



ORIGINAL RESEARCH PAPER

Engineering

ROLE OF INNOVATIVE TEACHING METHODS IN PANDEMIC: CHANGING PARADIGM

KEY WORDS: Technology, Digital Generation, Learning Platforms, Internet, Pedagogy, Online Teaching

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ABSTRACT

A new era of education has been started which inevitably demands a new role of teacher, pupils and education system in India. In the era of ICT, it will be very difficult for India to cross the digital divide, if concerted efforts are not made to promote ICT education. One of the strategies to be adopted in this regard is the production of teachers who have developed competencies for the successful instructional use of ICT in education. Those teachers are called 21st century teachers who will possess the technological, pedagogical, and social competencies in them and they will shape the personality of their pupils on constructivist level. This paper attempts to highlight the role of ICT in higher education during Covid-19 pandemic. The spread of Corona Virus over the world made educational institutions being shut down face to face classes globally. The Corona virus has revealed emerging vulnerabilities in education systems around the world. It is now clear that society needs flexible and resilient education systems as we face unpredictable futures. A Meta analysis methodology was adopted for this study and pertinent literature was visited to capture the essence of continued learning during these unprecedented times. Findings reveal that apart from resources, staff readiness, confidence, student accessibility and motivation play important function in ICT integrated teaching and learning.

INTRODUCTION

The pandemic introduced significant changes in didactics and teaching methods. Pedagogy of the pre Covid-19 differs from the pedagogy of during Covid-19. Since the beginning of the twenty-first century, there have been many changes in the development of national and world education. The most observable phenomenon is now the Internalization of society and the penetration of digital technologies into learning. The modern generation of school boys and college boys is known by the name digital, socially digital, and generation Z3. Knowledge is the transition from acquiring knowledge through reading, from the teacher's monolog to visual perception, or discussion in the classroom. Digital technologies has change way of life, way of communication, thinking, feelings, and channels of influence on other people, social skills, and social behavior.

As Myamesheva states, "the high-tech environment – computers, smart phones, video games, Internet search engines – reshape the human brain"³. ICT contributes significantly to the classroom teaching- learning process as it helps the teacher to motivate the learners and to make the teaching- learning process more dynamic. ICT can help the teachers to evaluate the learners' progress on daily basis. It renews the learners' enthusiasm because it develops the ability of self-learning. It makes learning experience more effective through its various products. The learners can interact with the teachers, peers, and experts on various issues outside the classroom.

Why ICT enabled Teaching & Learning

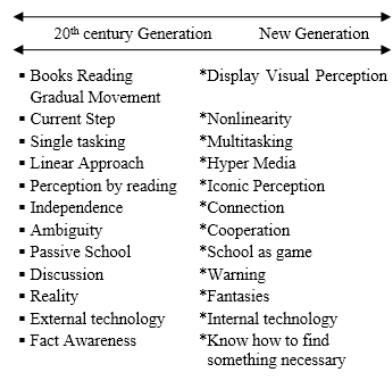
Due to COVID-19 outbreak various policy initiatives are being launched by governments across the world to continue teaching activities so as to contain the virus. However, there is ambiguity and disagreement about what to teach, how to teach, the workload of teachers and students, the teaching environment, and the implications for education equity.

Massive efforts has done to utilize emerging and evolving technology in support of remote learning, distance education and online learning during the COVID-19 pandemic. Certain deficiencies such as the poor online teaching infrastructure, the inexperience of teachers, the information gap and the complex home environment became as key issues. However, despite certain limitations, present situation demands action so that the education of the students is not affected in any way.

Digital Generation-Challenges

In this present phenomenon the students ("Next" generation or generation Z) mindset also a problem. The accessibility of almost any information at any time from an early age changes the structure of mnemonic processes. The average concentration duration of attention compared to that which was 10-15 years ago, decreased ten times. New phenomenon clip thinking has emerged based on fragments processing of visual images, rather than "on logic and text associations.

Figure-1 Changing Generations and Perceptions



Challenges for Teachers

Indian teachers are used to chalk-and-talk teaching, which is a practical way of communicating concepts, clarifying doubts, teaching even subjects such as math and Engineering.

Besides, it is a method that works in all circumstances and locations. Students too are used to following the teacher as she teaches on the board.

The general bustle and the playfulness of students also keep them and the teacher engaged and relaxed. Now, suddenly teachers have to accept the shifting paradigm and have to cope up with the situations for survival.

Technology in tow

In the midst of this digital shift, teachers also face the additional pressure of converting all teaching material to digital formats, making worksheets, taking classes on

platforms like Zoom and Google Classroom, checking WhatsApp images of home works, and reporting all of this information to both parents and principals.

This is all the more difficult for female teachers who need to do all of this, and still manage their households. And also for the teachers who are very conventional in nature and rigid to learn ICT enabled techniques of teaching and learning.

List of top E-learning tools to conduct classes

S.No	Name of the Tool	Accommodation in No	Cost in Rs
1	Microsoft Teams	250	Free of Cost
2	Google Meet	250	Free of Cost
3	Zoom	100	Free of Cost
4	GoToMeeting	100	Free of Cost
5	Cisco Webex Meeting	200	Free of Cost
6	Adobe Connect	100	Free of Cost
7	FreeConferenceCall	100	Free of Cost
8	JioMeet	100	Free of Cost
9	Skype	50	Free of Cost
10	BlueJeans	100	Free of Cost

Source: Primary Data

Statement of the Problem

Today, the pandemic has introduced transformational changes in didactics and teaching methods. Pedagogy of the pre Covid-19 differs from the pedagogy of during Covid-19. Since the beginning of the 21st century, there have been many changes in the development of national and world education. The most observable phenomenon is now the Internalization of society and the penetration of digital technologies into learning.

There are several key issues in teachers' readiness that leading organizations to be focus on. Especially, in educational sector upcoming institutions need to have a vision and a well defined strategy on upgrading the talent staff in Academia and Research meant for the future growth of the Institution.

The educational sector has become the outsourcing capital of the employment and innovation and also own set of HR challenges. Educational sector's biggest problem is that qualified teaching staff is becoming scarce. Hence, the present study has under taken to measure significant role in explore the available technologies, teachers' readiness and pupils' acceptance in teaching and learning.

Need and Significance of the Study

Due to the pandemic, today educational sector become more volatile compare to other sectors. There is an important issue for many educational institutions how to conduct online classes and complete the syllabus.

Hence, institutions have taken the steps to adopt ICT enabled teaching & learning to meet the uncertainty in the Covid-19. ICT enabled teaching & learning helps in train and retain talent workforce in the organization to meet critical issues & unrecognized challenges like; Covid-19. Teaching faculty with ICT enabled teaching & learning practice have become the heart of every institute, to survive and gain competitive advantage.

Scope of the Study

The scope of the study is confined to explore ICT enabled teaching & learning practices in select Engineering Colleges of Rayalaseema Region of Andhra Pradesh. Furthermore, among the various components like;

1. Available ICT tools,
2. Teachers readiness and
3. Students' perception.

Hence, it is highly interesting and valuable to make a study.

Objectives of the Study

1. To study available ICT tools for teaching learning,
2. To examine various factors that influence Teachers' readiness,
3. To analyze the impact of ICT blended learning on Students' perception.

Hypotheses

- H₁: There is a significant relationship between ICT blended teaching and Students perception.
- H₀: There is no significant relationship between ICT blended teaching and Students perception.

Research Design & Methodology

The present research is an empirical in nature. The descriptive research method is adopt for describe the present scenario of ICT enabled teaching and learning practices in select the Engineering Colleges in Rayalaseema Region of Andhra Pradesh.

Sources of Data

Primary Data: For the present study, the data is collected from both primary and secondary sources. The primary data is collected by sending Google form to the faculty and students.

Secondary Data: The secondary data was gathered from Internet, books, research articles, survey reports, newsletters, various journals and magazines.

Sampling Technique: The purposive sampling technique is applied to define the sample (teaching faculty and students).

Sampling Size: 240 (120 Students +120 Faculty)

Statistical tolls and techniques

The collected data is analyzed and interpreted based on frequency, factor analysis and correlation coefficient analysis with the aid of SPSS-20Version.

Limitations of the study

1. This research is limited to study ICT enabled teaching & learning practices in select engineering colleges of Rayalaseema region only.
2. The present study is confine to Teaching Staff and Students.
3. The results of the research cannot be generalized to other staff like; lab assistants, librarians and other supporting staff.
4. The accuracy of given information may owe to change from time, place and individual factors.

TABLE – 1: Demographic Detail

Demographic Aspects		Details of the Respondents	
		No. of Faculty	Percentage (%)
Age	20-30 years	40.0	33.3
	31-40 years	60.0	50.0
	41-50 years	20.0	16.6
	51 years & above	0	0
	Total	120	120
Gender	Male	80	66.6
	Female	40	33.3
	Total	120	100

Educational Qualifications	Graduation	0	0
	Post Graduation	80.0	66.6
	PhD	40.0	33.3
	Any Other	0	0
	Total	120	100
Marital Status	Married	80.0	66.6
	Unmarried	40.0	33.3
	Total	120	100
Job Experience	Less than 5 years	30.0	25.0
	5-10 years	40.0	33.3
	10-15 years	50.0	41.6
	15 years and above	0	0
	Total	120	100
	Designation	Professor	30.0
Associate Professor		40.0	33.3
Assistant Professor		50.0	41.6
Total		120	100

Source: Primary Data

Table- 2: Factors Affecting Teachers Readiness

S.No	Factor / Component and Items	Factor Loading
1	Perceived Positive effects	
	Thirst of learning	0.896
	Change of role	0.875
	Enhance skills	0.691
	Ease of doing/ implementation	0.828
	Spot assessment and clarification	0.640
2	Perceived Readiness	
	Faculty expertise	0.860
	Level of knowledge in ICT tools	0.857
	Preparation for every class	0.758
	Application of innovative tools	0.535
	Organizational support	0.548
3	Collaborative Tendency	
	Collaborate with students and different stakeholder	0.842
	Chance to work with different expertise	0.812
	Chance of being leader in usage of ICT	0.842
4	New Learning Paradigm	
	Continuous learning	0.613
	Being an expert in usage of ICT tools	0.801
	Skills development	0.781
5	Access to Technology	
	Computer and Internet facility	0.789
	Reliable E-learning App	0.687
	Zero Interruption	0.675
6	Time Constraint	
	Duration of each class	0.832
	Syllabus coverage	0.708
	Interaction with students and clarify their doubts in subject	0.633
7	Relationship with each other	
	Expect relationship with students	0.745
	Expect relationship by other stakeholder	0.782
8	Internal Management	
	Class preparation/execution	0.801

	Syllabus completion	0.676
9	Ethics and values	
	Morals and Ethics	0.875

Source: Primary Data

H₁: Correlation Coefficient between ICT enabled teaching and Students Perception

	Variables	Communication	Teaching Quality
ICT Blended Teaching & Learning	Pearson Correlation	1	0.077**
	Sig. (2-Tailed)		0.000
	N	120	120
Students Perception	Pearson Correlation	0.077**	1
	Sig. (2-Tailed)	0.000	
	N	120	120

Source: Primary Data

CONCLUSIONS

The results of the study are on basis of the study, conducted in Rayalaseema region, a geographical part of Andhra Pradesh which was bounded into the context of Indian educational system.

The findings of the study show that many of the teaching faculty are neither agreed nor disagreed on their perceived readiness for ICT enabled teaching & learning practices even though they were quite positively perceived the effects. The teaching faculty did not express their readiness strongly because of time constraint and insufficient access to computer and the internet facilities at their Homes.

These two factors are the perceived impediments to the implementation of ICT enabled teaching & learning in engineering colleges. Other factors such as collaborative intention and perceived positive effects of ICT enabled teaching & learning did not affect teachers' perceived readiness, but these factors have positive relationship with the factor of "new learning paradigm". This newly emerged factor has some positive influence on the students' perception for ICT enabled teaching & learning. This implies that teacher and students with more positive attitude or belief towards new teaching & learning paradigm. Many of the teachers also believe that the supports from college principal and training provider are the important conditions for them to practice ICT enabled teaching & learning.

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