



Challenges of teachers in adoption of digital education in India– A case study of Telangana state

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Abstract

Covid 19 forced Indian education system shift from traditional to modern without well preparation. This posed many challenges to teachers, students, parents, institutions and government. Therefore, present study focused on the teacher side challenges in digital education system in the Telangana State during Covid 19 period. The sample size is 250 teachers working government schools in Telanga State. The sample size selected simple ransom technique. The study revealed that, due to poor infrastructure facility teachers in Telangana exposed to many challenges in effective implementation of digital education such as poor internet facility, power cut, inadequate training, rural areas, communication problem, poor clarity of voice, no proper support from government and insignificant performance in students etc. Therefore, present study suggests policy makers to develop well digital infrastructure before shift to digital education in the State.

Keywords: digital education, e-education, challenges of D-education

Introduction

Digital education is the only a mean for transformation of nation into digital society which is cost effective and high productive. Digital education refers to enlighten of students through suing technology and digital services. Digital education also concerned with application of modern technology in teaching and learning process. E-learning system is another form of digital education which helps the students to focus on self-directed learning skills. The main advantages of D-education system are sharing of unlimited knowledge, availability of expert's classes, time convenience, and doubt clarification, easy revision of classes, online exams and cost effective. Digital education in world is most preferred education tool both in developed and under developed countries. In particularly, under developed countries e-learning tools facility helped poor students to get quality education from their remote areas. Therefore, World Bank also recognized the significance of digital education to bring poor out of the poverty with low cost and high quality education. The success of digital education system is highly depends on the availability of digital infrastructure in the country. The digital infrastructure facility consist of digital devices such as lap tops, mobiles, television others, internet facility, trained teachers, and projectors etc. The digital infrastructure is very poor in both developing and under developed countries due to high dependency on traditional education system and poor allocation of funds for education in budget.

The world pandemic decease Covid-19 brought tremendous changes in education system towards digital education at all levels of education particularly secondary education and higher education system. The India is also not exemption for this. The series of lock down periods and restriction on educational institutions hampered the knowledge of students. To address this problem entire country, schools and students were directed towards arrangement of digital devices which enables them to be educated digitally. However, development of digital infrastructure is not one day phenomenon, it is exposed to various problems in the country where traditional education system played significant role and income level of nations is poor. Therefore, present study focused on the challenges faced by teachers in effective implementation of digital education system in India, particularly in Telangana State during pandemic period.

Review of Literature

Muthuprasad *et al* (2021) ^[1] examined the perception and preferences of 307 agricultural students towards digital learning system in India during covid period. The study found that, 70 percent of students were prepared to opt online classes with help of small phones. The study also observed that, students preferred record classes followed by quiz at the end. The study highly preferred online classes due to high flexibility and convenience of attending class room. The study also observed that technical issues are major constraints in online education.

Tuba Kamal and Asheref Illiyen (2021) ^[2] examined the teacher's perceptions and challenges in adoption of e-learning mechanism in schools during pandemic period. The study selected 200 teachers working in Delhi schools as sample and adopted descriptive statistics, factor analysis, reliability and chi-square tests for data analysis. The study found positive perception of teachers towards online teaching. The study also found that, teachers exposed to technical issues in teaching, conducting online exams and assessment etc.

Rishabh Gandhi (2021) [3] investigated the positive and negative effect of digital education system in India through adopting PESTELE and cost benefit analysis techniques during pandemic period. The study irritation, depression and poor social relationship are negative results of digital education and positive effects consist of rise in income levels and good future. However, the study revealed that, negative effects are outweighs the positive effect. The study suggests that in online classes only teaching of core concepts.

Anil Kumar and Ankur Pratap Singh (2020) have emphasized on the digital inclusion in education system in India during pandemic period. The study found gender of inequality, caste based inequality and regional based inequality in accessing of digital education. The study found that, around 70 percent of women, scheduled castes and tribes and village students are so far from digital education in India. The study also found that, poor digital study environment, poor internet speed, lack of well trained teachers, funds and poor digital education policies are major constraints to digital education in India.

Rampravesh Gond and Rashi Gupta (2017) [5] described the benefits of digital education system to students, parents, and education institutions. The study expressed that, planning of class room events, projects, assignments, online exams, results watching, listening of missed class subjects and online library advantages to students. Digital education helps the parents to watch children attendance to classes, progress of syllabus, time table, home work, payment of school fees and events. The study also found that, digital education helps the teacher in preparation of subject content, time tables, wider information, teaching history etc.

Need of the Present Study

The initiation of modern reforms in education system is inevitable in the country like India where traditional education system plays significant role from gross root level. This traditional education system in India suffering with challenges of lack of teachers out dated teaching methods, costly, poor infrastructure and location in remote areas. To address these issues through application of technology based education system is essential in India. However, poor digital infrastructure is a major constraint for effective implementation of digital education systems in India. Unfortunately, covid 19 forced Indian education system shift from traditional to modern without well preparation. This posed many challenges to teachers, students, parents, institutions and government. Therefore, present study focused on the teacher side challenges in digital education system in the Telangana State during Covid 19 period.

Objectives of the study

Present Study is aimed to explore the challenges faced by teachers in implementation of digital education in Telangana State during Covid-19 period.

Research Methodology

Present study is purely based on the primary data collected from the 250 teachers working in government schools of Telangana State. The sample size is selected through stratified random technique. The selected teachers participated in online classes for 8th, 9th and 10th classes during lock down period and post lock down period in Telandanga State. The primary data is collected through well structured questionnaire prepared on the challenges of digital education systems in India. The data is collected from the teachers on the challenges based by them in digital education during online classes. The collected is analyzed through descriptive statistics and ANOVA. The study also calculated reliability test.

Hypothesis

Null Hypothesis: There is no significant difference in between and within groups of responses in challenges faced in digital education.

Alternative Hypothesis: There is significant difference in between and within groups of responses in challenges faced in digital education.

Table 1

Demographic Characteristics of The Responses								
Gender			Region			Class		
	N	(%)		N	(%)		N	(%)
Male	175	70	Urban	99	39.6	8 th	67	26.8
Female	75	30	Semi-Urban	46	18.40	9 th	68	27
			Rural	105	42	10 th	115	46
Total	250	100	Total	250	100	Total	250	100
Subjects taught			Age			Teaching experience		
	N	(%)	Years	N	(%)	Years	N	(%)
Telugu	25	10	25-35	53	21.2	< 5 years	63	25.2
English	43	17.2	36-45	89	35.6	5-10	72	28.8
Hindi	19	07	46-55	103	41.2	11-15	58	23.0
Maths	58	23	>55 years	5	2	16-20	52	20.8

Science	69	27.6				>20years	5	02
Social	36	14.4						
Total	250	100	Total	250	100	Total	250	100

Demographic Profile of Sample Size: The study observed that, in total sample size, 70 percent represent by male while 30 percent represent by female teachers. In regional of participation, 42 percent of teachers participated from rural areas, followed by 39.6 percent from urban, 18.40 percent from semi-urban. In total sample size, 46 percent of teachers taught 10th class, 27 percent taught 9th class and 26.8 percent taught 8th class. In subject wise participation, 27.6 percent is science teachers, 23 percent mathematics teachers, 17.2 percent English teachers, 14.4 percent social teachers, 10 percent telugu teachers and seven percent Hindi teachers. Similarly, 41.2 percent of teachers is the age group of 46-55 years, followed by 35.6 percent 36-45 years, 21.2 percent 25-35 years group and only two percent is above 55 years. Finally, in total teachers 28 percent has 5-10 years of teaching experience, followed by 25.2 percent below five years, 23 percent 11-15 years, 20.8 percent 16-20 years and only two percent above 20 years.

Data Analysis

Table 2: Challenges Facing by Teachers in Adoption of Digital Education in Telangana State

Statements	Strongly Disagreed	Disagreed	Neutral	Agreed	Strongly Agreed	Total
I am able to utilization of digital equipment properly	9 (3.6)	15 (6)	65 (26)	107 (42.8)	54 (21.6)	250 (100)
I learned innovative digital teaching methods for school students	98 (39.2)	12 (4.8)	82 (32.8)	26 (10.4)	32 (12.8)	250 (100)
Poor internet connectivity is great hurdle to digital education in schools	14 (5.6)	29 (11.6)	34 (13.6)	125 (50)	48 (19.2)	250 (100)
There is clarity in voice reaching to students	115 (46)	52 (20.8)	45 (18)	22 (8.8)	16 (6.4)	250 (100)
Students are highly interested to attend online classes	95 (38)	48 (19.2)	56 (22.4)	15 (6)	36 (14.4)	250 (100)
Preparation of Time table is highly convenient for online classes than traditional	39 (15.6)	24 (9.6)	107 (42.8)	55 (22)	25 (10)	250 (100)
There is good responses from students for asked questions in online classes	96 (38.4)	52 (20.8)	52 (20.8)	32 (12.8)	18 (7.2)	250 (100)
There is good support from government to provide required equipments	95 (38)	62 (24.8)	42 (16.8)	26 (10.4)	25 (10)	250 (100)
There is good improvement in students marks post online classes	102 (40.8)	53 (21.2)	46 (18.4)	26 (10.4)	23 (9.2)	250 (100)

Source: Field Study

Table 3: Descriptive Statistics of the Data

Statements	I	II	III	IV	V	VI	VII	VIII	IX
Mean	3.7200	2.530	3.6900	2.0800	2.3700	2.9900	2.2800	2.2700	2.2500
Standard Error	.10058	.14246	.10702	.12446	.1411	.11849	.12955	.13398	.13286
Median	4.000	3.00	4.000	2.000	2.000	3.0000	2.000	2.000	2.000
Mode	4	1.00	4.00	1.000	1.00	3.00	1.00	1.00	1.000
Standard Deviation	1.005	1.42457	1.07021	1.24462	1.41175	1.18488	1.29552	1.33979	1.32859
Sample Variance	1.012	2.029	1.145	1.549	1.993	1.404	1.678	1.795	1.765
Skewness	-.746	.323	-.913	.904	.677	-.241	.627	.776	.740
Kurtosis	.241	.4488	.241	-.258	-.787	-.581	-.780	-.591	-.631

Source: Field Study

Data Interpretation

Table no 01 exhibit the responses of teachers on challenges in digital education. The study revealed that, 42.8 percent of teachers agreed and 21.6 percent is strongly agreed that there are able to utilize digital equipments property, in contrast, six percent disagreed and 3.6 percent are strongly disagreed, which indicates their inability to use digital equipments, while 26 percent took neutral status regarding their ability to use digital equipment properly. In overall, the study observed mean value of 3.72 which indicates that majority of respondents agreed to the statement. This is mainly due to experience of teachers in using smart phone technology and adoption of recorded teaching videos. Similarly, Standard Deviation of the statement is 1.005 which indicates that agreement responses are not much deviated among sample responses. Similarly, study witnessed that, 39.2 percent of teachers strongly disagreed and 4.8 percent is disagreed to that they learned innovative digital teaching methods

for school students, in contrast, 12.8 percent agreed and 10.4 percent are strongly agreed to this statement which positive impact on teaching methods, while 32.8 percent took neutral status regarding innovative teaching methods. This negative response to digital education is mainly due to no available of proper training. In overall, the study observed mean value of 2.530 which indicates that majority of respondents are neutral to the statement. Similarly, Standard Deviation of the statement is 1.07021 which indicates that agreement responses are not much deviated among sample responses. Similarly, the study investigated that, 50 percent of teachers agreed and 19.2 percent is strongly agreed that internet connectivity great hurdle to the digital education, in contrast, 11.6 percent disagreed and 5.6 percent are strongly disagreed to this statement, while 13.6 percent took neutral to the statement. In overall, the study observed mean value of 3.69 which indicates that majority of respondents agreed to the statement. Similarly, Standard Deviation of the statement is 1.07021 which indicates that responses on agreement are not much deviated among sample responses. The majority of the respondents viewed internet connectivity is great hurdle to digital education due to reason that, during lock down period demand and usage of internet is very high owing to work from home and majority of people at home.

In the similar line, the study observed that, 46 percent of teachers strongly disagreed and 20.8 percent is disagreed that there is clarity in voice reaching to students, in contrast, 8.8 percent expressed agree and 6.4 percent are strongly disagreed to this statement, while 18 percent took neutral status regarding clarity in voice. In overall, the study observed mean value of 2.080 which indicates that majority of respondents disagreed to the statement. Similarly, Standard Deviation of the statement is 1.24 which indicates that responses on agreement are not much deviated among sample responses. The reason for disagreement with statement is that interruption in TV channels due to power cut and poor internet connectivity. The another challenge is students interest to attend the class, in is revealed that, 38 percent of teachers strongly disagreed and 19.2 percent is disagreed to the statement, in contrast, 14.4 percent strongly agreed and six percent are agreed to this statement, while 22.4 percent took neutral status regarding student interest. In overall, the study observed mean value of 2.37 which indicates that majority of respondents are neutral to the statement. Similarly, Standard Deviation of the statement is 1.41175 which indicates that responses on agreement are not much deviated among sample responses. It is observed that 42.8 percent of teachers took neutral status in regarding convenience in preparation of time table in digital education where is 22 percent agreed and 10 percent is strongly agreed, in contrast, 9.6 percent disagreed and 15.6 percent are strongly disagreed to this statement. In overall, the study observed mean value of 2.99 which indicates that majority of respondents are neutral the statement. Similarly, Standard Deviation of the statement is 1.18488 which indicates that responses on agreement are not much deviated among sample responses.

The study observed that, 38.4 percent of teachers strongly disagreed and 24.8 percent is disagreed that there is good response from students to questions in online classes, in contrast, 12.8 percent disagreed and 7.2 percent are strongly disagreed to this statement, while 20.8 percent took neutral status regarding student responses to questions. In overall, the study observed mean value of 2.28 which indicates that majority of respondents are neutral to the statement. Similarly, Standard Deviation of the statement is 1.29552 which indicates responses on agreement are not much deviated among sample responses. The poor response to the question is attributable to absence of physical interaction and personal care. The study observed that, 38 percent of teachers strongly disagreed and 24.8 percent is disagreed that good support from government in providing digital equipments, in contrast, 10.4 percent agreed and ten percent are strongly agreed to this statement, while 16.8 percent took neutral status regarding their government support. In overall, the study observed mean value of 2.27 which indicates that majority of respondents neutral to the statement. Similarly, Standard Deviation of the statement is 1.339 which indicates that responses to the agreement are not much deviated among sample responses. This is mainly due to poor allocation of funds for digital education in schools and not ready for implementation, heavy shortage of funds due to covid 19. Finally, the study witnessed that, 40.8 percent of teachers strongly disagreed and 21.2 percent is disagreed that good improvement in students market during post online classes, in contrast, 10.4 percent agreed and 9.2 percent are strongly agreed to this statement, while 18.4 percent took neutral status regarding student improvement. In overall, the study observed mean value of 2.5 which indicates that majority of respondents neutral to the statement. Similarly, Standard deviation of the statement is 1.32859 which indicates that responses to the agreement are not much deviated among sample responses.

Table 4: Reliability Test

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.791	.744	9

Cronbach's alpha technique is used to assess the reliability, or internal consistency, of a set of scale or test items. The results of the test will be in range from (α) 0 to 1. If $\alpha = 0$, it indicates independency of all scale items one with another where $\alpha = 1$ indicates entire dependency of all scale items and high covariance. Therefore, increasing the value indicates high reliability. In general, suggestible Cronbach alpha reliability coefficient level is 0.70. In the present study reliability test results is .791 which is higher than standard of 0.70, this indicates high reliability and consistency of data and fit of ANOVA.

ANOVA Results**Table 5: ANOVA**

		Sum of Squares	df	Mean Square	F	Sig
Between People		531.862	99	5.372		
Within People	Between Items	318.900	8	39.862	35.438	.000
	Residual	890.878	792	1.125		
	Total	1209.778	800	1.512		
Total		1741.640	899	1.937		
Grand Mean = 2.6867						

The analysis reveals that, in this case the Sig value is 0.000 which is less than 0.05 so we reject the null Hypothesis and accept alternative Hypothesis and conclude that "There is significant difference in between and within groups of responses in challenges faced in digital education.

Findings and Suggestions

- The study observed that, 64.4 percent i.e. one third of the teachers agreed that they are able to utilized digital education equipments properly, due to used experience of smart phones and past experience of online classes. However, on the other side, senior aged teachers expresses difficulty in used digital education equipments. This resulted into mean value of 3.72 and standard deviation of 1.005 which indicates agreement and insignificant deviations in responses.
- The study also found that, 44 percent teachers disagreed and 32.8 percent teachers neutral on statement of that digital education caused innovative teaching methods in them. This negative response is attributable to lack of training in digital education from professionals. This resulted into mean value of 2.53 and standard deviation of 1.005 which indicates disagreement and insignificant deviations in responses. Therefore, the study suggests need of arrangement of proper online teaching training classes for teachers.
- The study witnessed that, around 70 percent of responses agreed that, internet connectively is major hurdle to digital education particularly in rural areas and teaching of mathematic classes. This resulted into mean value of 3.69 and standard deviation of 1.005 which indicates agreement and insignificant deviations in responses. Therefore, the study suggests provision of quality network facility to avoid interruption in classes.
- The study investigated that, 66.8 percent of teachers expressed difficulty in reaching of clear voice to the students particularly language teachers and science teachers. This is mainly due to frequency problems and network problem. The study also observed that, half teachers expressed poor interest in students to attend classes timely due to childhood behavior, power problem and works at home etc. The study also observed that, 42.8 percent of teachers are neutral to convenience in preparation of time tables where 32 percent expressed convenience. Similarly, majority of teachers i.e. 58.8 percent observed poor responses from students to asked question in online classes, 62.8 percent expressed difficulty in getting government support for digital education and 62 percent observed not good improvement in student market during post online classes. The mean values for all statement since 4th is in the range of 2-3 which indicates neutral status and standard deviation is less than 1.8 which indicates insignificant deviations in responses. The hypothesis results supported alternative hypothesis that, there is significant difference in between and within groups of responses in challenges facing by the teachers" in Telangana.

Conclusion

The study concludes that, the covid 19 situation forced the nation towards digital education in India at mass spread in the country without proper pre planning and adequate infrastructure. However, government of India and other States including Telangana took many steps towards adoption of digital education in the system. However, due to poor infrastructure facility teachers in Telangana exposed to many challenges in effective implementation of digital education such as poor internet facility, power cut, inadequate training, rural areas, communication problem, poor clarity of voice, no proper support from government and insignificant performance in students etc. Therefore, present study suggests policy makers to develop well digital infrastructure before shift to digital education in the State.

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