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Attitude towards Innovative Practices in Teaching and Learning Mathematics in Schools

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Abstract

The current research aims to study the attitude towards innovative practices among the teachers working in English medium schools. Mathematics is highly abstract. It is concerned with ideas rather than objects. The teaching and learning of mathematics is a complex activity and many factors determine the success of this activity. So it is the need of the hour to utilize the innovations to make the teaching and learning process a quality one.

The investigators had employed descriptive method using survey technique and also had used stratified random sampling to draw the sample. The strata used were male, female, married, unmarried, U.G and P.G qualification. The sample consists of 100 teachers working in English medium schools in Rajapalayam. A three point scale constructed and validated by the investigators was used to gather the data. Mean, standard deviation and't' test were the statistics used to analyse the data. It was revealed that majority of the teachers working in English medium schools have average level of attitude towards innovative practices in teaching and learning mathematics. Significant difference was found between teachers working in English medium schools in their attitude towards innovative practice with respect to marital status. No significant difference was found between teachers working in English

schools in their attitude towards innovative practice with respect to gender and qualification.

Introduction

Education is the manifestation of the perfection already in man. Knowledge is inherent in man, no knowledge comes from outside and is all inside stuff that gets discovered and unveiled with the help of education. But the process of unveiling must be done by the teacher. So, teacher is expected to possess a greater precision, ingenuity and resourcefulness in order to unveil the hidden and innate talents of the students. Education must be life– building, character making and assimilation of ideas with real life implications. Education should strengthen the mind and expand one's intellect and enable the student to stand on one's own feet.

Any subject learnt should make one to express his ideas freely and make the right use of the same in real life and so mathematics.

The education commission 1964 -66 points out that "In the teaching of mathematics emphasis should be more on the understanding of basic principles than on the mechanical teaching of mathematical computations".

Quality in teaching is directly proportional to student's performance. According to the National curriculum Framework 2005 vision for mathematics includes

- Children learn to enjoy mathematics rather than fear it
- Children pose and solve meaningful problems.
- Teachers engage every child in class with the conviction that everyone can learn mathematics.

Background of the study

Basturk (2005) conducted a study and reported that learning capacity of the introductory statistics could be improved successfully when CAI used as a supplement to regular lecture in teaching introductory statistics course.

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Donnipad Manjunath examined and reported that use of mathematics laboratory was more effective than the traditional method.

Renata Ujhaziova (2005) investigated and found project method is an effective approach to teaching mathematics.

Banerjee et al. (2007) found beneficial effects of computer–aided instruction programs in mathematics.

Need and Significance of the study

Nowadays students learn the mathematical concepts by rote memory and reproduce the same either as homework or in tests. The traditional teacher–centered methods such as lecture method can't cultivate the power of thinking, understanding and retention amongst children which makes the students show less interest towards mathematics learning.

Children should be provided with several resources like games and activities that engage them in mathematical thinking and problem solving. Innovative practices develop dispositions such as curiosity, imagination, inventiveness and persistence that contribute to child's success in mathematics. It also helps in developing a positive attitude and in making connections between mathematics and everyday thinking. Unless a child's mathematical knowledge and experiences are integrated into classroom practices and continuity established between their home and school, they will find mathematics uninteresting, culturally barren and dead. Hence innovative practices are one of the resources that enable the teacher to cultivate the child's ability to do mathematics and enjoy the essence of it.

The findings of the study may help the curriculum designers, educational authorities and teacher educator's knowledge about using innovative practices that can be used in the schools and let us know the attitude of using those practices in the unaided English medium schools.

Operational Definitions

1. Innovative Practices

Innovative practices in education are unique teaching methodologies that have demonstrated success in high–performing schools.

2. English Medium Teachers

The teachers working in unaided English medium schools are referred as English medium teachers

3. Project Method

Project Method means solving open and relatively wide formulated problems for the application of particular mathematical topics and the solving of every day life problems.

4. Club Activities

Mathematical club provides a lot of freedom of expression for the students and it supplements classroom learning.

5. Laboratory Method

This is a method in which the practical work is emphasised.

6. Computer Assisted Instruction (CAI)

It is computer assistance in the presentation of instructional materials to the students and to monitor learning progress or to select additional instructional materials in accordance with the needs of individual learners.

7. Field trips

Field trips are a valuable way to build on classroom instruction and help students gain a better understanding of topics.

Statement of Aim

To find out the Attitude towards innovative practices in teaching and learning mathematics in schools

Objective

1) To find out the level of attitude towards innovative practices in teaching & learning mathematics among English Medium teachers.
2) To find out the significant difference between English Medium teachers in their attitude towards innovative practices in teaching and learning mathematics in schools with respect to background variables.

Hypothesis

There is no significant difference between English medium teachers in their attitude towards innovative practices in teaching and learning mathematics in schools with respect to background variables.

Methodology

The investigators had employed descriptive method with survey technique and stratified random sampling to draw the sample.

Population & Sample

The geographical are focused for this research is Rajapalayam. 100 teachers working in English Medium Schools were participated in this study.

Research Tool

A three–point attitude scale constructed and validated by the investigators was used to gather the data. For establishing validity, the tool was given to a panel of experts. Based on their opinion some items were deleted and some of them were modified. The items in the attitude scale are selected through item correlation. It consists of 48 items. The reliability of the tool was established using split-half method and was found to be 0.79.

Table 1

Dimension wise Distribution of Attitude Scale

No.	Dimensions	Statements	No. of items
1	Project Method	1-10	10
2	Club Activities	11-18	8

3	Laboratory Method	19-26	8
4	Computer Assisted Instruction (CAI)	27-38	12
5	Field Trips	39-48	10
Total			48

Statistical Techniques used

- Percentage Analysis
- Mean and Standard deviation
- 't' – test

Analysis and Interpretation of Data

Objective

To find out the level of attitude towards innovative practices in teaching and learning mathematics of English medium teachers

Table 2

Level of attitude towards innovative practices

Sl.No.	Dimensions	Low		Average		High	
		No.	%	No.	%	No.	%
1	Project Method	17	17%	64	64%	19	19%
2	Club Activities	25	25%	53	53%	22	22%
3	Laboratory Method	20	20%	70	70%	10	10%
4	CAI	18	18%	65	65%	17	17%
5	Field Trips	23	23%	53	53%	24	24%

6	Attitude-in total	25	25%	50	50%	25	25%

From the table it is observed that the level of attitude towards innovative practices in teaching and learning mathematics among English medium teachers is average.

Hypothesis 1

There is no significant difference between English medium teachers in attitude towards innovative practices in teaching and learning mathematics with reference to gender.

Table 3

Difference between English medium teachers in attitude towards innovative practices with respect to gender

Sl.No.	Dimensions	Categories	Count	Mean	SD	Calculated 't' value	Result
1	Project Method	Male	30	26.03	2.15	**2.64**	S
		Female	70	**27.31**	2.35		
2	Club Activities	Male	30	20.33	2.20	1.08	NS
		Female	70	20.86	2.23		
3	Laboratory Method	Male	30	20.67	1.63	1.55	NS
		Female	70	21.24	1.85		
4	CAI	Male	30	29.83	3.22	0.543	NS
		Female	70	30.24	3.82		
5	Field Trips	Male	30	25.90	2.53	0.095	NS

		Female	70	25.84	3.22		
6	Attitude-in total	Male	30	122.77	8.61	1.37	NS
		Female	70	125.50	10.22		

(At 5% level of significance the table value is 1.96)

NS – Not Significant (Hypothesis accepted) S – Significant (Hypothesis not accepted)

It is inferred from the above table that significant difference is found between English medium teachers in their attitude towards innovative practice-project method and no significant difference is found in other dimensions.

Hypothesis 2

There is no significant difference between English medium teachers in the attitude towards innovative practices in teaching and learning mathematics with reference to marital status.

Table 4

Difference between English medium teachers in the attitude towards innovative practices with reference to marital status

Sl.No.	Dimensions	Categories	Count	Mean	SD	Calculated 't' value	Result
1	Project Method	Married	59	**27.41**	2.31	**2.49**	**S**
		Unmarried	41	26.24	2.28		
2	Club Activities	Married	59	20.90	2.30	1.08	NS

		Unmarried	41	20.41	2.09		
3	Laboratory Method	Married	59	**21.44**	1.77	**2.56**	**S**
		Unmarried	41	20.54	1.70		
4	CAI	Married	59	30.49	3.76	1.23	NS
		Unmarried	41	29.59	3.48		
5	Field Trips	Married	59	26.02	3.27	0.646	NS
		Unmarried	41	25.63	2.63		
6	Attitude-in total	Married	59	**126.25**	10.03	**1.98**	**S**
		Unmarried	41	122.41	9.10		

(At 5% Level of Significance the table value is 1.98)

NS – Not Significant (Hypothesis accepted) S – Significant (Hypothesis not accepted)

The above table shows that married and unmarried English medium differ significantly in their attitude towards innovative practice- project method, laboratory method and attitude–in total.

Hypothesis 3

There is no significant difference between English medium teachers in the attitude towards innovative practices in teaching and learning mathematics with reference to qualification.

Table 5

Difference between English medium teachers in the attitude towards innovative practices with reference to qualification

Sl.No.	Dimensions	Categories	Count	Mean	SD	Calculated 't' value	Result
1	Project Method	U.G	37	26.76	2.45	0.552	NS
		P.G	63	27.03	2.31		
2	Club Activities	U.G	37	20.86	2.34	0.554	NS
		P.G	63	20.60	2.16		
3	Laboratory Method	U.G	37	21.00	2.03	0.283	NS
		P.G	63	21.11	1.66		
4	CAI	U.G	37	30.27	3.02	0.337	NS
		P.G	63	30.03	4.00		
5	Field Trips	U.G	37	26.54	2.95	1.75	NS
		P.G	63	25.46	3.01		
6	Attitude-in total	U.G	37	125.43	10.34	0.574	NS
		P.G	63	124.24	9.53		

(At 5% Level of Significance the table value is 1.98)

NS – Not Significant (Hypothesis accepted)

English medium teachers do not differ significantly in their attitude towards innovative practices with respect to qualification.

Results and discussions

- Significant difference is found between male and female English medium teachers in their attitude towards the innovative practice-project method. Comparing the mean scores female teachers have more favorable attitude than their counterparts. This might be due to

female teachers always trying an attempt to make the students understand and realize the value of mathematics. They believe that project method helps the students to acquire new mathematical knowledge. They encourage the students to solve genuine mathematical problems using project method. They find success and observe project method promotes the achievement and creates interest in learning mathematics.

- There is significant difference between married and unmarried English medium teachers in their attitude towards innovative practices in teaching learning mathematics. Comparing the mean scores married teachers have more favorable attitude than the unmarried teachers. Usually married teachers deal every problem with patiently and they maintain smooth relationship with the students as their parents. They want to shine and stamp something in the school by doing innovative works as they have settled in life. So, they use innovative practices in their teaching and they share the resources available in their nearest schools with the help of their friends.

Conclusion

Innovative practices develop in the learners the ability to criticize, the art of reasoning and gives them practical knowledge. It develops self-confidence and self discipline. Hence learning is permanent. So to make the teaching and learning in an effective manner teachers should use innovative practices. They must have favourable attitude towards using innovative practices. Because many studies have shown that favourable attitude leads to success.

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