

ABSTRACT:

The present study was conducted to know the teaching competencies of secondary school Mathematics teachers and its impact on academic achievement of secondary school students in Mathematics. Researcher selected 50 mathematics teachersand 722 mathematics students from secondary schools of Chitradurga district (Karnataka) as a sample. Academic achievement test and teaching competency scale is constructed by the researcher himself. Teaching competency scale is administered to Mathematics teachers and academic achievement test is administered to the students and collected the data. The data was analysed by using descriptive statistics-mean & standard deviation, Karl Pearson's Product moment correlation and simple linear regression model was applied. The analysis of the data has clearly indicated a positive and significant relationship between academic achievement of students with teaching competencyof teachers & its components. Further, the academic achievement of students in mathematics is influenced by teaching competencyof teachers of secondary schools.

KEYWORDS*: Teaching competency and Academic achievement.*

INTRODUCTION:
Lot of transformation going on in the modern world and in the field of education too it is happening. In doing so, education is the potent force, which can bring desired changes towards the progress. In this process the role and responsibility of teachers community is at most crucial and important. So, a competent teacher can bring such transformation in the society by instructing, motivating and guiding the students who are the future citizens of any country. The results of the study will be helpful to strengthen the competencies of the teachers and help to organize and reorient the teachers according to the needs and demands of the situation.

OBJECTIVES OF THE STUDY:
1. To study the teaching competencies of secondary school Mathematics teachers.
2. To study the academic achievement in mathematics of secondary school students.
3. To study the relationship between academic achievement in mathematics of students and teaching competency and its components of teachers of secondary schools.
4. To study the teaching competency of teachers of secondary schools as a predictor of academic achievement of students in mathematics.

HYPOTHESIS OF THE STUDY:
1. There is no significant relationship between academic achievement in mathematics of students and teaching competency & its components of teachers' of

_____
Journal for all Subjects : www.lbp.world

1

_____
secondary schools.

2. Teaching competency of teachers of secondary schools would be significant predictor of academic achievement of students in science.

METHODOLGY:
For the present study, the investigator has used descriptive research.

SAMPLE:
The sample selected for the present study consisted of 50 mathematics teachers from 50 secondary schools on random sampling technique and their 722 students studying in 9th standard.

Sl.No	Taluks	Govt.High Schools	Aided High Schools
1	Challakere	4	5
2	Chitradurga	4	6
3	Hiriyur	4	4
4	Holalkere	3	5
5	Hosadurga	3	7
6	Molakalmuru	2	3
	Total Schools	**20**	**30**

VARIABLES:
1. **Independent variable:**Teaching competency.
2. **Dependent variable:**Academic achievement.

Tools used for the collection of Data:
1] Teaching competency Scale:
Teaching competency scale was developed by the researcher for the purpose of the present study. There was a need to develop the tool, since the researcher was not satisfied with the available scales developed by the earlier researchers. Researcher consulted the experts during finalizing the items for the scale. The scale was based on the ten competencies categorised by NCTE. The ten competencies weregrouped by the researcheras Classroom competencies (Tool-A): 1) Content competency 2) Transactional competency 3) Competency to develop teaching learning material 4) Evaluation competency 5) Management competency and other competencies (Tool-B): 6) Contextual competency 7) Conceptual competency 8) Educational activities related competency 9) Competency related to other educational activity 10) Competency related to working with parents.

There were a total of 72 items in the teaching competency scale measured in 5 point scale: Very good, Good, Satisfactory, Average and Not satisfactory. Each item was given a maximum of 5 and minimum of 1 score. A maximum of 360 scores can be obtained.

2] Academic achievement test:
An academic achievement test was constructed by the researcher to collect the required data related to academic achievement. For this researcher has selected9th Standard mathematics subject textbook to draw items. Initially 60 multiple questions are drawn. By discussing with experienced teachers, subject experts and educationist, the blue print of the questionnaire was prepared. Pilot study was made to select the items, finally 33 questions were selected, and each question carries one mark.

Administration of Tools:
The researcher collected the required data related to teaching competency and academic achievement by administeringtools to secondary school teachers and students. The response sheets were obtained and scored using scoring key. The data obtained was subject to analysis.

_____

_____

Statistical Techniques used for Data Analysis:

To analyse the data t-test, Karl Pearson's product moment and Tukeys Multiple Posthac procedures were used.

Analysis and Interpretation of results:

Table: Summary statistics (n, mean and SD) of teaching competency and its components scores of mathematics teaching teachers of secondary schools

Variables	Summary	Mathematics
	n	50
Total teaching competency	Mean	31.76
	SD	2.60
Content competency	Mean	3.44
	SD	0.26
Transactional competency	Mean	3.15
	SD	0.30
Competency to develop teaching learning material	Mean	3.53
	SD	0.36
Evaluation competency	Mean	3.34
	SD	0.23
Management competency	Mean	3.01
	SD	0.26
Contextual competency	Mean	2.47
	SD	0.40
Conceptual competency	Mean	2.58
	SD	0.41
Educational activities related competency	Mean	3.67
	SD	0.40
Competency related to other educational activity	Mean	3.48
	SD	0.30
Competency related to working with parents	Mean	3.07
	SD	0.32

The above table represents the summary statistics (n, mean and SD) of teaching competency and its components scores of mathematicsteaching teachers of secondary schools. It clearly indicated the followings:
- The mean of teaching competency of teachers of secondary schools mathematics teaching teachers is (31.76±2.60)
- The mean of component of teaching competency i.e. content competency scores of mathematics teaching teachers of secondary schools is 3.44±0.26,
- The mean of component of teaching competency i.e. transactional competency scores of mathematics teaching teachers of secondary schools is 3.15±0.30.
- The mean of component of teaching competency i.e. competency to develop teaching learning material scores of mathematics teaching teachers of secondary schools is 3.53±0.36.
- The mean of component of teaching competency i.e. evaluation competency scores of mathematics teaching teachers of secondary schools is 3.34±0.23.
- The mean of component of teaching competency i.e. management competency scores of mathematics teaching teachers of secondary schools is 3.01±0.26.

_____

_____

- The mean of component of teaching competency i.e. contextual competency scores of mathematics teaching teachers of secondary schools is 2.47±0.40.
- The mean of component of teaching competency i.e. conceptual competency scores of mathematics teaching teachers of secondary schools is 2.58±0.41.
- The mean of component of teaching competency i.e. educational activities related competency scores of mathematics teaching teachers of secondary schools is 3.67±0.40.
- The mean of component of teaching competency i.e. competency related to other educational activity scores of mathematics teaching teachers of secondary schools is 3.48±0.30.
- The mean of component of teaching competency i.e. competency related to working with parents scores of mathematics teaching teachers of secondary schools is 3.07±0.32.

Hypothesis-1: There is no significant relationship between academic achievement in mathematics of students and teaching competency and its components of teachers of secondary schools.

To accomplish the above null hypothesis or assumption, the Karl Pearson's correlation coefficient technique has been applied and the result are presented in the table given below.

Table: Karl Pearson's coefficient between academic achievement in mathematics of students and teaching competence and its components of teachers of secondary schools.

Variables	Correlation coefficient between academic achievement in mathematics of students with teachers			
	r-value	t-value	p-value	Signi.
Total teaching competency	0.9600	23.7490	0.0001	S
Contextual competency	0.8785	12.7428	0.0001	S
Conceptual competency	0.8184	9.8673	0.0001	S
Content competency	0.7325	7.4550	0.0001	S
Transactional competency	0.6188	5.4575	0.0001	S
Competencies to develop teaching learning material	0.6771	6.3745	0.0001	S
Evaluation competency	0.7287	7.3726	0.0001	S
Management competency	0.7841	8.7542	0.0001	S
Educational activities related competency	0.8543	11.3851	0.0001	S
Competencies related to working with parent	0.7912	8.9628	0.0001	S
Competencies related to working with community and other agencies	0.7883	8.8766	0.0001	S

The results of the above table clearly point out that, a positive and significant relationship was observed between academic achievement in mathematics of students with teaching competency (r=0.9600, p<0.05) & its components i.e. academic achievement in mathematics of students with contextual competency (r=0.8785, p<0.05), academic achievement in mathematics of students with conceptual competency (r=0.8184, p<0.05), academic achievement in mathematics of students with content competency (r=0.7325, p<0.05), academic achievement in mathematics of students with transactional competency (r=0.6188, p<0.05), academic achievement in mathematics of students with competencies to develop teaching learning material (r=0.6771, p<0.05), academic achievement in mathematics of students with evaluation competency (r=0.7287, p<0.05), academic achievement in mathematics of students with management competency (r=0.7841, p<0.05), educational activities related competency (r=0.8543, p<0.05), academic achievement in mathematics of students with competencies related to working with parent (r=0.7912, p<0.05) and academic achievement in mathematics of students with competencies related to working with community and other agencies

_____

(r=0.7883, p<0.05) at 5% level of significance. Hence, the null hypothesis is rejected and alternative hypothesis is accepted. It means that, the academic achievement in mathematics of students and teaching competency & its components (i.e. teaching competency, contextual competency, conceptual competency, content competency, transactional competency, competencies to develop teaching learning material, evaluation competency, management competency, educational activities related competency, competencies related to working with parent and competencies related to working with community and other agencies) of teachers of secondary schools are dependent on each other. In another words, the academic achievement in mathematics of students scores are increases or decreases with increase or decrease inteaching competency & its components of teachersof secondary schools.

Hypothesis-2: Teaching competency of teachers of secondary schools would be significant predictor of academic achievement of students in mathematics.

To achieve the above null hypothesis, the simple linear regression model was applied and the results are presented in the following table.

Table: Simple linear regression analysis of academic achievement of students in mathematics by teaching competency of teachers of secondary schools

Independent variable	Estimate	SE of estimate	t-value	p-level	Signi.
Constant	-31.3450	1.9875	-15.7709	0.0001	S
Teaching competency	1.4813	0.0624	23.7490	0.0001	S
R=0.9599, R^2=0.9215, F(1,48)=564.02 p<0.05, S, Std.Error of estimate: 1.1339					

From the results of the above table, it can be seen that, the combined effect of teaching competencyof teachers of secondary schools on academic achievement of students in mathematics is found to be positive and statistically significant at 5% level of significance. It means that, the academic achievement of students in mathematics is influenced by teaching competencyof teachers of secondary schools.

The R of the linear regression equation is 0.9599. For testing R, the F-ratio (564.02) was found to be significant at 5% level. Thus, the null hypothesis is rejected and alternative hypothesis is accepted. Significant R suggests that estimation of academic achievement of students in mathematics is possible on the basis of the teaching competencyof teachers of secondary schools.

Further, it means that teaching competencyof teachers of secondary schools can be used to prediction of academic achievement of students in mathematics. The coefficient of determination of R^2 is 0.9215. It can be therefore, be said that nearly 92.15 percent of contribution of teaching competencyof teachers of secondary schools onacademic achievement of students in mathematics. The prediction regression line of teaching competency of teachers of secondary schools on academic achievement of students in mathematics is also presented in the following figure.

Figure: Regression analysis of academic achievement of students in mathematics by teaching competency of teachers of secondary schools

AA in maths= -31.34 + 1.4813 * TC
Correlation: r = 0.95998
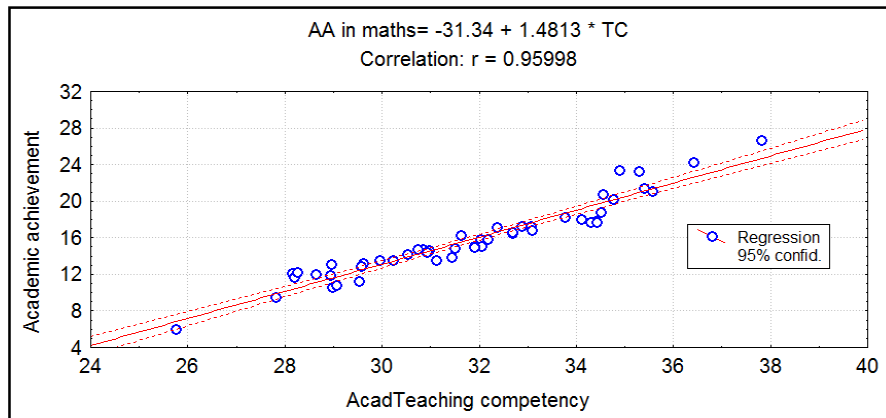
RESULTS OF THE STUDY:

1. There is a positive and significant relationship between academic achievement of students with teaching competency (r=0.9544, p<0.05) & its components.
2. Teaching competencyof teachers of secondary schools was a significant predictor of secondary school teachers on academic achievement of students in mathematics. It is found to be positive and statistically significant at 5% level of significance.

EDUCATIONAL IMPLICATIONS:

1. The present study will be helpful to organize professional improvement programmes to improve teaching competency of teachers.
2. The present study provides feed back to the teachers to improve their teaching competency.
3. The present study will help the teacher to plan for remedial classes to improve the academic achievement of students.

CONCLUSION:

The present study reveals that there is a significant relationship between academic achievements of students with teaching competency of secondary school teachers.

REFERENCES:

1. Vinod Kumar Singh, (2010). Teaching competency of Primary school Teachers, New Delhi, Gyan Publishing House
2. Best & Kahn. (1998). Research in Education, New Delhi: Prentice Hall
3. Shiv Kumar. S and JahithaBegam (2010). A teaching competencies of mathematics teachers Vol.40(1&2) Jan/July Psycho lingua journal of Education.
4. Koul, Lokesh, (2009). Methodology of Educational Research, New Delhi: Vikas Publishing House Pvt. Ltd.
5. ReetiChauhan and Pratibha Gupta, A study of teaching competency among teachers in Secondary school level in Ghaziabad District Vol.4(1), Jan.2014, Asian Journal of Educational Research & Technology.