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SELF-EFFICACY OF HIGH SCHOOL MATHEMATICS TEACHERS

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Abstract:

The present study tries to find out the self-efficacy of high school Mathematics Teachers in the southern districts of Tamil Nadu.The sample is collected through random sampling and it includes Mathematics teachers from the southern districts of Tamil Nadu viz. Kanyakumari, Tirunelveli and Tuticorin.The sample consists of 303 high school Mathematics teachers andis categorized on the basis of gender, marital status and district. Percentage analysis, t test and ANOVA were used to analyse the collected data.Percentage analysis reveals that majority of the Mathematics teachers have moderate level of self-efficacy. 't' test reveals the following: (i) There exists significant difference in their self-efficacy with respect to the sex and marital status.(ii)Male teachers are better than female teachers in their self-efficacy in total and in its dimensions of behavioural self-efficacy, cultural self-efficacy, and decision making self-efficacy. (ii) Unmarried teachers are better than married high school Mathematics teachers in their self-efficacy in total and in the dimension of decision making self efficacy. (iii) Thoothukudi district teachers are better in their decision making self-efficacy.

Key Words: High School Mathematics Teacher & Self-Efficacy

Introduction:

A teacher is one of the important components in teaching learning process. A teacher helps in the all-round development of the children in physical, emotional, mental and social sphere. Teacher's self-efficacy improves the teaching effectiveness which is a product of interaction between certain teacher characteristics and the teaching learning situations. Bandura (1997) defines self-efficacy as "People's judgments of their capabilities to organize and execute courses of action required to attain designated types of performance". The self-efficacy theory of Bandura (1997) postulates four sources that enhanceself- efficacy. They are: (a) mastery learning experiences, (b) vicarious experiences, (c) social persuasion, and (d) physiological and emotional states. Self-efficacy refers to what someone believes he or she is capable of under certain circumstances, regardless of the capabilities or skills that he or she actually possesses. Self-efficacy increases the ability of teacher to plan instructions and accomplishes instructional objectives. Higher self-efficacy of teacher enables effective use of teacher's knowledge and skills and lower self efficacy decrease teacher's attitudes in effective use of teaching skills.

Significance of the Study:

Glickman and Tamashiro (1982) found out that teachers with low sense of efficacy had a drop out in their profession. Chan (2008) established that teacher's self-efficacy is influenced by teacher professional behaviour and teacher activities. Professional competency is the teaching attributes that helps a teacher to perform his duties effectively. Tschannen-Moran and Hoy (2001) showed that higher self-efficacious teachers always had greater commitment in teaching. "The factors which influence the quality of education and its contribution to national development, the quality, competency and characters of teachers are undoubtedly the most significant" (Kothari Commission, 1964). Kamaruddinand Ibrahim (2010) found out that there was a positive and significant relationship between lecture efficacy and lecture competency. If the teacher has more self-efficacy, then she/he generally become more controlling and more conservative, rather than innovative and reflective in handling different kinds of students.Teachers with a strong sense of efficacy tend to exhibit greater levels of planning and organization (Allinder 1994).Teachers with higher levels of self-efficacy were less critical of students when they made errors. From these we find that self-efficacy is an important component to give better teaching.

Objectives of the Study:

- ✓ To find out the level of self-efficacyof high school Mathematics teachers in the southern districts of Tamil Nadu.
- ✓ To find out whether there is any significant difference in self-efficacy of high school Mathematics teachers in the southern districts of Tamil Nadu based on variables: (i) Sex, (ii) marital status, (iii) district.

Hypotheses:

There exists significant difference in the self-efficacy of High school Mathematics teachers based on their (i) sex, (ii) marital status and (iii) district.

Methodology:

For this study, the investigator used the random sampling technique to select a sample of 303 high school Mathematics teachers from the schools in three southern districts of Tamil Naduviz, Kanyakumari,

Tirunelveli and Thoothukudi.In drawing the sample, representation was given to sex, marital status and district. Data were collected by using the tool 'Self-efficacy Scale'developed and validated by the investigator. Percentage analysis, t test ANOVA, Post ANOVA were used in the analysis of data.

Analysis and Interpretation of Data:

Table 1: Level of Self-efficacy and its Dimensions of High School Mathematics Teachers

Self-efficacy and its Dimensions	Low		Moderate		High	
	N	%	N	%	N	%
1.Instructional self-efficacy	26	8.6	237	78.2	40	13.2
2.Behavioural self-efficacy	27	8.9	238	78.5	38	12.5
3.Cultural self-efficacy	46	15.2	231	76.2	26	8.6
4.Decision making self-efficacy	36	11.9	235	77.6	32	10.5
Self-efficacy in Total	**31**	**10.2**	**235**	**77.6**	**37**	**12.2**

It is inferred from the above table that 8.6% of high school Mathematics teachers have low, 78.2% of them have moderate and 13.2% of them have high level of instructional self-efficacy.

8.9% of high school Mathematics teachershave low, 78.5% of them have moderate and 12.5% of them have high level of behvioural self-efficacy.

15.2% of high school Mathematics teachers have low, 76.2% of them have moderate and 8.6% of them have high level of cultural self-efficacy.

11.9% of high school Mathematics teachers have low, 77.6% of them have moderate and 10.5% of them have high level of decision making self-efficacy.

10.2% of high school Mathematics teachers have low, 77.6% of them have moderate and 12.2% of them have high level of self-efficacy.

Hypothesis 1:

There exists significant difference between male and female high school mathematics teachers in their self-efficacy and its dimensions.

Table 2: Difference between Male and Female High School Mathematics Teachers in their Self-efficacy and its Dimensions

Self-efficacy and its Dimensions	Gender	N	Mean	S.D	Calculated 't' value	Remarks
1. Instructional Self-efficacy	Male	96	39.80	3.463	0.653	NS
	Female	207	39.51	4.043		
2. Behavioural Self-efficacy	Male	96	48.51	4.106	2.198	S
	Female	207	47.30	5.097		
3. Cultural Self-efficacy	Male	96	42.81	4.158	2.432	S
	Female	207	41.43	5.485		
4.Decision making Self-efficacy	Male	96	60.71	5.789	2.536	S
	Female	207	58.76	7.039		
Self-efficacy in Total	**Male**	**96**	**191.83**	**14.704**	**2.399**	**S**
	Female	**207**	**187.00**	**19.349**		

(At 5% level of significance, the table value of 't' is 1.96)

It is inferred from the above table that there is no significant difference between male and female high school Mathematics teachers in their instructional self-efficacy, as the calculated 't' values is less than the table value thus the hypothesis is rejected. But there is significant difference between male and female high school Mathematics teachers in their behavioural self-efficacy, cultural self-efficacy, decision making Self-efficacy and Self-efficacy as the calculated 't' value is greater than the table value. Thus the hypothesis is accepted.

While comparing the mean scores of male and female high school Mathematics teachers, male (Mean=48.51, 42.81, 60.71, 191.83) teachers are better than female (Mean=47.30, 41.43, 58.76, 187.00) teachers in their behavioural self-efficacy, cultural self-efficacy, decision making Self-efficacy and Self-efficacy respectively.

Hypothesis 2:

There exists significant difference between married and unmarried high school Mathematics teachers in their Self-efficacy and its dimensions.

Table 3: Difference between Married and Unmarried High School Mathematics Teachers in their Self-efficacy and its Dimensions

Self-efficacy and its Dimensions		Marital Status	N	Mean	S.D	Calculated 't' Value	Remarks
1.	Instructional Self-Efficacy	Married	256	39.49	4.006	1.403	NS
		Unmarried	47	40.19	2.954		
2.	Behavioural Self-Efficacy	Married	256	47.52	4.996	1.718	NS

		Unmarried	47	48.60	3.722		
3.	Cultural Self-Efficacy	Married	256	41.68	5.256	1.634	NS
		Unmarried	47	42.85	4.349		
4.	Decision Making Self-Efficacy	Married	256	58.99	6.894	2.840	S
		Unmarried	47	61.49	5.254		
Self-efficacy in Total		**Married**	**256**	**187.69**	**18.797**	**2.422**	**S**
		Unmarried	**47**	**193.13**	**13.121**		

(At 5% level of significance, the table value of 't' is 1.96)

It is inferred from the above table that there is no significant difference between married and unmarried high school Mathematics teachers in their instructional self-efficacy, behavioural self-efficacy, cultural self-efficacy, as the calculated 't' values is less than the table value thus the hypothesis is rejected. But there is significant difference between married and unmarried high school Mathematics teachers in their decision making self-efficacy and self-efficacy in total, as the calculated 't' value is greater than the table value thus the hypothesis is accepted.

While comparing the mean scores of married and unmarried high school Mathematics teachers, unmarried (Mean=61.49, 191.13) high school Mathematics teachers are better than married (Mean=58.99, 187.69) high school Mathematics teachers in their decision making self-efficacy and self-efficacy respectively.

Hypothesis 3:

There exists significant difference among Tirunelveli, Thoothukudi and Kanyakumari district high school Mathematics teachers in their self-efficacy and its dimensions.

Table 4: Difference among Tirunelveli, Thoothukudi and Kanyakumari District High School Mathematics Teachers in their self-efficacy and its Dimensions

Self-efficacy and its Dimensions	**Source of Variation**	**df (2, 300)**		**Calculated 'F' Value**	**Remarks**
		Sum of Squares	**Mean Square**		
1. Instructional Self-Efficacy	Between	77.916	38.958	2.635	NS
	Within	4434.764	14.783		
2. Behavioural Self-Efficacy	Between	56.354	28.177	1.209	NS
	Within	6992.860	23.310		
3.Cultural Self-Efficacy	Between	115.901	57.950	2.214	NS
	Within	7851.551	26.172		
4. Decision Making Self-Efficacy	Between	267.765	133.883	3.004	S
	Within	13369.588	44.565		
Self-Efficacy in Total	**Between**	**1308.700**	**654.350**	**2.006**	**NS**
	Within	**97882.752**	**326.276**		

(At 5% level of significance, for (2,300) df, the table value of 'F' is 3.02)

It is inferred from the above table that there is no significant difference among Tirunelveli, Thoothukudi and Kanyakumari district high school Mathematics teachers in their instructional self-efficacy, behavioural self-efficacy, cultural Self-efficacy and self-efficacy, as the calculated 'F' value is less than the table value thus the hypothesis is rejected. But there is significant difference among Tirunelveli, Thoothukudi and Kanyakumari district high school Mathematics teachers in their decision making self-efficacy, as the calculated 'F' value is greater than the table value thus the hypothesis is accepted.

Post Anova (Waller Duncan):

Decision Making Self-Efficacy:

District	**N**	**Subset for Alpha = 0.05**	
		Mean 1	**Mean 2**
Tirunelveli	114	58.62	
Kanyakumari	122		59.15
Thoothukudi	67		61.09

While comparing the mean scores of Tirunelveli (Mean=58.62), Kanykumari (Mean=59.15) and Thoothukudi (Mean=61.09) district high school Mathematics teachers, Thoothudkudi district teachers are better in their decision making self-efficacy.

Findings:

- ✓ There is significant difference between male and female high school mathematics teachers in their behavioural self-efficacy, cultural Self-efficacy , decision making Self-efficacy in total. While comparing the mean scores of male and female high school Mathematics teachers, male teachers in their behavioural self-efficacy, cultural self-efficacy, decision making Self-efficacy and Self-efficacy respectively. But there is no significance of difference between male and female high school Mathematics teachers in their self-efficacy.

- ✓ There is no significant difference between married and unmarried high school Mathematics teachers in their instructional self-efficacy, behavioural self-efficacy, cultural self-efficacy. But there is significant difference between married and unmarried high school Mathematics teachers in their decision making self-efficacy and self-efficacy.
- ✓ There is no significant difference among Tirunelveli, Thoothukudi and Kanyakumari district high school Mathematics teachers in their instructional self-efficacy, behavioural self-efficacy, cultural self-efficacy and self-efficacy. But there is significant difference among Tirunelveli, Thoothukudi and Kanyakumari district high school Mathematics teachers in their decision making self-efficacy.

Conclusion:

It is concluded from the above table that there exists significant difference in self-efficacy with respect to sex and districts. Previous self-efficacy studies have shown that teachers have varying degrees of mathematics self-efficacy. Teachers with a high sense of instruction efficacy operate on the belief that difficult students are teachable through extra effort and appropriate techniques and that they can enlist family supports and overcome negative community influences through effective teaching.

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