



ATTITUDE TOWARDS TECHNOLOGY IN MATHEMATICS IN RELATION TO THEIR LEARNING STYLES AT UNDERGRADUATE STUDENTS

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ABSTRACT

Technology is the making, modification, usage, and knowledge of tools, machines, techniques, crafts, systems, methods of organization, in order to solve a problem, improve a preexisting solution to a problem, achieve a goal or perform a specific function. Learning style is important for students as well as for teachers. For students, if they learn what type of learner they are, they can have a clearer picture of the learning process, and more consciousness of learning. The present study aims at investigating the attitude towards technology in mathematics in relation to their learning styles. The sample consisted of 95 undergraduate students from various colleges in Salem district. The attitude towards technology in mathematics scale was standardized by Galbraith.P& Haines, C.(2000) and learning styles scale standardized by Peter Honey and Alan Mumford (2006) was used. Descriptive analysis, Differential analysis, Pearson Product moment correlational analysis and Chi square analysis were the statistical techniques used. The finding of this study reveals that there is no significant positive correlation between attitude towards technology in mathematics and learning styles at undergraduate students with respect to their gender.

KEY WORDS: Attitude towards technology, learning styles, mathematics, undergraduate students.

INTRODUCTION

Technology is an important key factor to success. User-friendly interaction between the student and technology in the society is a great milestone of the fresh generation development. The field of mathematics has benefited from technology throughout its description. The demands of the 21st-Century require that all people should be mathematically, scientifically, and technologically literate. It is generally perceived among educators as a vital tool for effective instruction in secondary mathematics classrooms (Franz & Hopper, 2007), and the integration of technology in the learning and teaching of mathematics became a very critical issue (Adamides&Nicolaou, 2004, p. 139).

The learning theories provide the base for learning styles. Learning styles are relatively stable preference used by each individual to organize and process information for solving a problem in a learning task. According to Feldman (2004, p.35) "learning style reflects our preferred manner of acquiring, using and thinking about knowledge". When a situation has been faced by a person it is his learning style which leads him to acquire, retain and use knowledge to handle that situation. Every one has different way to handle the situation. Felder (2005, p.58) said that "students are characterized by different learning styles preferentially focusing on different types of information and tending to cooperate on perceived information in different ways". There are many learning styles based on the individual differences or these individual differences reflect different learning styles in human personality.

REVIEW OF LITERATURE

Ramya.,(2015) studied attitude towards technology in learning mathematics and math anxiety of undergraduate mathematics students. The study showed that there was a low positive significant relationship between attitude towards technology in learning mathematics and math anxiety of undergraduate mathematics students.

Chen Kang Lee and Manjit Singh Sidhu., (2013) took a study on engineering students learning styles preferences using Honey and Mumford Learning Styles Questionnaire: A Case study in Malaysia. The results indicated that the engineering students have a quite balance learning styles in Activist (very strong preference), Reflector (strong preference) and Theorist (strong preference) while less on Pragmatist (average preference).

STATEMENT OF THE PROBLEM

The problem is taken for this study stated as **“ATTITUDE TOWARDS TECHNOLOGY IN MATHEMATICS IN RELATION TO THEIR LEARNING STYLES AT UNDERGRADUATE STUDENTS”**.

OPERATIONAL DEFINITIONS OF THE STUDY

ATTITUDE TOWARDS TECHNOLOGY IN MATHEMATICS

Technology is essential in the teaching and learning of mathematics; it influences the mathematics that is taught and enhances students' learning. The present study includes five dimensions of using technology in learning mathematics namely, Mathematics confidence, Confidence with technology, attitude to learning mathematics with technology, Affective engagement and Behavioral engagement.

LEARNING STYLES

Learning style is an individual characteristic way of responding to certain variables in the instructional environment. It involves individual methods for processing information in learning new concepts. In this context learning styles include the four styles Activist, Reflector, Theorist, and Pragmatist.

UNDERGRADUATE STUDENTS

Under graduate students indicates those who are studying mathematics.

OBJECTIVES OF THE STUDY

- ✚ To assess the level of attitude towards technology in mathematics by undergraduate students
- ✚ To find the level of learning styles at undergraduate students
- ✚ To study the significant difference between attitude towards technology in mathematics and learning styles at undergraduate students with respect to their gender and locality
- ✚ To find the relationship between attitude towards technology in mathematics and learning styles at undergraduate students with respect to their gender and locality
- ✚ To investigate the association between attitude towards technology in mathematics and learning styles at undergraduate students based on birth order

HYPOTHESES OF THE STUDY

- ✚ The level of attitude towards technology in mathematics by undergraduate students is moderate
- ✚ The level of learning styles at undergraduate students is moderate
- ✚ There is no significant difference between attitude towards technology in mathematics and learning styles at undergraduate students with respect to their gender and locality
- ✚ There is no significant relationship between attitude towards technology in mathematics and learning styles at undergraduate students with respect to their gender and locality

- There is no association between attitude towards technology in mathematics and learning styles at undergraduate students based on birth order

METHODOLOGY

Method: The survey method was adopted for the study.

Sample: By using the random sampling technique, 95 undergraduate students from various colleges in Salem District have been selected for the study.

Tools: The attitude towards technology in mathematics was standardized by Galbraith.P& Haines, C.(2000). It contains in the tool are 20 items with 5 dimensions. Learning styles scale standardized by Peter Honey and Alan Mumford (2006) was used. It consisted of 80 items on four styles viz. Activist, Reflector, Theorist, and Pragmatist.

STATISTICAL TECHNIQUES USED

Descriptive analysis, Differential analysis, Pearson Product moment correlational analysis and Chi square analysis were adopted for analyzing and interpreting the data.

DATA ANALYSIS

A)PERCENTAGE ANALYSIS

TABLE - I
LEVEL OF ATTITUDE TOWARDS TECHNOLOGY IN MATHEMATICS WITH RESPECT TO THEIR BACKGROUND VARIABLES

ATTITUDE TOWARDS TECHNOLOGY IN MATHEMATICS		LOW		AVERAGE		HIGH	
		N	%	N	%	N	%
Gender	Male (80)	16	20.00	36	45.00	28	35.00
	Female (15)	3	20.00	7	46.67	5	33.33
Locality	Rural (53)	10	18.87	26	49.06	17	32.08
	Urban (42)	7	16.67	19	45.24	16	39.10
Birth order	First (28)	6	21.43	13	46.43	9	32.14
	Middle (46)	12	26.09	21	45.65	13	28.26
	Last (14)	3	21.43	6	42.86	5	35.71
	Single (7)	1	14.29	4	57.14	2	28.57

From the table it is noticed that undergraduate students had average level of attitude towards technology in mathematics with reference to demographic variables such as gender, locality and birth order.

TABLE - II
NUMBER OF STUDENTS IN EACH LEARNING STYLE

VARIABLES	FOUR LEARNING STYLES			
	ACTIVIST (19)	REFLECTOR (21)	THEORIST (44)	PRAGMATIST (11)
Male	15	17	32	16
Female	3	4	3	5
Rural	10	12	20	11
Urban	12	13	12	5
First	6	7	10	5
Middle	8	6	22	10
Last	3	4	5	2
Single	-	2	4	1

- # Most of the male undergraduate students were found to theorist style. More female students followed pragmatist style.
- # Majority of the rural undergraduate students were found to theorist style. More number of urban students followed reflector style.
- # More number of different birth orders under graduate students were found to theorist style.

B) DIFFERENTIAL ANALYSIS

HYPOTHESIS – 1

A) ATTITUDE TOWARDS TECHNOLOGY IN MATHEMATICS

There is no significant difference between attitude towards technology in mathematics at undergraduate students with respect to their gender and locality

TABLE - III
TEST OF SIGNIFICANCE BETWEEN ATTITUDE TOWARDS TECHNOLOGY IN MATHEMATICS WITH RESPECT TO THEIR BACKGROUND VARIABLES

ATTITUDE TOWARDS TECHNOLOGY IN MATHEMATICS		N	M	SD	t VALUE	S / NS
Gender	Male	80	64.91	10.80	0.060	NS
	Female	15	64.73	9.29		
Locality	Rural	53	64.40	11.069	0.512	NS
	Urban	42	65.50	9.890		

From the above table it is noticed that, the difference between the mean scores of attitude towards technology in mathematics of male and female groups, rural and urban groups is not significant at 0.05 level and 0.01 level as the critical ratios obtained for these groups are below the table values (1.96 and 2.28)

CONCLUSION

There is no significant difference between attitude towards technology in mathematics at undergraduate students with respect to their gender and locality.

B) LEARNING STYLES

There is no significant difference between learning styles at undergraduate students with respect to their gender and locality.

TABLE - IV
TEST OF SIGNIFICANCE BETWEEN LEARNING STYLES WITH RESPECT TO THEIR BACKGROUND VARIABLES

LEARNING STYLES		N	M	SD	t VALUE	S / NS
Gender	Male	80	302.60	57.30	0.350	NS
	Female	15	308.33	54.68		
Locality	Rural	53	305.60	53.55	0.398	NS
	Urban	42	300.86	60.89		

From the above table it is noticed that, the difference between the mean scores of learning styles of male and female groups, rural and urban groups is not significant at 0.05 level and 0.01 level as the critical ratios obtained for these groups are below the table values (1.96 and 2.28).

CONCLUSION

There is no significant difference between learning styles at undergraduate students with respect to their gender and locality

C) CORRELATIONAL ANALYSIS**HYPOTHESIS – 2****A) GENDER**

There is no significant relationship between attitude towards technology in mathematics and learning styles at undergraduate students with respect to their gender

TABLE - V
RELATIONSHIP BETWEEN ATTITUDE TOWARDS TECHNOLOGY IN MATHEMATICS AND LEARNING STYLES WITH RESPECT TO THEIR GENDER

VARIABLES	CATEGORY	R VALUE	TABLE VALUE
Attitude towards technology in mathematics and learning styles	Male	0.033	0.205
	Female		

It is inferred from the table, male under graduate students has no positive correlation with female undergraduate students of Attitude towards technology in mathematics and learning styles.

CONCLUSION

There is no significant positive correlation between attitude towards technology in mathematics and learning styles at undergraduate students with respect to their gender.

B) LOCALITY

There is no significant relationship between attitude towards technology in mathematics and learning styles at undergraduate students with respect to their locality

TABLE - VI
RELATIONSHIP BETWEEN ATTITUDE TOWARDS TECHNOLOGY IN MATHEMATICS AND LEARNING STYLES WITH RESPECT TO THEIR LOCALITY

VARIABLES	CATEGORY	R VALUE	TABLE VALUE
Attitude towards technology in mathematics and learning styles	Rural	0.278	0.205
	Urban		

It is inferred from the table, rural under graduate students has positive correlation with urban undergraduate students of Attitude towards technology in mathematics and learning styles.

CONCLUSION

There is significant positive correlation between attitude towards technology in mathematics and learning styles at undergraduate students with respect to their locality.

D) CHI- SQUARE ANALYSIS**HYPOTHESIS – 3****A) ATTITUDE TOWARDS TECHNOLOGY IN MATHEMATICS**

There is no association between attitude towards technology in mathematics at undergraduate students based on birth order

TABLE - VII
ASSOCIATION BETWEEN ATTITUDE TOWARDS TECHNOLOGY IN MATHEMATICS AND THEIR BIRTH ORDER

VARIABLES	CATEGORIES	ATTITUDE TOWARDS TECHNOLOGY IN MATHEMATICS			χ^2 VALUE	S / NS
		LOW	MODERATE	HIGH		
Birth order	First	6	13	9	0.91	NS
	Middle	12	21	13		
	Last	3	6	5		
	Single	1	4	2		

From the table it is found that calculated value is 0.91. Table value of χ^2 for df6 at 0.01 level 16.812. So calculated value is less than the table value. Hence the hypothesis is accepted.

CONCLUSION

There is no association between attitude towards technology in mathematics at undergraduate students based on birth order.

B) LEARNING STYLES

There is no association between learning styles at undergraduate students based on birth order

TABLE - VIII
ASSOCIATION BETWEEN LEARNING STYLES AND THEIR BIRTH ORDER

VARIABLES	CATEGORIES	LEARNING STYLES			χ^2 VALUE	S / NS
		LOW	MODERATE	HIGH		
Birth order	First	7	14	7	0.434	NS
	Middle	11	23	12		
	Last	3	7	4		
	Single	1	4	2		

From the table it is found that calculated value is 0.434. Table value of χ^2 for df 6 at 0.01 level 16.812. So calculated value is less than the table value. Hence the hypothesis is accepted.

CONCLUSION

There is no association between learning styles at undergraduate students based on birth order.

MAJOR FINDINGS OF THE STUDY

- ✚ Undergraduate students had average level of attitude towards technology in mathematics with reference to demographic variables such as gender, locality and birth order.
- ✚ Most of the male undergraduate students were found to theorist style. More female students followed pragmatist style.
- ✚ Majority of the rural undergraduate students were found to theorist style. More number of urban students followed reflector style.
- ✚ More number of different birth orders under graduate students were found to theorist style.
- ✚ There is no significant difference between attitude towards technology in mathematics at undergraduate students with respect to their gender and locality
- ✚ There is no significant difference between learning styles at undergraduate students with respect to their gender and locality

- # There is no significant positive correlation between attitude towards technology in mathematics and learning styles at undergraduate students with respect to their gender.
- # There is significant positive correlation between attitude towards technology in mathematics and learning styles at undergraduate students with respect to their locality.
- # There is no association between attitude towards technology in mathematics at undergraduate students based on birth order
- # There is no association between learning styles at undergraduate students based on birth order

DISCUSSION ON THE FINDINGS

Chen Kang Lee and Manjit Singh Sidhu.,(2013) indicated that the engineering students had a quite balance learning styles in Activist (very strong preference), Reflector (strong preference) and Theorist (strong preference) while less on Pragmatist (average preference). These findings is not confirm to the present study. It has stated as theorist (very strong preference), Reflector (strong preference) and activist (strong preference) while less on Pragmatist (average preference).

CONCLUSION

The purpose of the present study was attitude towards technology in mathematics in relation to their learning styles, and in light of this finding, to discover the level of attitude towards technology in mathematics. It was revealed that undergraduate students had average level of attitude towards technology in mathematics with reference to demographic variables such as gender, locality and birth order. Furthermore the most preferred learning style were identified. It also revealed that most preferred learning style was theorist.

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