



ORIGINAL RESEARCH PAPER

Management

“ROLE OF TECHNOLOGY IN MODERN TEACHING AND LEARNING: EFFECTIVENESS OF ICT INTEGRATION IN SCHOOL EDUCATION”

KEY WORDS: Technology, Digital Generation, Internet, Pedagogy, Teaching and Learning

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“If we teach today as we taught yesterday, We rob our children of tomorrow”. - **John Dewey**

ABSTRACT

The present generation is the “Age of technology” and technology has made a significant impact on each and every sector of the economy including the Education Sector. 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. The impact of ICT Tools for teaching has become important as it facilitates effective teaching and learning process. ICT Tools creates interactive learning environment and helps learners to develop creative thinking. 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 school education. This study aims to analyze teachers’ perceptions on effectiveness of ICT integration to support teaching and learning process in classroom. 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

Today, worldwide research has shown that ICT can lead to an improved student learning and better teaching methods. A report made by the National Institute of Multimedia Education in Japan, proved that an increase in the use of ICT in education with integrating technology to the curriculum has a significant and positive impact on students’ achievements. The results specifically showed that the students who are continuously exposed to technology through education has better ‘knowledge’, presentation skills, innovative capabilities, and are ready to take more efforts into learning as compared to their counterparts.

Schools use a diverse set of ICT tools to communicate, create, disseminate, store, and manage information. In some contexts, ICT has also become integral to the teaching-learning interaction, through such approaches as replacing chalkboards with interactive digital whiteboards, using laptops, projectors or other devices for learning during class time, and the “flipped classroom” model where students watch lectures at home on the computer and use classroom time for more interactive exercises.

Digital technologies have 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

The Ministry of Education also launched a web portal named “SAKSHAT” a ‘One Stop Education Portal’. The high quality e-

content once developed will be uploaded on SAKSHAT in all disciplines and subjects. Several projects are in the completion stage and are expected to change the way teaching and learning is done in India.

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.

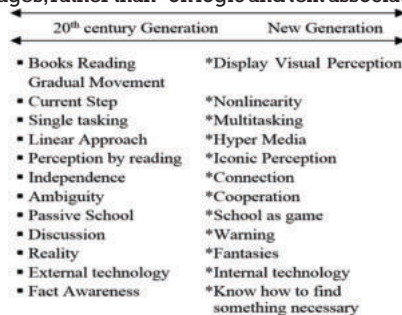


Figure-1 Changing Generations and Perceptions

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 ICT Tools for Teaching & Learning

S.No	Name of the Tool	Purpose of the Tool
1	Blackboard Learn	Community building, and knowledge sharing
2	Google Classroom	Creating, distributing, & grading assignments.
3	ClassDojo	Communities by sharing what's being learned in the classroom home through photos, videos, and messages
4	Edmodo	Teachers to share content, distribute quizzes and assignments, and manage communication with students, colleagues, and parents
5	EDpuzzle	Edpuzzle is a web-based tool for editing online videos and adding interactive content to target specific learning objectives.
6	Evernote	It is intended for archiving and creating notes in which photos, audio and saved web content can be embedded.
7	Flipgrid	Flip (formerly Flipgrid) is a video-based tool allows for discussion across digital devices,
8	Socrative	Can help teachers spark conversation and learning through polls and quizzes
9	Thinglink	Thinglink is a tool for creating interactive images and videos by adding tags. Tags can link to websites, social media pages, videos, maps, images, and audio.
10	Trello	Trello is the visual tool that empowers your team to manage any type of project, workflow, or task tracking.

Source: Primary Data

Statement of the Problem

Today, the integration of ICT in classroom is getting more important as it help student in enhancing their collaborative learning skills as well as developing transversal skills that stimulates social skills, problem solving, self-reliance, responsibility and the capacity for reflection and initiative.

The Digital India program is also supporting these transformational changes in teaching and learning methods. Pedagogy of the pre Covid-19 differs from the pedagogy of after 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.

Educational sector's biggest problem is integration of ICT tools with Teaching and Learning process. 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

Technology-based teaching and learning can make many changes in school that requires for proper planning and policy making. Researchers and policymakers must both have the same insight about the future plan.

Dudeney (2010) noted that national ICT policies can serve several crucial functions. They provide a rationale, a set of goals, and a vision of how education systems run if ICT is integrated into teaching and learning process, and they are beneficial to students, teachers, parents and the general population of a given country.

Scope of the Study

The scope of the study is confined to explore ICT enabled teaching & learning practices in select Primary and Secondary Schools of Rayalaseema Region of Andhra Pradesh.

Furthermore, among the various components like;

1. Available ICT tools and usage,
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 and learning,
2. To examine various factors that influence Teachers' readiness,
3. To analyze the impact of ICT blended learning on Students' perception.

Hypotheses

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

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 Schools 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: 360 (120 Faculty+240 Students)

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-20 Version.

Limitations of The Study

1. This research is limited to study ICT enabled teaching & learning practices in select Schools 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	40	33.3
	Female	80	66.6
	Total	120	100
Educational Qualifications	Graduation	0	0
	Post Graduation	40.0	33.3
	PhD	0	0
	B.Ed/M.Ed/Professional	80.0	66.6
Total	120	100	
Marital Status	Unmarried	40.0	33.3
	Married	80.0	66.6
	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	Pre-School Teacher	30.0	25.0
	Primary Teacher	40.0	33.3
	Secondary Teacher	50.0	41.6
	Total	120	100

Source: Primary Data

Table - 2: Factors Affecting Teachers Adoptability

S. No	Factor / Component and Items	Factor Loading
1	Perceived Positive effects	
	Thirst of learning	0.786
	Change of role	0.865
	Enhance skills	0.781
	Ease of doing/ implementation	0.728
2	Perceived Readiness	
	Faculty expertise	0.760
	Level of knowledge in ICT tools	0.755
	Preparation for every class	0.756
	Application of innovative tools	0.745
3	Organizational support	0.548
	Collaborative Tendency	
	Collaborate with students and different stakeholder	0.732
	Chance to work with different expertise	0.713
	Chance of being leader in usage of ICT	0.742
4	New Learning Paradigm	
	Continuous learning	0.813
	Being an expert in usage of ICT tools	0.601
	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	0.732
	Syllabus coverage	0.708
7	Interaction with students and clarify their doubts in subject	0.633
	Relationship with each other	
	Expect relationship with students	0.745
8	Expect relationship by other stakeholder	0.762
	Internal Management	
	Class preparation/execution	0.701
9	Syllabus completion	0.676
	Ethics and values	
	Morals and Ethics	0.775

Source: Primary Data

Table - 3: Factor affecting Students' Learning

S. No	Factor / Component and Items	Factor Loading
1	Perceived Positive effects	
	ICT allows students' to be more creative and imaginative	0.860
	ICT helps students to find related knowledge for learning	0.870
	ICT encourages students to communicate more with teacher	0.860
	ICT increases students' confidence to participate actively in the class	0.870
2	I think students learn more effectively with the use of ICT	0.860
	Perceived Readiness	
	ICT helps to broaden students' knowledge paradigm	0.820
	ICT helps to improve students' ability in reading, writing and speaking English	0.876
	The students' are more behaved and control with the use of ICT	0.758
3	ICT enables students' to express their ideas and thoughts better	0.745
	ICT promotes active and engaging lesson for students' best learning experience	0.848
	New Learning Paradigm	
	Continuous learning	0.712
	Being an expert in subject	0.702
4	Skills development	0.711
	Access to Technology	
	Computer and Internet facility	0.798
	Reliable E-learning	0.768
	Zero Interruption	0.765
5	Time Constraint	
	Duration of each class	0.642
	Syllabus coverage	0.789
6	Interaction with teacher and clarify their doubts in subject	0.722
	Relationship with each other	
	Expect relationship with teacher	0.745
7	Expect relationship by other classmates	0.782
	Ethics and values	
	Morals and Ethics	0.875

Source: Primary Data

Table - 4: T-test Correlation Coefficient between ICT enabled teaching and Students Learning

Variables	Communication	Teaching Quality

ICT Blended Teaching & Learning	Pearson Correlation	1	0.087**
	Sig. (2-Tailed)		0.000
	N	240	240
Students Learning Perception	Pearson Correlation	0.087**	1
	Sig. (2-Tailed)	0.000	
	N	240	240

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 portray that many of the teachers 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 teachers did not express their readiness strongly because of time constraint and insufficient ICT usage training and the internet facilities and knowledge.

From the present study it can be concluded that the institutions are providing training to teachers regarding the usage of ICT Tools, but it is advisable to increase the number of training programs to train the employees more effectively. This will make Teachers to use the ICT Tools in a most effective manner. The study also reveals that Teachers have a positive interest towards the usage of ICT Tools as it helps in saving time while preparing and delivering subjects.

This implies that students also have more positive attitude or belief towards new teaching & learning paradigm. Many of the teachers also unveils 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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