EFFECTIVENESS OF TECHNOLOGY IN HIGHER EDUCATION – A STUDY AMIDST COVID-19 SCENARIO

Dr. Rajashree S Kini

Associate Professor, Dept. of P G Studies and Research in Law

SDM Law College, Mangalore

Abstract

The 21ˢᵗ century is marked with technology in all the fields. When technology-based teaching and learning is successful in schools, at the level of higher education it's not that effective due to different reasons. This paper is an effort in trying to understand the level of tech-based teaching learning amidst this never seen pandemic covid-19. The study is on teachers and students perspective about the usage of technology in higher education along with its barriers, measures to overcome the barriers and to improve the education system in the country.

Keywords :- *Technology-based teaching/learning, Higher education, Teachers and students perspective, Barriers, Measures, Blended method.*

Introduction

Covid-19 has brought drastic changes in the education system not only in India but worldwide. It has made the universities and institutions to suspend the physical class rooms and switch to digital/online classes. When this transition is easy for most of the developed countries, developing countries like India are on little struggling mode based on its investments in technology.

While faculty are trying to adapt to new technologies, students, though they use new technologies in social media platforms, struggle to cope up when it comes to education. The 21ˢᵗ century is marked with "technology" and use of technology can be seen in all the fields including education (Grabe, 2007). But when it comes to education technology was only supportive aid to physical teaching and not the main method of teaching (Ghavifekr, Afshari & Amla Salleh, 2012).

There is lots of debate going on as to the nature of future classes, examination, evaluation, practical courses learning etc. in the light of covid-19 scenario. Here one thing to be noticed is higher education is based on concept study and not topic-based study. As such, in higher education teaching like undergraduate programmes is less and concept-based knowledge sharing is more. There are few questions to be pondered upon to understand the transition from physical teaching to digital teaching (Zhang, C., 2013). They are:

1
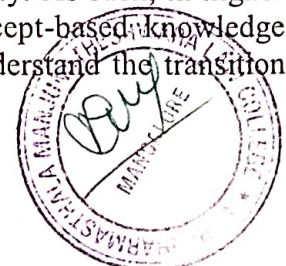
- Technology-based learning was going on for a decade now. Still why it did not take over conventional education system in the pre-covid era?
- When all the fields are well-versed in using technology to continue, why has the higher education not switched to completely technology-based?

Transition from Physical to Digital

It is not easy to get into technology transition for any field. The transition is based on various aspects like investment in technology, connectivity, adaptability of people using it, learning ability to use it, knowledge of different platforms etc. (Türel, Y. K., & Johnson, T. E. (2012). Digital education can be done in two ways basically:

- The use of already recorded classes like Massive Open Online Course (MOOCs).
- Live online classes through video conferencing, webinars through zoom meetings, google hangouts, ciscowebex meetings etc.

For both the ways, institutions need stable IT infrastructure, high-speed internet connectivity, Learning Management Systems (LMS), training to faculty members and motivation to students along with devices and connectivity. Three main stages for ICT to be highly valued and regarded by the teachers; integration, enhancement and complementary are identified by Hermans, Tondeur, Van-Braak, and Valcke (2008).

Objectives

- To understand the teachers perception on technology-based teaching/online teaching
- To understand the students perception on technology-based learning/online learning
- To analyse the measures to overcome the barriers of online learning

Limitations

- Responses are taken over the phones (Whatsapp and call) as response rates were very poor. Due to lockdown people were not in personal touch and were not ready to respond to the mailed questionnaire.
- Study covers few aspects of technology use.
- Not able to take the responses from faculty members teaching in rural areas.

Literature Review

Students are not getting motivated in involving into conventional method of teaching/learing only. Students like the complementary approach of use of ICT to aid and support them in learning (Hermans et al., 2008). To implement technology-based education system as the part of regular education system, academicians, researchers and policy-makers should go hand in hand (Dudeney, 2010). If there is no proper support from the government and the institutions, teachers are not able to include new technologies in imparting education (Jamieson-Proctor et al., 2013). Ghavifekr et al. (2014), inferred that there is a need of integration of ICT in teaching to make students gain all the essential skills required for technology-based jobs. Teachers are encouraged to use ICT in developing their pedagogies (Melki, Nicolas

2

Khairallah, and Adra, 2017). Castaneda & Selwyn (2018), studies have shown that, there need to have a paradigm shift in traditional method of teaching to integrated method of teaching by including technology in teaching and learning. Earlier studies have shown that modern method of teaching is preferred by the students. But studies have not done on how effective the teaching/learning process is using ICT-based/online classes. The pandemic situation now has made it necessary for the education system to adapt to ICT-based/online class mode and gave the opportunity to do the reality check of previous researches regarding preference of modern method of teaching by the students as well as teachers.

Method

Research Design

This is a quantitative, empirical and descriptive study based on semi-structured interview for faculty members and students of different courses of few colleges of Mangalore, Udupi, Puttur and Bangalore. The research is done between 21st of May 2020 to 25th of May 2020.

Sampling and Data Collection Procedure

The total respondents are 95. Out of which 35 are faculty members and 60 are students of MBA, LLM and MSc Psychology. Semi-structured questionnaire (questionnaire is prepared based on the study of Ghavifekr, S. & Rosdy, W.A.W., 2015), is administered to these respondents by whatsapp and over the phone and answers are recorded. The questionnaire is in 3 parts – demographic background, faculty perspective, students' perspective. Most of the questions are based on 4-point Likert scale ranging from 4= Strongly Disagree, 3= Disagree, 2= Agree and 1= Strongly Agree. The questions are based on technology-based (ICT) teaching/learning. It also covered the aspects of online teaching/learning. The questions covered both positive aspects of technology as well as barriers in using the technology.

Data Analysis Process

The data collected from the respondents were analyzed using Statistical Package for the Social Sciences (SPSS) version 20. The analysis includes both descriptive and inferential analysis. The researchers used descriptive analysis to analyze the frequency, percentage mean, standard deviation, Chi-Square and also correlation when needed.

Analysis of Result

Demographic Analysis

Table 1: Demographic Background of Respondents – **Faculty** (N=35)

| Particulars	Frequency	Percentage (%)
Gender:		
Male	10	28.57
Female	25	71.42
Teaching Experience:		
<1 year	8	22.85

3

585
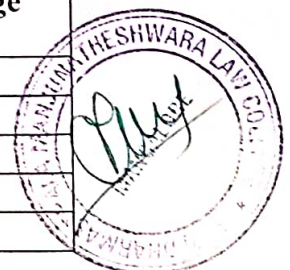
Between 1-5 years	8	22.85
Between 6-10 years	8	22.85
>10 years	11	31.42
Course Teaching:		
MBA	9	25.71
LLM	18	51.42
MSc Psychology	8	22.85
Region of Teaching Courses:		
Urban	35	100
Rural	0	0
Preference of Teaching:		
Conventional (Chalk and Board)	11	31.42
Modern (Using ICT)	8	22.85
Blended	16	45.71
The Ability of Handling ICT/Online Teaching:		
High	9	25.71
Moderate	16	45.71
Low	10	28.57

From the total population (n=35) based on gender, there are 10 male (28.57%) and 25 female respondents (71.42%). There are 8 (22.85%) of teachers having less than 1 year teaching experience, 8 (22.85%) teachers with to 1 to 5 years experience, 8 (22.85%) teachers with 6 to 10 years of experience and rest 11 (31.42%) teachers are with more than 10 years experience. 9 (25.71%) of the teachers are teaching MBA course, 18 (51.42%) of the teachers are teaching LLM and 8 (22.85%) of the teachers are teaching MSc Psychology course. Out of total number of faculty members all (100%) are teaching in urban area. Based on preference of teaching 11 (31.42%) teachers prefer conventional teaching, 8 (22.85%) prefer ICT based teaching and 16 (45.71%) prefer blended teaching method. Out of total teachers, 9 (25.71%) teachers said their ability of handling ICT/online classes are high, 16 (45.71%) said their ability is moderate and 10 (28.57%) said they have low ability.

Table 2: Demographic Background of Respondents – **Students** (N=60)

Particulars	Frequency	Percentage (%)
Gender:		
Male	16	26.66
Female	44	73.33
Course Pursuing:		
MBA	16	26.66
LLM	30	50
MSc Psychology	14	23.33
Current Year of Study:		
1st Semester	15	25
Between 2 – 5 Semester	35	58.33
Last Semester	10	16.66

4
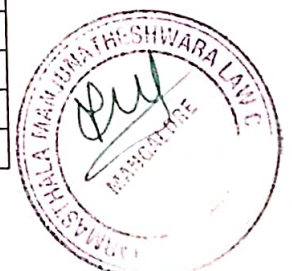
Region of Institution Pursuing the Courses:		
Urban	60	100
Rural	0	0
Preference of Learning:		
Conventional (Chalk and Board)	11	18.33
Modern (Using ICT)	19	31.66
Blended	30	50
The Ability of Handling Digital Learning:		
High	11	18.33
Moderate	33	55
Low	16	26.66

From the total population (n=60) based on gender, there are 16 male (26.66%) and 44 female respondents (73.33%). 16 (26.66%) of the students are pursuing MBA course, 30 (50%) of the students are pursuing LLM and 14 (23.33%) of the students are pursuing MSc Psychology course. There are 15 (25%) in 1st semester, 35 (58.33%) are in between 2nd to 5th semester, 10 (16.66%) in last semester. Out of total number of students all (100%) are studying in urban area. Based on preference of learning 11 (18.33%) students prefer conventional way of learning, 19 (31.66%) prefer ICT based learning and 30 (50%) prefer blended learning method. Out of total students, 11 (18.33%) students said their ability of handling ICT/online classes are high, 33 (55%) said their ability is moderate and 16 (26.66%) said they have low ability.

Analysis of Teachers' Perception on Technology-based Teaching/Online Teaching

Table 3: Teachers Perception on Use of Technology in Teaching

SL. NO.	Particulars	Strongly Disagree	Disagree	Agree	Strongly Agree	Mean	Standard Deviation
		Frequency and Percentages (%)					
1	I am willing to learn using of technology in teaching	2	4	15	14	3.17	.857
		5.7%	11.4%	42.9%	40.0%		
2	I feel/find it easy to teach by using ICT in online teaching	3	3	7	22	3.37	.973
		8.6	8.6	20.0	62.9		
3	Without using technology teaching is not effective and interesting in this 21st century	8	8	17	2	2.37	.910
		22.9	22.9	48.6	5.7		
4	The use of technology in teaching helps teachers to improve teaching methods with new materials	2	3	25	5	2.94	.684
		5.7	8.6	71.4	14.3		
5	The use of technology improves quality of teaching	8	8	17	2	2.94	.684
		22.9	22.9	48.6	5.7		
6	Technology makes it easy to	8	8	17	2	2.37	.910

5

	prepare teaching materials	22.9	22.9	48.6	5.7		
7	The teaching materials prepared using technology enables students to be more involved in the topic	2	3	25	5	2.94	.684
		5.7	8.6	71.4	14.3		
8	I can still have an effective teaching without the use of ICT.	23	3	9	35	1.60	.881
		65.7	8.6	25.7	100.0		
9	Online teaching reaches many students at a time	2	3	25	5	2.94	.684
		5.7	8.6	71.4	14.3		
10	Digital teaching makes it easy to finish the syllabus in time	2	3	25	5	2.94	.684
		5.7	8.6	71.4	14.3		
11	Online teaching makes it easy for distance teaching	8	6	19	2	2.43	.917
		22.9	17.1	54.3	5.7		
12	Online teaching can be used to teach without any working time boundaries	2	3	23	7	3.00	.728
		5.7	8.6	65.7	20.0		
13	Students response is good for online classes	16	16	3	0	1.63	.646
		45.7	45.7	8.6	0		
14	The classroom management is out of control in online/distance teaching	2	4	15	14	3.17	.857
		5.7	11.4	42.9	40.0		
15	Students' makes effort for their lessons in online teaching	19	14	2	0	1.51	.612
		54.3	40.0	5.7	0		
16	Students pay attention in online teaching	19	14	2	0	1.51	.612
		54.3	40.0	5.7	0		
17	I think the online teaching is a waste of time.	33	0	2	0	1.11	.471
		94.3	0	5.7	0		
18	Students interaction with teachers is better in online teaching	19	14	2	0	1.51	.612
		54.3	40.0	5.7	0		
19	Internet connectivity is big issue in online teaching	0	0	0	35	4.00	.000
		0	0	0	100		
20	ICT/Online teaching reduces the students ability to read and write	0	0	25	10	3.29	.458
		0	0	71.4	28.6		
21	Online teaching is going on good in my institution	0	0	12	23	3.66	.482
		0	0	34.3	65.7		
22	Management is not providing any technical support if I face any problem in online teaching	11	2	22	0	2.31	.932
		31.4	5.7	62.9	0		
23	No proper training is provided by the institution in conducting online classes	2	19	14	0	3.29	.750
		5.7	54.3	40.0	0		

6

From the analysis in Table 3, on teacher's perception of Technology-based Teaching/Online Teaching, it shows that most teachers are strongly agreed that they are willing to learn ICT in teaching and they feel that the usage of ICT makes them easy to teach online (Means are 3.17 and 3.37 respectively). Teachers feel that online classes can be taken without office time boundary (Mean=3.00).When asked about online classes, most of the teachers agreed that classroom management is difficult in online classes (Mean=3.17). They also said online usage of ICT/online classes, reduces the ability of students to read and write (Mean=3.29). Where most of the teachers strongly agreed that online classes are going on good in their respective institutions (mean=3.66), but all of them strongly agreed that internet connectivity is the biggest issue in online classes (mean=4). Unfortunately, most of the teachers agreed that no proper training is provided by the institutions in conducting online classes (mean=3.29).

Some of the teachers agreed that use of ICT helps them in preparing new materials and also it improves the quality of teaching (Means are 2.94 each). They also felt, the teaching materials prepared using technology enables students to be more involved in the topic (mean=2.94). Most of the teachers agreed that online teaching reaches many students at a time and also it makes easy for them to finish the syllabus in time (Means 2.94 each).

On the other hand, few of the teachers agreed that without using technology teaching is not effective and interesting in this 21st century (mean=2.37), but they meant it is not always true. Teachers agreed that technology makes it easy to prepare teaching materials (mean=2.37), but they showed that teaching materials can be prepared without the use of technology also. Surprisingly, few of the teachers disagreed on the fact that they can still have an effective teaching without the use of ICT (mean=1.60). Teachers agreed that online teaching makes it easy for distance teaching (mean=2.43). Few teachers disagreed on the point, students response is good for online classes (mean=1.63), students' make effort for their lessons in online teaching students pay attention in online teaching, students interaction with teachers is better in online teaching (mean=1.51 each). Few teachers feel that management is not providing any technical support on facing any problem in online teaching (2.31).

The lowest mean of 1.11 is recorded showing no teacher thinks that online class is a waste of time.

Analysis of Students' Perception in Online Learning

Table 4: Students Perception on Online Learning

SL. NO.	Particulars	Strongly Disagree	Disagree	Agree	Strongly Agree	Mean	Standard Deviation
		Frequency and Percentages (%)					
1	I am willing to learn using of technology in online learning	4	8	25	23	3.12	.885
		6.7	13.3	41.7	38.3		

7

589

2	I feel/find it easy to learn by using ICT in online learning	2	2	14	42	3.60	.718
		3.3	3.3	23.3	70.0		
3	Without using technology learning is not effective and interesting in this 21st century	16	17	24	3	2.23	.909
		26.7	28.3	40.0	5.0		
4	The use of technology in teaching helps teachers to improve teaching methods with new materials	4	5	45	6	2.88	.666
		6.7	8.3	75.0	10.0		
5	The use of technology improves quality of teaching	3	2	47	8	3.00	.611
		5.0	3.3	78.3	13.3		
6	Technology supported teaching materials makes my learning easy and simple	23	20	12	5	1.98	.965
		38.3	33.3	20.0	8.3		
7	The teaching materials prepared using technology enables students to be more involved in the topic	4	4	44	8	2.93	.686
		6.7	6.7	73.3	13.3		
8	I can learn effectively without the use of ICT.	48	5	7	0	1.32	.676
		80.0	8.3	11.7	0		
9	Online teaching reaches many students at a time	4	4	44	8	2.93	.686
		6.7	6.7	73.3	13.3		
10	Digital teaching makes it easy to finish the syllabus in time	5	4	43	8	2.90	.730
		8.3	6.7	71.7	13.3		
11	Online teaching makes it easy for distance learning	15	13	29	3	2.33	.914
		25.0	21.7	48.3	5.0		
12	I can learn at my own time in online learning	5	5	38	12	2.95	.790
		8.3	8.3	63.3	20.0		
13	Students response is good for online classes	29	26	5	0	1.60	.643
		48.3	43.3	8.3	0		
14	Students have many ways to escape from online/distance learning	5	8	25	22	3.07	.918
		8.3	13.3	41.7	36.7		
15	Students' makes no effort for their lessons in online learning	31	25	4	0	1.55	.622
		51.7	41.7	6.7	0		
16	Students cannot focus in online learning	31	24	5	0	1.57	.647
		51.7	40.0	8.3	0		
17	I think the online learning is a waste of time.	53	0	7	0	1.23	.647
		88.3	0	11.7	0		
18	Students interaction with teachers reduces in online learning	31	24	5	0	1.57	.647
		51.7	40.0	8.3	0		
19	Internet connectivity is big issue in online learning	0	0	0	60	4.00	.000
		0	0	0	100		

8

20	ICT/Online learning affects my ability to read and write	0	0	44	16	3.27	.446
		0	0	73.3	26.7		
21	Online learning is going on good in my institution	0	0	16	44	3.73	.446
		0	0	26.7	73.3		
22	I appreciate the efforts put in by teachers in providing study materials through online learning during lockdown	13	4	43	0	2.50	.834
		21.7	6.7	71.7	0		
23	Many teachers do not have proper training and knowledge in taking online classes	6	0	33	21	3.15	.860
		10.0	0	55.0	35.0		

From the analysis in Table 4, on students' perception of Online learning, it shows that most of the students are willing to learn technology that help them take online classes (mean=3.12), and they feel it easy that usage of ICT will make their online learning easy (mean=3.60). Most of the students agree that the use of technology improves quality of teaching (mean=3.0). They agree like the teachers that online learning affects their ability to read and write (mean=3.27). They also agree that online classes are going on good in their institution (mean=3.73). But students have many ways to escape from online/distance learning (mean=3.07). At the same time, students contradict and strongly disagree by recording lowest mean of 1.32 that they can learn effectively without the use of ICT.

On the other hand, students are not very sure that without using technology learning is not effective and interesting in this 21st century (mean=2.23). Students are not very sure that the use of technology in teaching helps teachers to improve teaching methods with new materials (mean=2.88). Most of the students though they agree (but not so sure) that technology supported teaching materials makes learning easy and simple (mean=1.98) and also that it makes them more involved in learning (mean=2.93).

Surprisingly, Students are not on very agreeing terms about online teaching reaches many students at a time (mean=2.93), digital teaching makes it easy to finish the syllabus in time (mean=2.90), online teaching makes is easy for distance learning (mean=2.33) or for that matter, about the fact that they can learn at their own time in online learning (mean=2.95). Few of the students strongly disagreed that their response is good for online classes (mean=1.60), they also disagreed that they make no effort for their lessons in online learning (mean=1.55) and they disagreed that they cannot focus in online classes (mean=1.57). They disagreed that students interaction with teachers reduce in online learning (mean=1.57). Few of the students disagreed that online learning is a waste of time (mean=1.23)
Students agree that they appreciate the efforts put in by teachers in providing study materials through online learning during lockdown (mean=2.50), but unfortunately, they feel that many teachers do not have proper training and knowledge in taking online classes (mean=3.15).

Chi-Square Test
H₀ – There is no association between teachers teaching experience and ability to handle ICT/Online classes.
H₁ - There is significant association between teachers teaching experience and ability to handle ICT/Online classes.
If Chi-square value is less than 0.05 then null hypotheses is rejected.

9

Faculty
Chi-Square Test to check the association between the teachers teaching experience and ability to handle ICT/Online classes
Table 5:

Variable1	Variable 2	Chi-Square Value	Result
Teachers Teaching Experience	Ability to handle ICT/Online classes.	0.000	Null hypothesis rejected

As the Chi-Square value is 0.000, which is less than 0.05, it is inferred that there is association between teaching experience of the teachers and the ability to handle ICT/Online classes.

Students
Chi-Square Test to check the association between the course pursuing by students and ability to handle ICT/Online classes

Table 6:

Variable1	Variable 2	Chi-Square Value	Result
Course pursuing by Students	Ability to handle ICT/Online classes.	0.000	Null hypothesis rejected

As the Chi-Square value is 0.015, which is less than 0.05, it is inferred that there is association between the course pursuing by students and the ability to handle ICT/Online classes.

Correlation

H_0 – There is no significant correlation between the two variables.
H_1 – There is significant correlation between the two variables.
Reject the null hypothesis if Sig is less than 0.05
If r is upto 0.30 weak correlation
If r is between 0.30 and 0.70 moderate correlation
If r is more than 0.70 high correlation

Faculty
Correlation between the variables 'the teaching materials prepared using technology enables students to be more involved in the topic' and 'students response is good for online classes'.

Table 7:

Variable1	Variable 2	r	Sig	Result

10

The teaching materials prepared using technology enables students to be more involved in the topic	Students response is good for online classes.	0.017	0.922	Null hypothesis accepted

As r is less than 0.30 there is a weak positive correlation between the variables. As sig = 0.922 which is more than 0.05 it is inferred that null hypotheses is accepted, which means the correlation between the two variables are almost zero. That is, even though teachers use technology to prepare teaching material, students' response to online classes are not good.

Correlation between the variables 'students response is good for online classes' and 'online teaching is going on good in my institution'

Table 8:

Variable1	Variable 2	r	Sig	Result
Students response is good for online classes	Online Teaching is Going on Good in my Institution	0.146	0.403	Null hypothesis accepted

As r is less than 0.30 there is weak correlation between the variables. As sig = 0.403 which is more than 0.05 it is inferred that null hypotheses is accepted, which means the correlation between the two variables is zero. That is, even though online teaching is going on good in the institution, students' response to online classes are not good.

Students
Correlation between the variables 'online teaching makes it easy for distance learning' and 'students have many ways to escape from online/distance learning'

Table9:

Variable1	Variable 2	r	Sig	Result
Online teaching makes it easy for distance learning	Students have many ways to escape from online/distance learning	0.094	0.474	Null hypothesis accepted

As r is less than 0.30 there is a weak positive correlation between the variables. As sig = 0.474 which is more than 0.05 it is inferred that null hypotheses is accepted, which means the correlation between the two variables are almost zero. That is, students find out ways to escape from online learning, even if online learning makes it easy for distance learning.

Findings
- Most of the respondents in teachers' category are females, most of them have teaching experience more than 10 years, most of the faculty members are teaching LLM course in urban area. Teachers prefer conventional teaching or blended method. Teachers have moderate ability to handle ICT/online classes.

11

- In student respondents there are more female respondents. More respondents are pursuing LLM course, respondents are between their 2nd to 5th semesters or in their final semester. All the students are in urban institutions, they prefer blended and modern method of teaching. Like teachers even their ability to handle ICT/online classes are moderate.

- On teacher's perception of Technology-based Teaching/Online Teaching, it shows that most teachers are willing to learn ICT in teaching and they feel that the usage of ICT makes them easy to teach online. They agreed that online classes are going on good in their respective institutions. Teachers agreed that use of ICT helps them in preparing new materials, it improves the quality of teaching and it enables students to be more involved in the topic. They agreed that online teaching reaches many students at a time and also it makes easy for them to finish the syllabus in time, as online classes can be taken without office time boundary. But at the same time, teachers agreed that classroom management is difficult in online classes. Unfortunately, most of the teachers agreed that no proper training is provided by the institutions in conducting online classes.

- On the other hand, most of the teachers agreed that without using technology teaching is not effective and interesting in this 21st century, but they meant it is not always true. Teachers agreed that technology makes it easy to prepare teaching materials, but they showed that teaching materials can be prepared without the use of technology also. Surprisingly, most of the teachers disagreed on the fact that they can still have an effective teaching without the use of ICT. Teachers agreed that online teaching makes it easy for distance teaching. Most of the teachers disagreed on the point, students' response is good for online classes, students' makes no effort for their lessons in online teaching, students pay attention in online teaching, students interaction with teachers is better in online teaching. There is consensus among most of the teachers that management is not providing any technical support on facing any problem in online teaching and also internet connectivity is the biggest issue in the online classes. All the teachers disagreed that online class is a waste of time.

- On students' perception of Online learning, it shows that most of the students are willing to learn technology that help them take online classes and they feel it easy that usage of ICT will make their online learning easy. Most of the students agree that the use of technology improves quality of teaching. Students are not very sure that without using technology learning is not effective and interesting in this 21st century. Students are not very sure that the use of technology in teaching helps teachers to improve teaching methods with new materials. Most of the students though they agree (but not so sure) that technology supported teaching materials makes learning easy and simple and also that it makes them more involved in learning. At the same time, students contradict and strongly disagree that they can learn effectively without the use of ICT.

- Surprisingly, Students are not on very agreeing terms about online teaching reaches many students at a time, digital teaching makes it easy to finish the syllabus in time, online teaching makes is easy for distance learning or for that matter, about the fact that they can learn at their own time in online learning. They disagreed that they make no effort for their lessons in online learning and they disagreed that they cannot focus

12

in online classes. They disagreed that students' interaction with teachers reduce in online learning. They agree like the teachers that online learning affects their ability to read and write. At the same time, most of the students strongly disagreed that their response is good for online classes.

- They also agree that online classes are going on good in their institution. But students have many ways to escape from online/distance learning. Most of the students disagreed that online learning is a waste of time. Students agree that they appreciate the efforts put in by teachers in providing study materials through online learning during lockdown, but unfortunately, they feel that many teachers do not have proper training and knowledge in taking online classes.
- The Chi-Square tests reveal that there is association between teaching experience of the teachers and the ability to handle ICT/Online classes but that there is association between the course pursuing by students and the ability to handle ICT/Online classes.
- The correlation analysis shows that though teachers use technology to prepare teaching material, students' response to online classes are not good, that though online teaching is going on good in the institution, students' response to online classes are not good and that students find out ways to escape from online learning, even if online learning makes it easy for distance learning.

Measures

From the analysis of the study and from the previous literatures (Macho, 2005), (Grant, D., Malloy, A., & Murphy, C., 2009), (Tshabalala, M., Ndeya-Ndereya, C., & van der Merwe, T., 2014), few measures can be suggested:

- Institutions need to provide proper training to the faculty members to handle ICT/Online classes.
- Technology-based teaching-learning should be implemented in higher education as a regular affair.
- Proper infrastructure need to be provided by the institutions.
- Faculty members need to make the online classes creative and attractive to get the attention of students.
- Most importantly, in regular education blended method of conventional and ICT/online classes based education need to be implemented.
- Teachers should be encouraged to prepare the study materials by using technology, but should not depend on that.
- Teachers and students need to be given some incentives to encourage them to take up online classes with focus and interest.
- Institutions must offer some online certificate courses to make teachers and students comfortable in handling ICT-based/online classes.
- Proper interaction between the students and the teachers can be encouraged by introducing the activities like conducting quizzes, giving creative projects, team work involving teachers and many students together etc.
- Students should be given homework based on grades to make them connect to the classes.
- Apps or software need to be programmed to manage the online classes.
- Government need to take measures to improve the connectivity issue as part of the 'smart city' plan.

Conclusion

13

In this study the researcher has observed 3 sets of teachers/students from their responses; 'digital natives', who are well-versed in technology and from urban area, 'digital immigrants', who are from rural area and trying to get some exposure of technology, they are willing and interested in learning the usage of technology to go further and also 'digital aliens', who are mostly from remote rural areas, and are totally unaware of the use or types of technology, and find it very difficult to imbibe technology related matters, if suddenly need to get exposed to it.

This study shows that technology-based teaching-learning is more effective than the conventional method of teaching, if proper training is provided to teachers, technical support is given for online teaching, issues like connectivity and classroom management is taken care. Respondents supported blended method of teaching-learning including conventional method mixed with ICT/online classes on regular basis in higher education to make it normal in the education system. The blended method is the norm of the day in this pandemic time, which is very much needed to increase the world ranking of education system of the country to have good placements to our youth, worldwide. Government and institutions need to join hand in bringing awareness among teachers and students about blended education system and provide proper skill sets and infrastructure to harness it.

Future Research Directions

- Study can be done on effectiveness of blended method of teaching-learning.
- Further studies can be made on barriers faced by the teachers in ICT/online classes and measures to solve it.
- Study can be done by taking large number of faculty members and students from different disciplines as the respondents to get more accurate results.
- Study can be done to check physical and mental problems faced by teachers and students in taking up technology-based classes.
- Comparative study can be done between different institutions to take the benefits of technology-based study and to make improvements needed from the drawbacks identified.
- In depth study can be done to support the government to make policies on technology-based education.
- Also study can be done for U G students and P G students about implementing technology-based education system and comparison can be done.

References

1. Castaneda, L. & Selwyn, N. (2018). More than tools? Making sense of the ongoing digitisations of higher education. International Journal of Educational Technology in Higher Education, 15(1), 1-10.
2. Dudeney, G. (2010). The Internet and the language classroom (Vol.X). Cambridge: Cambridge University Press.

14

3. Ghavifekr, S. & Rosdy, W.A.W. (2015). Teaching and learning with technology: Effectiveness of ICT integration in schools. International Journal of Research in Education and Science (IJRES), 1(2), 175-191.

4. Ghavifekr, S., Abd Razak, A.Z., Ghani, M.F.A., Ran, N.Y., Meixi, Y. & Tengyue, Z. (2014). ICT Integration In Education: Incorporation for Teaching & Learning Improvement. Malaysian Online Journal of Educational Technology (MOJET),2 (2), 24-46.

5. Ghavifekr, S., Afshari, M., & Amla Salleh. (2012). Management strategies for E-Learning system as the core component of systemic change: A qualitative analysis. Life Science Journal, 9(3), 2190-2196.

6. Grabe, M., & Grabe, C. (2007). Integrating technology for meaningful learning (5th ed.). Boston, MA: Houghton Mifflin.

7. Grant, D., Malloy, A., & Murphy, C. (2009). A comparison of student perceptions of their computer skills to their actual abilities. Journal of Information Technology Education, 8, 141–160.

8. Hermans, R., Tondeur, J. , Van -Braak, J., & Valcke, M. (2008). The impact of primary school teachers' educational beliefs on the classroom use of computers. Computers & Education, 51(4), 1499-1509.

9. Jamieson-Proctor, R., Albion, P., Finger, G., Cavanagh, R., Fitzgerald, R., Bond, T., & Grimbeek, P. (2013). Development of the TTF TPACK Survey Instrument. Australian Educational Computing, 27(3),26-35.

10. Macho, S. (2005). Differences Among Standardized Test Scores Due to Factors of Internet Access at Home and Family Affluence. West Virginia University:United States.

11. Melki, A., Nicolas, m. Khairallah, M. & Adra, O. (2017). Information and communications technology use as a catalyst for the professional development: perceptions of tertiary level faculty. International Journal of Education and Development Using Information and Communication Technology (IJEDICT), 13(3), 128-144.

12. Tshabalala, M., Ndeya-Ndereya, C., & van der Merwe, T. (2014). Implementing Blended Learning at a Developing University: Obstacles in the Way. Electronic Journal of e-Learning, 12(1), 101-110.

13. Türel, Y. K., & Johnson, T. E. (2012). Teachers' Belief and Use of Interactive Whiteboards for Teaching and Learning. Educational Technology & Society, 15(1), 381–394.

14. www.wikipaedia.com

15. Zhang, C. (2013). A Study of Internet Use in EFL Teaching and Learning in Northwest China. Asian Social Science, 9(2), 48-52.

15