Applying Blooms Revised Taxonomy on Information and Communication Technology Skills of University Faculty Members

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ABSTRACT

Purpose: *The goal of this research study is to stress on the Information and Communication Technology (ICT) skill of the University Faculty in the education/training sector. The study also focuses on Applying Bloom's Taxonomy on Information and Communication Technology (ICT) Skill of University Faculty in achieving the goal of betterment in the education sector.*
Methodology: *It also uses secondary data from well-known journals, popular websites, most read books, authorised reports and good conference proceedings.*
Findings: *The very application of ICT has achieved outstanding results in achieving skill competencies in every field. This has encouraged the majority of people or the faculty community in particular to share, clarify and improve the content using Information technologies. Collaboration, conversation, and construction are the three theories upon which entire learning process success is expected.*
Research limitations/implications: *This paper is fully based on secondary data from research articles available in search engines like Google scholar and Google search. Hence amount of work would have been good if primary data (which is difficult to collect) was collected and analysed.*
Originality/value: *Past experiences have shown us that traditional teaching methodologies has some disadvantages, it is recommended that to solve those problems we should use Information Technologies available on the Internet. This study addresses the importance of higher order skills mentioned in top 4 layers in Bloom's Taxonomy.*
Paper type: *A case study paper.*

Keywords: Blooms Taxonomy, Skill, Information and Communication Technologies, Development, ABCD Analysis, ABCD listing

1. INTRODUCTION :

Technological advancements are coming from the rapid growth of population in cities due to the migration of the population from rural to urban areas for jobs and better living conditions. Census studies estimate that nearly 70% of the Indian population is in rural areas. This trend is expected to reverse in the next 50 years due to rapid urbanization and the migration of labor. Many of the problems like climate change and extreme heat are the results of this human exodus and settling from villages to cities. As cities become bigger and better they require fair quality skilled people to do various chores. This continuous trend of flocking to cities has choked and congested some of the existing cities hence administration has created suburban cities near these cities to decongest these choked or congested old and obsolete cities. These new cities need solutions that would solve some of the problems seen in existing cities like transportation, housing, health, Information Technology, and education /training sectors. These campuses with smart and innovative solutions provide future jobs and are growth drivers hence these infrastructures would require massive skilled /wisdom people to build and maintain the same. Skill is defined as the ability to use one's knowledge effectively and readily in execution or performance. Skilling is a life-long process not limited to training institutes or the education sector. Man continuously learns new skills as age progresses and evolves into better

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humans. However, in a real-world / market-oriented world skilling is a process through some trainers or resource person. Skill is an activity inherent or learned from others that makes people's life easy. Examples for skill are typing, programming, or teaching skill.

2. OBJECTIVE OF THE RESEARCH :

The primary objectives of the research are as follows:
(1) To apply Bloom's Revised Taxonomy on ICT skills of the faculty member of the University.
(2) To do ABCD analysis of the Final system (Tech driven SAMR model that has a mapping to Bloom's Revised Taxonomy model).

3. METHODOLOGY :

All the Findings that are cited in the paper are either from the information available in journals, research articles, reputed Books, Websites, and Reports. The search Engines like Google scholar and Google search are the most prominent search engines used in search of Literature.

4. LITERATURE SURVEY :

The search Engines like Google scholar and Google search are the most prominent search engines used in search of Literature. Table 1 given below gives a proper idea about the topic of research and its origin.

Table 1: Review of related work.

S. No.	Reference	Area/Keyword	Methodology	Findings	Gaps
1.	Arbo, P., P. Bennewort h, (2007). [1]	Regional Contribution, Higher Education Institution.	Connectivism approach.	Higher education as a binding force in a region between different professionals, Government machinery, can act as knowledge centres for social, economic, and cultural development of a region first, nation second and globally last.	Does not talk about religious scriptures and true knowledge hidden in them.
2.	Jasemi, M., & Piri, M., (2018). [2]	Knowledge management, challenges, Knowledge management system.	Literature Survey method	Paper also touches upon non-existence of globally accepted forms of knowledge or definition. This paper talks about the knowledge/Knowledge database that must be maintained in all organisations specifically in industries in any of 3 forms publication, theses, and patent depending on nature of organisations.	No mention of the origin of knowledge.
3.	Shtaltovna, Y., & Muzzu C., (2021). [3]	skills development, soft skills, digital	Literature review method	This paper puts light on problems faced by Resource people around the world in the	The Paper doesn't talk about

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		collaboration, higher education, employability.		post Covid-era where solutions can be found in Emergency E-Learning tools or skills using 6 important aspects/areas. 1. Digital tech use. 2. Digital resources sourcing, creating, sharing. 3. Learning and Teaching. 4. Digital learning assessment. 5. Empowering learners through engagement. 6. Enabling learners' digital capability.	cognitive skills.
4.	Wrahatnolo, T., (2018). [4]	21st centuries skills, Technology, Education, Knowledge	Citations /Reference method.	21st century skills are grouped into three types, namely (1) Life and professional skills, (2) Research and learning skills, and (3) Digital literacy	Numeric data or statistics unavailable.
5.	Bierly, P. E., Kessler, E. H., & Christensen, E. W., (2000). [5]	Organisaton learning, Knowledge, Passion, Experience and wisdom	Citations/refe rence method.	To understand of the impact of organisational knowledge and learning on competitiveness, paper proposes a model that includes the elements like wisdom, knowledge, information, and data.	No diagrammatic representation or linking of components.
6.	Nazir, M. J., Rizvi, A. H., & Pujeri, R. V., (2012). [6]	Learning, multimedia, learning environment (Interactive, Multimedia based)	Questionnaire, sampling method and Data Analysis.	After the study of the area and carrying out experiments a model is proposed saying that multimedia in Teaching/Learning process have a significant effect on skill development process.	Smaller and less number of university students taken as respondents. Hence has geographical limitations.
7.	Kommers, P., & Simmerling, M., (2014). [7]	ICT, e-learning, blended learning, life-long learning,	Literature review on blended learning (E-learning) and its advantages.	1. Explanation of competence, skill and learning. 2. Reason for choosing distance education over other modes.	No mathematical proof in above literature. It would have been great if author had put

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				3. Supports digital learning without support of data.	some data to support the views or arguments.
8.	Davenport, T. H., & Prusak, L., (1998). [8]	Knowledge, data, Information, Experience, Knowledge management	Literature survey on organisational knowledge	1. Definition of organisational knowledge. 2. Different types of knowledge.	No statistics, diagrams showing different forms of knowledge and their relationship.
9.	Gibbons, M., (1998). [9]	Educational change or reform, Futures of society, Higher Education, Social influences.	Literature survey on different modes of higher education and relevance.	Changing dynamics of relevance of higher education, social responsibility, partnerships and alliances leading to competitions and collaborations.	Too little content on virtual universities.
10.	Vijayudu, G., (2016). [10]	Skill Development, Higher Education, Shiksha Abhiyan, Faster Economic Growth	Literature Survey of Higher Education.	Challenges or problems facing Higher education, stress on Value based Education, Government schemes like RUSA, PMEGP, RGUMY, Skill development missions.	No diagrammatic model representations.
11.	Bircham-Connolly, H.J., (2007). [11]	Question response structure, recipient attitude	Theoretical framework.	The kind of question structure has an effect on knowledge outcome or sharing by the recipient of the question.	No supporting numeric data.
12.	Wolhuter, C., (2017). [12]	Economics and Comparative and International Education	Literature review	The paper talks about different forces/factors influencing Education policy. Detailed explanation of past, present and future of Education scenarios. Challenges coming.	No statistics on Education or diagrammatic representations.
13.	Hussain, F., 2012). [13]	Artificial intelligence, Web 3.0, e-learning 3.0, connectivism.	Imagination or Cognition method.	Mention of web 3.0 and some of the prototype e-learning 3.0 management systems.	No clear cut idea/model about web 3.0 and E-Learning 3.0.

The skill of any working professional can be classified as soft skills and hard skills (Domain skills) [14] and this applies to all professional fields including teaching. And Teachers/Faculty need to have 12 Generic Skills(soft skills) to do efficient teaching. They are:

    a) Oral and Written Communication [15]
    b) Research and Innovation [15]
    c) Problem Solving [15]

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d) Commitment to quality [15]
e) Information and Communication Technology (ICT) [15]
f) Critical Evaluation [15]
g) Team Work [15]
h) Adaptability and Sustainability [15]
i) Independent Lifelong Learning [15]
j) Leadership and Decision-making [15]
k) Ethical Standards [15]
l) Responsibility and Accountability [15].

The Information and Communication Technology (ICT) according to [16] is defined as is a combination of traditional knowledge of computer and communications technology to store, process, and transmit any data (including text, audio, image, video) [16].

Education is providing environment for learning in other words acquisition of knowledge, skills, values, morals, beliefs [17]. Education started as impart of heritage/cultural legacy from a generation to successive ones. New age Education goals include liberation of learners, critical thinking, skills, (professional and generic) required for modern society [17]. There are 3 types of Education namely Formal Education, Informal Education, and Non-formal Education. Formal Education is a process where a student or learner goes to some institute for learning and a Faculty or resource person is delivering some information to be grasped by learners. In active learning, both students and Faculty get some knowledge whereas in passive learning only one person gets knowledge. Informal Education is obtained outside the academic framework most probably from parents, print-audio-video media, or websites. Non-formal Education is temporary courses that one attends to get some additional skills for getting jobs or doing business.

Informatization of education is regarded as a topic of pedagogical science, that creates a specific type of integrity, with the methodology, theory and practice to effective and efficient ICT tools usage for ease of living environment [18].

The paper (Fedorenko, E. H., Velychko, V. Y., Stopkin, A. V., & Chorna, A. V., 2019 [19]) also discusses "following components as primary goals of informatization of education:

o formation of skills of self-education and self-realisation [19];
o development of the prospects of each person, thereby growth of intellectual potential of the nation [19];
o development of the educational services for needs of the special people with disabilities [19];
o rise in the standard of Higher education for it provides favourable environment 19];
o creation of new pedagogical tools [19];
o augment the aptitude to analyse the extended skills and knowledge of students [19];
o establishment of the informatively experienced society; [19]"

The factors that influence the development of the modern informatization of education are listed below.

1. Globalisation of information interaction in synchronous and asynchronous modes [20].
2. Pedagogical technologies and information and communication technologies merge to become same and help one another to penetrate into the masses or population [20].
3. Conflict of Individual reality versus virtual reality driving physical, social and mental aspects of individual and world around him [20].
4. Network information dependence of the individual on:
   i. Information interaction with anonymous partners, both real and virtual [20];
   ii. Use of information-loaded, eye-catching, old fashioned information resources[20];
   iii. Forceful promotion in the process of virtual management of objects and events[20];
   iv. Uncontrolled production of fake information [20].
5. Individual suffering from the condition called as "mental infantilism" for losing individual motivation for ones' presence in the real world and distancing from communication with people which entails greater danger to the mental health of the person.

There is significant shift in the role of Faculties in the past and present context of Education described in paper (Majumdar, S., 2015) [21].

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The paper (Majumdar, S., 2015) discusses ICT skills in relation to Modern day university Faculty's role:

1. ICT skills of the University Faculty member can help him to achieve the role of Guide and Facilitator of Knowledge by sharing journal articles and other resources such as PowerPoint presentations, Annual study reports, and e-books by well-recognized authors and institutions like ILO, UNESCO, NASSCOM, MHRD, MICROSOFT.

2. Creation of the Learning Environment by the Faculty community is influenced by Andragogical and technological factors. Andragogical methods are in Faculty's control, that is how he/she wants to deliver the lecture or share information, make learning interesting, and use advanced information technologies or software available right now. Technological factors like connectivity issues, satellite failures, protocol mismatch, hardware issues, and copyright issues, can influence the interaction between Faculty and a Student.

3. Collaborator and Co-learner is the new Role given to Faculty as Collaborator and Co-learner would make students at ease with the Faculty. The new role would make the entire environment relaxed and facilitate greater interactions among students and Faculty. Free and Open interactions would encourage students to ask questions regarding subjects or personal matters. Faculty would also be involved in investigating solutions to current problems along with the students. Hence there is learning happening in students as well as Faculties. Hence we can say students and Faculty as learners and better learners.

4. Using ICT to enhance Learning can be done using Newer Apps and Tools like Google form for conducting tests and getting survey data, Cisco Webex and Google meet for conducting online classes, Smart Boards for Attractive Presentations, Google Drive for storing data/information permanently, Google platform for almost any work.

5. Faculty today has to be Fully interactive hence if he is "actively" using technologies (ICT) like Google Meet or Cisco Webex and WhatsApp Messengers that means Faculty is sufficiently interactive and responding to student concerns. ICT technologies would make a Faculty to be Fully explorer of knowledge and Wisdom seeking as most of the search technologies like Google scholar are linked to knowledge sources.

All the above is happening online because of the wonder called Web 2.0

The term Web 2.0 is participative and social web that facilitate interactive data sharing, interoperability, user-centered design, and collaboration on the Internet [22]. A Web 2.0 site allows interactivity feature between a user with other users or to modify portal content also called dynamic, in contrast to non-interactive/static portal where users are forced to the passive viewing of data [22].

Characteristics of web 2.0:
- Collaboration [22].
- Openness [22].
- Modularity [22].
- User Control [22].
- Identity [22].
- Evolving Content [22].

The characteristics listed above help us to solve the education-related problem in the following ways:

A. Some of the best available collaboration tools in web 2.0 like 1. RSS and Aggregators 2. Micro Blogging 3. Content Rating 4. Video-Sharing, helps faculty to create, collaborate, edit, categorise, exchange, and promote".

B. The openness of web 2.0 is the concept that emerges with the 'open science' or 'wiki science' or 'Science 2.0' theory that nobody owns knowledge or content and anyone can modify anything - from programming code, journal articles, songs, video [23]. So openness can be further applied to different aspects like
   - Openness to 'experience' [23]
   - Openness to criticism [23]
   - Openness to interpretation [23]
   - Openness to the Other [23]
   - Open science communications technologies [23]
   - Openness=freedom [23]
   - Open science governance [23].

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C. The modularity feature of Web 2.0 is contradiction to monolithic (composed all in one piece). Here users are able to choose from a set of interlinked components in order to build something newer (reusability) [24].

D. In user control characteristics, the user can exercise what he wants to see and how he wants to see it. The user is the ultimate authority for controlling the content and mode of transmission. Once Faculty becomes the admin of Web 2.0 Tools, he can control other users' participation levels and track and bolster the speed of work of students by sending automated or timer set commands to targeted Students.

E. The user's Identity can be increasingly manipulated or changed according to the User's wish to suit the scenario. Hence Faculty sometimes may not be interested in revealing their identity to a student in order to check up on the activities of students so they can change the profile names whenever he or she wishes to hide from the students and come back to real profile names whenever he wants them to know his real name.

F. Evolving content is another reason why web 2.0 has been this popular. A dynamic and newer addition to kinds of content ranging from static text to live video streaming has made Web content nowadays a mesmerizing experience. The entire Universe is accessible at the click of a button.

Owing to these characteristics of Web 2.0 and the Internet platforms, ICT tools have empowered Faculty member to efficiently manage and coordinate the online classroom for teaching or learning environment.

Contextual learning means drawing inspiration from the outside world and applying real-world strategies and methods to academic problems [25].

Educational Fundamentalism should be totally disapproved of in all kinds of learning. Educational Fundamentalism is always preaching one side of the story or approach or ideology or thinking [26].

Information service of education allows actors to collect and store data of various components in the education process that is happening in the education scenario and disseminate it to the public [26].

Elements that significantly affect the content, methods, and forms of education are Novelty, dynamism, and diversity [27].

There is a tremendous gap in Information technology usage by different University Faculty in the same campus or department?. There are certain barriers to learning technology aspects these are:

1) Skills necessary to use technology.
2) Time to learn skills.
3) Reliability of software or hardware components.

The paper (Rafique, Ghulam Murtaza, 2014) [28] defines "information literacy as much broader concept than information-pursue process which includes:

➢ Arriving at the topic [28]
➢ Choosing and using resources [28]
➢ Finding information [28]
➢ Assess resources [28]
➢ Recording the research [28]."

The above skills would enable a University Faculty to manage the classroom environment and make learning interesting. Of all the above Faculty skills, ICT skill is the current need of the hour since Covid-19 or pandemic broke out. The use of Information and Communication Technology would make learning more long-lasting and help to create an environment conducive to research, storage, retrieval, and communication of scholarly articles. The below-mentioned sections discuss some tools and technologies for Teaching /Learning available in the internet domain.

There have been many tools available in the Information Technology area for solving education sector problems associated with the Teaching/Learning Process, of them Integrated Learning System (ILS) use Computer Networks to combine "courseware" with Centralized Management Tools. Computer-based Cognition Tools like databases, spreadsheets, and teleconferencing programs are the intelligence partners which enhance higher-order skills such as planning, decision making, and self-regulation. . Tools like Moodle, eCollege, Desire2Learn, Blackboard, ANGEL Learning Management Suite, Sakai CLE and Canvas are well known Learning Management System (LMS) [29]. The book (Ramesh Chandra, 2005) discusses "Reasons for using Online method over traditional method is as follows:

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- New form of Knowledge transfer [30].
- Extension of Knowledge transfer to a wider audience [30].
- Flexibility in time [30].
- Flexibility of physical space [30].
- User group-oriented programs [30].
- Usage of colour, animation, and sound [30].
- Collaborative problem solving over distance [30].

Human-Computer Collaborative Learning technologies like apprentice systems and Learning environments present the partnership between the machine and human for solving the teaching/learning problems. An apprenticeship system (expert system) that updates its knowledge base by observing a human expert put an end to a problem".

Two amateur chess players in collaboration with an AI system (centaur chess) running on three PCs won against a field of supercomputers and grandmasters [30].

Artificial intelligence for applications like expert systems, processing of natural language, recognition of speech and vision of machine is the simulation of human intelligence processes by computer systems [31].

ICTs make possible asynchronous learning where learners using Online course materials (24 hours a day, 7 days a week) make remote learning possible [32].

Research article in [33] discusses some of the MAJOR ICT INITIATIVES IN INDIA BY GOI/STATE GOVERNMENTS.

1. UGC-INFONET
2. BRIHASPATI
3. EDUSAT
4. SAKSHAT
5. e-SIKSHAK
6. e- YANTRA
7. OSCAR++
8. FOSSEE

BLOOM'S Revised Taxonomy is a model created by Anderson, Lorin W., and David R. Krathwohl, eds. 2001 in [34]. It has 6 layers or levels as depicted in the below list with Remember lowest level and Create at the highest level [34]. Levels in the 1-Dimensional model are given below

a. Remember or Recalling the Facts
b. Understanding meaning of the Facts
c. Applying the facts, rules, concepts, and ideas.
d. Analysing or Comparing the Solutions.
e. Evaluate the value of information in the present scenario.
f. Creating or building whole from parts or components.

Where as in the Knowledge dimension also this model can be applied, so this model can be extended to two-dimensional structure that can be used to study learners thinking pattern and Knowledge synthesis processes as in **Table 2** given below [35].

Table 2: Cognitive process Dimension vs Knowledge dimension

	Cognitive Process Dimension →					
The Knowledge Dimension ↓	Remember	Understand	Apply	Analyse	Evaluate	Create

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Factual [specific elements, terminologies]						
Conceptual [classifications, principles, theories, models]						
Procedural [methods of inquiry, algorithms, criteria for using specific strategies]						
Meta-cognitive [Strategic, cognitive tasks, one's own cognition]						

Source: (David R. Krathwohl, 2001) [34]

Authors of the revised taxonomy answer the question why to use this Bloom's Revised Taxonomy model:

(1) Teachers and students alike understand the purpose /objectives (learning goals) of the interchange of ideas or knowledge [36].

(2) Teachers can benefit from using Bloom's Model for Organizing objectives.

> o "synthesis and transmit correct information" [36];
> o "design result-oriented assessment activities and methods" [36]; and
> o "ensure that instruction and method of evaluation are lined up with the objectives." [36]

5. RESULTS AND FINDINGS :

For all the Findings or Observations, the researcher has used Google scholar or Google search as search engine. Bloom's Original classification is hierarchical and cumulative. Behaviours of previous level has cumulative impact on next level and levels are designed from simple to more complex to make it hierarchical [37]. The significant change in new taxonomy is that it is two-dimensional improvement over one-dimensional original Bloom's taxonomy [37]. The paper (Tee, T. K., Yunos, J. M., Mohamad, B., Othman, W., & Yee, M. H., 2010) explains metacognition is fundamentally thinking about thinking and defines metacognitive knowledge as awareness of and knowledge about one's own cognition [38]. It includes knowledge of general strategies that may be used in completing different tasks, the environment under which these strategies may be used, the extent to which the strategies are effective and efficient, and self-knowledge [38]. However, a great number of tools can be used for various purposes, that is, single tool may be used to engage different cognition levels [39]. The second problem is the popularity of the tools, annually we get entirely new educational online tools getting published [39]. Tech support has enabled Educators to design content and delivery according to SAMR Model (Puetendura, 2010). The Tech support sometimes act as Substitute tool for pedagogy without functional change [40]. Tech tool can also Augment existing capability of Educators with added functionality in the learning process [40]. The Modification facility or support available with technology enables teachers to modify content and task (learning process) [40]. Redefinition phase of the SAMR model allows educators to Redefine or construct the new task previously thought not doable [40].

Mapping from SAMR Model levels to Bloom's Revised Taxonomy levels is described in **Table 3** given below [40].

Table 3. SAMR model mapped to Bloom's Revised Taxonomy

S. No.	SAMR model phases	Bloom's Revised Taxonomy level
1.	Redefinition	Create
2.	Modification	Evaluate Analyse
3.	Augmentation	Apply
4.	Substitution	Understand Remember

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Source: (Rehman, Z. U., & Aurangzeb, W., 2021) [40]

6. ABCD ANALYSIS :

Advantage of technology assisted SAMR model is that it is faster to implement than Bloom's model since it is 4 level compared to 6 level model. It can be easily automated than latter model [40]. SAMR model is technology assisted model, all the 21st century skills are centered around technology hence this model needs careful notice [40]. Integrating technology in classroom environment can quickly increase learning benefits, increasing motivation or curiosity and collaboration through interaction [41].

Benefits like some of the activities or processes that use technology in greater way can be best understood using this model [42]. And easy automation when some processes use technology is another benefit that comes which this model [41].

Recently innovated model is another negative aspect associated with this model [43]. SAMR framework is useful for pre-service and practicing teachers by providing descriptive 'aim points' towards which to evolve their practice, it does not provide concrete illustrations of practices that might represent each stage, or ways of transitioning through the stages—nor does it explicitly account for supporting and necessary pedagogical, technological and learning design changes [45]. Lack of systematic evidence further complicates how to interpret and apply the model [44].

SAMR model doesn't talk about other aspects of learning like behaviourism or constructivism [44]. Rigid structure is another demerit of this model where too much emphasis is on the product but not process of learning, or components of learning like instructional components such as instructor efforts, student emotions (needs), community supports are not given importance [44]. Contextual absence is another cons of this much talked model because of absence of the details from learner journey and teacher sentiments [44]. Quality of learning or learning outcomes like what knowledge is constructed from the process or use of technology/system is missing [44].

New outcome called TPCK(Technology-Pedagogy-Content-Knowledge) which is built upon the initial work of SAMR model is the solution to effective teaching assessment [46]. The 21st century skills could be obtained if you take Foundation knowledge (core content, Information literacy, cross disciplinary knowledge), Humanistic knowledge(cultural competence, life and job skills, ethical and emotional awareness) and Meta-knowledge(creativity, problem solving and collaboration) seriously in the education programmes or lesson plan [47].

Table 4: Advantages, Benefits, Constraints, Disadvantages of the SAMR model over Revised Bloom's taxonomy**.**

Advantages	Benefits
i. Faster implementation of SAMR Model (4 level) compared to Bloom's Taxonomy model (6 level) [40]. ii. Technology assisted model [40]. iii. Learning benefits, increasing motivation, interaction, and collaboration [41]. iv. The 21st century skills could be obtained if you take Foundation knowledge (core content, Information literacy ,cross disciplinary knowledge), Humanistic knowledge(cultural competence, life and job skills, ethical and emotional awareness) and Meta-knowledge(creativity, problem solving and collaboration) seriously in the education programmes or lesson plan [47].	a. Processes that use technology tend to use this approach or can be best understood using SAMR model [42]. b. Process that use technology can be easily automated using this model [41]. c. New outcome called TPCK (Technology-Pedagogy-Content-Knowledge) which is built upon the initial work of SAMR model is the solution to effective teaching assessment [46].

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Constraints	Disadvantages
i. Recently innovated model [43]. ii. it does not provide concrete illustrations of practices that might represent each stage, or ways of transitioning through the stages [45]. iii. The lack of systematic evidence further complicates how to accurately interpret and apply the SAMR model [44].	i. SAMR model does not talk about other aspects of learning like constructivism or Behaviourism [44]. ii. Contextual rigidity is another aspect which is shortcoming owing to disregard for flexibility [44]. iii. However, the SAMR model includes no accommodation for context [44]. iv. Learning outcomes are compromised for technology adoption in instructional process [44].

7. SUGGESTIONS FOR THE RESEARCH :

Tech usage itself can be considered first step in learning the activity, skills, technique or methods for making life easier or earning one's living. So Technology assisted learning (E-learning 3.0) which is making learning on the go possible. Never underestimate the Educators role even after technology association. Good Educators would be absolutely irreplaceable even when there is technology revolution in the Education field.

8. CONCLUSION :

Cognitive capabilities as identified by Bloom's Taxonomy can be mapped to SAMR model, which can help educator perform functionalities in E-learning environment. E-learning environment is more about change and modification. The 4 Phases SAMR Model is more simple and handy model to implement in e-learning environment. Any course structure modeled using Bloom's Taxonomy can be mapped to SAMR model without any difficulty.

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