

Demographic Influence on Attitude of Teachers towards using New Technology: A Study after almost One Year of COVID-19 Outbreak

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Abstract

The present study has been conducted to investigate the attitude of teachers' towards using new technology and the influence of various demographic (personal and institutional) variables on it; after almost one year of the COVID-19 pandemic outbreak. The sample of the study consisted of 365 school teachers from different districts of Tamilnadu state. To know the attitude of teachers' towards using new technology the tool 'Attitude towards using new technology scale (ATUNTS)' developed and standardized by S Rajasekar was used. Demographic data were collected by using a Personal Data Questionnaire. The finding of the study revealed that the majority of the teachers of the selected sample showed neutrality; whereas a few of them showed a favourable attitude towards the use of new technology. Variables like; gender, age, marital status and type of family. Teaching experience, locality, school management and teaching level were found to have no significant influence on the attitude of teachers towards the use of new technology. Type of board, stream and number of online courses/ MOOCs attended were found to have a significant influence on the attitude of teachers towards the use of new technology.

Keywords: Attitude of teachers towards use of new technology, Demographic influence on teachers' attitude towards use of technology

Introduction

The outbreak of COVID-19 had impacted the education system worldwide, so the Indian education system is no exception. Slowly and gradually all the stakeholders of education modified their knowledge regarding and skills of using ICT tools, modern technological tools to be used for teaching and learning. E-learning is supplementing traditional learning slowly and gradually. Moreover, due to the present situation, the attitude of teachers has also changed towards using ICT tools and new technology for teaching and learning. The worldwide impact of the health emergency caused by the COVID-19 pandemic had initiated the transfer of face-2-face education to online education. Facing the challenge of this new situation, teachers had to adapt

not only to new online methodologies but also they had to undergo a lot of stress and various kinds of challenges of online teaching.

Many researchers investigated teachers' attitudes towards the use of new technologies in classroom teaching-learning situations before the COVID-19 pandemic period. Becker and Riel (1999) concluded through their investigation that teachers exposed to computers and having an abundance of instructional technologies that can be used in classrooms showed a more positive attitude towards integrating technology in their classrooms. Baylor and Ritchie (2002) observed that following a comprehensive plan for technology use is the key to success for successfully integrating technology into

the school curricula by many schools. According to Kersaint, Horton, Stohl and Garofalo (2003) use of technology by teachers is greatly influenced by their positive attitude. In a study conducted by Sunita Saikia, teachers despite not having enough experience in the utilization of technology in classrooms had shown a positive attitude towards technology. In a study on teachers of K-12 schools in the United Arab Emirates Al Mekhlafi and Al Meqdadi (2010) found teachers are progressive in using a variety of technological tools in their classrooms. Moreover, the female teachers were found to have more experience, usage and familiarity with the technological tools than their counterparts. Al-Zaidiyeen, Mei and Fook (2010) investigated the level of ICT use for educational purposes by teachers in Jordanian rural secondary schools and found that teachers hold positive attitudes towards the use of ICT, and a significant positive correlation between teachers' level of ICT use and their attitudes towards ICT was found. Basu and Ahmad (2016) found that secondary school teachers have a more favourable attitude towards ICT than the private secondary school teachers of the Budgam district. Kant (2016) studied the attitude of secondary school teachers towards using new technology and found that gender and the affiliating board does not influence teachers' attitude. Mahajan (2016) examined the attitude of school teachers towards the use of technology in Nurpur and Jawali blocks of District Kangra, and found that about 25 per cent of the teachers had a favourable attitude; gender & teaching experience had no influence on teacher's attitude towards the use of new technology.

In the present scenario, especially after the outbreak of Covid-19 pandemic, use of technology has become a part and parcel of the education system now. Though initial efforts taken by the novice

technology user teachers were huge, but now the teachers as well the students are getting used to technology-integrated teaching and learning. Previously, many studies had been conducted in India as well as abroad to know the teachers' attitude towards the use of new technological tools in the teaching-learning process. As, investigations by various researchers worldwide show that during this pandemic period the overall attitude of all the stakeholders has seen a shift from not so favoured technology to favourable towards technology. Recently, Alhumaid et al. (2020) investigated the perception and attitudes of university-level instructors from Rawalpindi, Pakistan towards e-learning during the Covid-19 period. Overall, the respondents expressed a favourable opinion concerning e-Learning acceptance during the lockdown situation and its impacts on students' academic performance. Espino-Díaz et al. (2020) suggested that the symbiosis of ICT and neuro education can make a great contribution to the paradigm shift that is taking place in the present time. A longitudinal national survey conducted by Sokal, Trudel and Babb (2020) at two points early in the COVID-19 pandemic indicated that teacher efficacy, attitudes toward change, and perceptions of administrative support were correlated with teacher resilience and burnout at the onset of the pandemic. Further, this study showed that teachers' cognitive and emotional attitudes toward change became more negative.

To investigate the present attitude of school teachers towards the use of technology in classrooms and demographic influence in the Tamilnadu state of India after nearly one year of the COVID-19 pandemic outbreak this study has been undertaken.

Objectives

The present study was conducted to realize the following objectives:

1. To study the overall attitude of teachers towards using new technology.
2. To study the significant difference in school teachers' attitude towards the use of new technology based on various variables i.e., gender, age, marital status, type of family; teaching experience, locality, management, board of school; level, stream and number of online courses/MOOCs attended.

Hypotheses

1. There is no significant difference in school teachers' attitude towards the use of new technology based on gender.
2. There is no significant difference in school teachers' attitude towards the use of new technology based on marital status.
3. There is no significant difference in school teachers' attitude towards the use of new technology based on family type.
4. There is no significant difference in school teachers' attitude towards the use of new technology based on locality.
5. There is no significant difference in school teachers' attitude towards the use of new technology based on type of school management; i.e. Aided and private.
6. There is no significant difference in school teachers' attitude towards the use of new technology based on the type of board (CBSE and State Board).
7. There is no significant difference in

school teachers' attitude towards the use of new technology based on different age groups.

8. There is no significant difference in school teachers' attitude towards the use of new technology based on teaching experience.
9. There is no significant difference in school teachers' attitude towards the use of new technology based on teaching levels; i.e. Primary/Secondary/Senior Secondary.
10. There is no significant difference in school teachers' attitude towards the use of new technology based on stream.
11. There is no significant difference in school teachers' attitude towards the use of new technology based on online courses/MOOCs attended.

Methodology

A descriptive survey method was employed for the present study.

Sample

The sample of the present study consisted of a total of 365 school teachers teaching at different levels (Primary, Secondary and Senior Secondary) of various Aided and Private schools of Tamilnadu, India.

Tool Used

To know the attitude of teachers towards using new technology the tool 'Attitude towards using new technology scale (ATUNTS)' developed and standardized by S. Rajasekar (2011) was used. For collecting the demographic data, a personal Data Questionnaire was used.

Data Collection

The data was collected online using google forms.

Analysis and Interpretation

Table-1: Overall attitude of teachers towards using new technology

S. No	Attitude towards use of new technology	N	%
1.	Neutral	312	85.5
2.	Favourable	53	14.5

From table-1 it is evident that the majority of the teachers 312 (85.5 per cent) out of total of 365 teachers of the selected sample showed a neutral attitude towards the use of new technology; whereas the rest of the teachers 53 (14.5 per cent) showed a

favourable attitude towards use of new technology. None of the respondents of the selected sample showed an unfavourable, highly unfavourable or highly favourable attitude towards using new technology.

Table-2: t-test results of attitude of teachers towards using new technology based on various demographic variables

Variables	Categories	N	Mean	SD	df	t	p
Gender	Male	38	101.11	12.304	363	-1.439	.151 ^{NS}
	Female	327	103.87	11.061			
Marital Status	Unmarried	39	101.85	8.558	363	-1.021	.308 ^{NS}
	Married	326	103.79	11.480			
Type of Family	Nuclear	226	103.99	11.112	363	.888	.375 ^{NS}
	Joint	139	102.91	11.377			
Locality of the School	Urban	316	103.73	11.254	363	.675	.500 ^{NS}
	Rural	49	102.57	10.983			
Type of School Management	Aided	57	102.93	11.206	363	-.475	.635 ^{NS}
	Private	308	103.70	11.225			
Type of Board	State Board	170	101.86	10.663	363	-2.751	.006 ^{**}
	CBSE Board	195	105.07	11.486			

** - significant at 0.01 level

NS – not significant at 0.05 levels

The following results can be drawn from the t-test results, given in Table-2:

Male and female teachers do not differ significantly with respect to their attitude towards using new technology; $t(363) = 1.439$, $p = .151$ even at a 0.05 level.

Married and unmarried teachers do not differ significantly with respect to their attitude towards using new technology; $t(363) = 1.021$, $p = .308$ even at a 0.05 level.

Teachers belonging to nuclear and joint families do not differ significantly with

respect to their attitude towards using new technology; $t(363) = .888, p = .375$ even at a 0.05 level.

Teachers belonging to schools located in urban and rural areas do not differ significantly with respect to their attitude towards using new technology; $t(363) = .675, p = .50$ even at a 0.05 level. Teachers belonging to Aided and Private do not differ significantly with respect to their attitude towards using new

technology; $t(363) = .475, p = .635$ even at a 0.05 level.

Teachers belonging to schools affiliated to the State Board and CBSE Board differ significantly with respect to their attitude towards using new technology; $t(363) = 2.751, p = .006$ at 0.01 level. CBSE board teachers ($M=105.07$) showed a significantly higher attitude towards the use of new technology as compared to State board teachers ($M= 101.86$).

Table-3: F-test results of attitude of teachers towards using new technology based on various demographic variables

Variable	Sub-variables	N	Mean	SD	F	p	Groups differ significantly
Age-group	20-30 years	62	102.34	9.838	1.101	.349 ^{NS}	Not Significant
	31-40 years	143	103.29	11.215			
	41-50 years	135	103.81	11.648			
	> 50 years	25	107.04	11.873			
Total Teaching Experience	1-5 years	106	102.45	10.840	1.073	.369 ^{NS}	Not Significant
	6-10 years	109	103.37	11.122			
	11-15 years	82	103.43	11.737			
	16-20 years	39	106.56	10.203			
	> 20 years	29	104.90	12.525			
Level	Primary	106	102.53	9.932	.926	.397 ^{NS}	Not Significant
	Secondary	169	103.63	11.026			
	Senior Secondary	90	104.71	12.864			
Stream	Science (1)	187	106.13	11.738	10.467	<.001 ^{**}	1 & 2 ($p<.001$)
	Arts/ Humanities (2)	148	100.81	10.077			
	Commerce (3)	30	101.33	9.629			
Online Courses/ MOOCs Done	None (1)	243	101.85	10.987	6.000	.001 ^{**}	1 & 2 ($p=.001$)
	1-5 Courses (2)	91	107.13	11.331			
	6-10 Courses (3)	24	106.79	9.330			
	>10 Courses (4)	7	106.29	11.543			

** - significant at 0.01 level
NS – not significant at 0.05 levels

The following results can be drawn from the F-test results, given in Table-3:

Teachers belonging to different age-groups do not differ significantly with respect to their attitude towards using new technology; $F = 1.101$, $p = .349$ even at a 0.05 level.

Teachers belonging to different teaching experience groups do not differ significantly with respect to their attitude towards using new technology; $F = 1.073$, $p = .369$ even at a 0.05 level.

Teachers belonging to different levels do not differ significantly with respect to their attitude towards using new technology; $F = .926$, $p = .397$ even at a 0.05 level.

Teachers belonging to different streams (Science, Arts/Humanities, Commerce) differ significantly with respect to their attitude towards using new technology; $F = 10.467$, $p < .001$ at 0.01 level. Further, post hoc analysis using Tukey HSD reveals that only teachers belonging to science ($M = 106.13$) and Arts/Humanities ($M = 100.81$) group differ with respect to their attitude towards using new technology; Science teachers have a more favourable attitude towards using new technology in classrooms.

Teachers belonging to different groups based on online courses/ MOOCs attended differ significantly with respect to their attitude towards using new technology; $F = 6.00$, $p = .001$ at 0.01 level. Further, post hoc analysis using Tukey HSD reveals that only teachers who have not done any online courses/ MOOCs ($M = 101.85$) and the teachers who have done 1-5 courses ($M = 107.13$) differ significantly with respect to their attitude towards using new technology.

Findings

1. The majority of the teachers 312 (85.5 per cent) out of the total 365

teachers of the selected sample showed a neutral attitude towards the use of new technology; whereas the rest of the teachers 53 (14.5 per cent) showed a favourable attitude towards the use of new technology.

2. Variables like; Gender, age, marital status, type of family, teaching experience, locality, school management and level were found to have no significant influence on the attitude of teachers towards the use of new technology.
3. Type of board, stream and number of online courses/MOOCs attended were found to have a significant influence on the attitude of teachers towards the use of new technology.
4. CBSE board teachers showed a significantly favourable attitude towards the use of new technology compared to State board teachers.
5. Science teachers showed significantly favourable attitudes towards the use of new technology compared to arts/humanities teachers.
6. The number of online courses MOOCs done by the teacher's influences their attitude towards using new technology. Teachers having done (1-5) MOOCs showed significantly favourable attitude towards use of new technology as compared to teachers who have done not a single MOOC.

Conclusion

The analysis of data regarding demographic influence on the attitude of teachers using new technology during the COVID-19 pandemic revealed some unexpected and some expected results. The majority of the teachers of the selected sample showed neutrality and the rest of the teachers showed a favourable attitude towards

the use of new technology. The extreme responses like highly favourable and highly unfavourable responses were totally missing. The neutral attitude of the teachers may be because by now the teachers have taken the use of technology as a new normal for the education system to run smoothly for some more years. As we can see, none of the respondents has shown an unfavourable attitude towards the use of technology in classrooms; this might be because of the need of time they have accepted technology as a part and parcel of school education in coming times. This acceptance of the use of ICT in school education can

be seen as a positive step towards the digitalization of education in the Indian scenario. Various variables like Gender, age, marital status, type of family, teaching experience, locality, school management and level were found to have no significant influence on the attitude of teachers towards the use of new technology. CBSE board teachers showed a significantly favourable attitude towards the use of new technology compared to State board teachers because of more facilities to CBSE school teachers as compared to state board teachers in terms of availability of and skill of using technological tools in classrooms.

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