

Differential Analysis of Attitude of Stem Education Among School Teachers with Respect to Gender and Management of Schools

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Abstract:

The present study focuses on analysing the Attitude of STEM Education among School Teachers with respect to Gender and Management of schools. The sample of the study comprises 100 school teachers from Chennai district selected through cluster sampling technique. The investigator employed an Attitude Scale for STEM Education (ASSE) comprising 40 items to collect the data from the selected sample. The findings of the study show that there is no significant difference in the attitude of STEM education among school teachers with respect to gender and there is a significant difference in the attitude of STEM education among school teachers with respect to management of schools.

Keywords: Attitude, STEM Education.

Introduction

Education is an approach that help the individuals to develop the knowledge and utilise them in their day to day life. Chen & Chen (2021); Panferov et al., (2022) has stated that the maximum individuals would apply the information which is either learned in school directly or blend with their experiences in their daily lives to solve the problem. When the set of knowledge or information is absent, it is difficult for an individual to solve problems. For this reason, STEM education came to live and it has been inculcated in all the educational institutions. STEM education is an approach that integrates Science, Technology, Engineering and Mathematics into one unit in order to develop a STEM specialist (Abdullah et al., 2017). According to Mariani, A., & Ismail, Z. (2013), many countries have adopted STEM education as they understand the need, importance and moreover, the fields of STEM will be the main occupation in future. STEM education partially replaces the traditional method of teaching and learning with the interactive student- centered method of teaching and learning (Breiner et al., 2012).

STEM education is helpful in developing 21st century skills like problem solving, critical thinking, creative thinking, and collaboration that is necessary for the individual to acquire their future dream career. These skills can be developed through the projects, activities and assignments given by the STEM teachers. So, the teachers have to be confident enough and should have a positive attitude that STEM

education will definitely produce skilled and competitive students. This study aims to examine the differential analysis of attitude of STEM education among school teachers.

Review of literature

Khan, Adnan Lodi (2022) conducted a study entitled “*Teachers Awareness and Attitude towards integrating STEM Education in Teaching and Learning*”. The researchers have used a survey method to collect the data from the sample of 302 elementary school teachers. The Stratified Random sampling and Purposive sampling were used to select samples. The findings of the study mentioned that elementary school teachers have average awareness regarding STEM education but still they have a favorable attitude towards integrating STEM Education.

Wong Kah Wei, Siti Mistima Maat (2020) have conducted a study on analysing “*The Attitude of Primary School Teachers towards STEM Education*”. The main aim of this study was to determine the attitude level of teachers towards STEM Education and their attitudinal disparity with respect to Gender (male and female). The sample of this study were 310 primary school Mathematics teachers and the tool used for collecting the data was the survey questionnaire consisting of 29 items with 5- point likert scale. The result of this study showed that the primary school mathematics teacher has a moderate attitude and has no significant difference with respect to gender.

Hackman et al., (2021) has explored the “*Secondary school science teachers’ attitudes towards STEM education in Liberia*”. The main aim of this study is to comprehend the current attitudes of Liberian science teachers towards STEM Education. The mixed method research was used where 194 in-service science teachers were selected as samples for the survey method and 10 science teachers served as respondents for the interview. The result showed that there exist a significant difference between private and public-school science teachers with respect to their attitudinal scores. Add on to that, a slight significant difference was found among teachers with respect to their grade level of teaching.

Erol (2024) has explored “*The Relationship Between Attitude Towards STEM Education, Self-Efficacy in STEM Education, and Constructivist Beliefs of Early Childhood Teachers*”. The main aim of this study is to examine the link between early childhood teachers’ attitude towards STEM education, constructivist beliefs, and its self- efficacy. A survey method was used to collect the data from 211 early childhood teachers working in different regions of Turkey and then the collected data was analyzed by Pearson correlation, multiple linear regression, and path analysis. The result showed that there is the occurrence of low positive correlation in the attitude of teachers towards STEM education, constructivist belief and its self- efficacy. Simultaneously, it was observed that the traditional belief did not affect the attitude towards STEM education and self- efficacy in STEM education, constructivist beliefs significantly influence the teachers’ attitude towards STEM education.

Objectives

- To study the attitude of STEM education among school teachers with respect to gender and management of schools.

Hypotheses

- There is no significant difference in the attitude of STEM education with respect to gender.
- There is no significant difference in the attitude of STEM education with respect to management of schools.

Methodology

The methodology opted for the present study was a survey method. The population of the study comprises teachers working in Government and private schools in Chennai district. The sample of present study was selected through cluster sampling technique which comprises 100 school teachers (50 teachers from Government and 50 teachers from Private schools) in Chennai district. The tool used for the present study was a standard tool named Attitude Scale for STEM Education (ASSE) where it was administered to 34 elementary school teachers and calculated the reliability of 0.881.

Statistical Techniques

- Descriptive Analysis (Mean and Standard Deviation)
- t- Test to find out the difference between the mean score of subgroups

Delimitations of the study

- The study is limited to school teachers only
- The study is limited to 100 school teachers only
- The study is limited to Chennai district only

Analysis and Interpretation of data

Hypothesis 1:

There is no significant difference in the attitude of STEM education with respect to gender.

Table 1: Attitude of STEM Education among School Teachers with respect to Gender

Dimensions	Gender				‘t’ Value	‘p’ Value	Level of significance
	Male (N=50)		Female (N=50)				
	M	SD	M	SD			
Attitude of STEM Education	135.48	42.276	132.88	45.660	0.295	0.768	p > 0.005 *NS

*Not significant at 0.05 level

Table 1 reveals that the mean scores of attitude of STEM education of male teachers (135.48) is

higher than that of female teachers (132.88). Since the p- Value is greater than 0.05, the null hypothesis is accepted. This shows that there is no significant difference in the attitude of STEM education among school teachers with respect to gender.

Hypothesis 2:

There is no significant difference in the attitude of STEM education with respect to management of schools.

Table 2: Attitude of STEM Education among School Teachers with respect to Management of schools

Dimensions	Management of Schools				‘t’ Value	‘p’ Value	Level of significance
	Government school teachers (N=50)		Private school teachers (N=50)				
	M	SD	M	SD			
Attitude of STEM Education	93.10	20.059	175.26	5.398	27.967	0.000	p<0.005 *S

*Significant at 0.05 level

From table 2, it is observed that the mean scores of attitude of STEM education with respect to the management of schools are 93.10 and 175.26 respectively. Moreover, the mean score of private school teachers (175.26) is higher than that of their counterparts. Since the calculated p- Value is less than 0.05 for the attitude of STEM education, the null hypothesis is rejected at 5% level of significance. Hence there is a significant difference in the awareness of STEM education among school teachers with respect to management of schools.

Findings of the study:

- There is no significant difference in the attitude of STEM education with respect to gender.
- There is a significant difference in the attitude of STEM education with respect to management of schools.

Recommendations

- The schools should provide equal STEM opportunities for teachers irrespective of their gender.
- The government should conduct continuous STEM training programmes for teachers.
- The schools should enhance STEM resources and facilities irrespective of their management.
- The schools should provide strong support for STEM implementation.

Conclusion

The results reveal that the male teachers have more attitude towards STEM education than the female teachers and private school teachers have more attitude towards STEM education than the government school teachers. We can further investigate the ways that will help all teachers to develop a positive attitude towards STEM education irrespective of gender and management of schools.

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