

New Archetype Reposition of Education from E-learning to U-Learning

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Abstract

*Learning is not now confined into four walls called school. With the advent towards 'Knowledge Society' and necessity of education for life-long learning, learning has to be now needed in everywhere and in availability for 24*7. To satisfy the needs and requirement, schools adapt online learning resources to reach million and million people to diminish the cost of infrastructure, maintenance cost, regular cost etc. along with to satisfy the necessity of the society in where needs from education differs from time to time. With rapid growth of population and entrance in educational periphery for all ages don't accumulate all population within the boundary. Introducing of e-learning justifies the need irrespective of geographical boundaries. Recent furtherance in wireless technology has introduced a new drift in the field of education that is U-Learning (Ubiquitous Learning) which is more advanced in its approach: it can percept the present situation of the learners and do accordingly. Present paper will focus on the paradigm shift from traditional teaching learning scenario to present u-learning and tries to locate its beneficial perspective and loops holes so that policy makers can able to address those adversities and can able to prescribe the desired one framework which leads to promote towards quality education and justify the demands of the society. Recent paper is based on qualitative approach and data as well as information are gathered from different secondary sources to justify the issue.*

Keywords- E-learning, M-learning, U-learning, Wireless Network, Context Aware.

Introduction

We reach in the arena of Web 4.0 and the advancement of technology has brought a rapid change in educational arena too (Pal & Sarkar, 2021). The age of 'Knowledge Society' has introduced distance learning and MOOC Learning platform with blended approach (Mayadas et al., 2009). Difference between real world scenario and lag in advancement of education also encourages to adopt e-learning to make the young minds compatible with the real needs of the society. 21st century is a content-based society, the four walls of education fail to supply that much knowledge within the stipulated time frame and fixed curriculum. This very challenge regarding knowledge transfer, to ferret out needed information and credentials at hand for task and projects, to provide and receive helps from global student community and be learner for life-long in diverse settings embolden the precondition for preparatory session of e-learning in education (McCombs, 2000). All these forces lubricate the path of introducing e-learning in educational scenario wherever internet facility is available. The spoon feeding approach in traditional education has transformed into e-learning either with online teaching learning or with blended learning to make the plate more palatable and is suitable for learning at any time (Al-Fraihat et al., 2020). E-learning delivers its teaching material through audio-video tape, broadcast through satellite, internet, intranet, interactive TV or through CD-ROM (Ozuorcun & Tabak, 2012). In this age of big data, E-learning is becoming important with assistance of artificial intelligence which make the learning process more precise (Souren Bhattacharya & Pal, 2020a).

With quickened pace of broad-band has innovated wireless internet technologies in our day to day lives. It accelerates the adopting process of M-learning. Mobile with LT devices such as smart phones, tabs, portable computer enhance the changes of face to face communication with previous e-learning facilities at any place and at any time (Rushby, 2008). From 2000 onwards, additional adaptor technology has been added with the wireless features of mobile and enlarges the path and directions for wireless technology assisted learning. This revolution in mobile technology routes towards context aware ubiquitous learning which allows its aspirants to flawlessly use large and various kinds of 'functional objects' using network connection at user's choice of time and place (Minami et al., 2004). Again, one more important feature of the ubiquitous network is that as it uses wireless network with sensor facilities, therefore it can presume and collect user information and his environment in practical scenario and supplies personalized services as per which is termed as 'context aware'. It can be assumed as the highest level of interrelationship between human and computer (Coskun, Ok & Ozdenizci, 2011). Many face to face interactions, dynamic grouping, discussion, problem-solving which are in lack in e-learning, all these features are available in U-learning with the use of Artificial Neural Network and Artificial Intelligence.

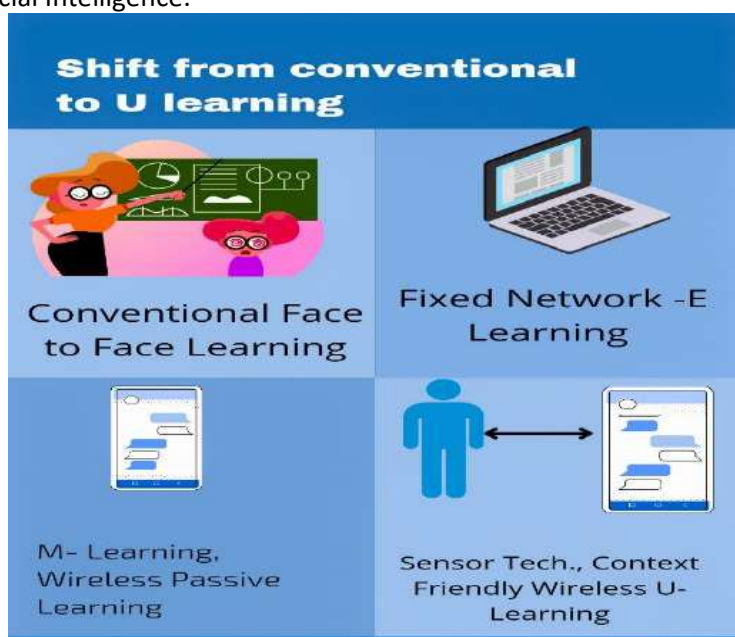


Figure 1: The process of transformation

Source: Author

This present paper throws light on educational shift from conventional to U-Learning along with benefits and loop-holes of U-learning. This paper also provides a framework to include more student friendly approach in learning as U-learning is wire-less and easily accessible. Again, this paper provides a guideline for the policy makers about how they implement this on in real life scenario to bring out more learning outcomes.

Literature Reviews

The paper wants to understand the factors that work behind using u-learning and throws light how u-learning helps a consumer to investigate in the area of development. In this paper, there is a model prescribed by the researcher to use smartphone as telecommunication tool as well as a tool for u-learning application. Practical implications for industry can be drawn from the findings of this paper (Shin et al., 2011).

This paper gives a brief description on definition and characteristics of u-learning along with some applications of it (Yahya, S., Ahmad, E. & Abd Jalil, 2010).

In this paper, researchers had focussed how ubiquitous computing help the online study process more pervasive and persistent along with offering students to access education flexibly at their own ease (Jones & Jo, 2004).

This paper provided the basic criteria of establishing u-learning ambience along with several strategies to conduct u-learning in teaching learning scenario (Hwang, 2006).

No paper has been focussed on the paradigm shift of traditional learning to u-learning and prescribed the framework from the angle of education. This present paper contributes in this field.

Methodology

This paper is based on qualitative approach. To get adequate information, data from various secondary sources are gathered to build this approach.

Objectives of the Study:

- To understand the reason behind the paradigm shift from traditional teaching learning scenario towards u-learning
- To realise the basic comparison among three different online approaches
- To get view on teaching and assessment strategies of U-learning
- To understand probable teaching learning scenario in U-learning.

Backdrop behind This Paradigm Shift

UNESCO has drafted the aim and ambition of education which has to be obtained by the end of 2030 to ensure 'Sustainable Development Goal' which is to "ensure inclusive and equitable quality education and promote life- long learning opportunities for all" (UNESCO, 2015). Therefore 'how to learn' out of the classroom scenario is one of the prime concerns of policy maker to execute in real life scenario. Students are not just the learner community of below 30 ages, learning becomes the necessity for everyone may be the individual of 45 age groups or above 65 age group. To survive in this earth, learning at any age becomes the necessity. Again, within a stipulated time frame and periphery of institution, it can't able to accommodate all individuals as per their time frame and necessity. Delors Commission prioritized the aim of 'learning to do' and 'learning to be' and 'learning to know' ("Delors Commission," 1996) which actually build the route map towards achieving the aspiration of the aspirant life should not be stopped for limitations of opportunity to entry in the field of learning as per need and necessity.

When formal education set up fails to attain and satisfy the circumstances, distance education has emerged into field to fill up the lacks (Pal & Sarkar, 2021). Again, the emergence of life-long learning to satisfy the demands of changing society broadens the way towards online learning as aspirants can access the learning materials at their ease and physical appearance in institution which creates barrier to continue study has been lessen by this approach. But to access E-learning, a fixed network and a fixed place are the basic needs which furthermore have been diminishes the mobility of the individual. There is no facility of face to face interactions in E-Learning which has been served as a ground to introduce M-Learning in the field with facilities of wire-less network and mobility and sensor system attachment with mobile paves for introducing U- learning in the criteria (Criollo-C et al., 2018). U-learning along with it brings some specific features which absent in M-learning such as 'dynamic grouping', 'interactive examination', 'creative scenario-based learning' and many more.

Basic Comparison in Approaches of E- Learning, M-learning and U-learning

Basic comparison has been helped to realise paradigm shift and difference as well as similarities in approach. Again, it helps to realise what learning helps an aspirant in what way.

Table 1: Comparison between E-Learning, M-Learning and U-Learning

Topic	E-Learning	M-learning	U-learning
Features	Synchronous, asynchronous and holistic distance free learning	Synchronous, asynchronous holistic distance free learning at any time at any place	Synchronous, asynchronous, holistic distance free learning with sensor learning support
Concept	Learning has been done at right time, right place and in appropriate manner	Learning has been done at right time and place	Learning has been done only at right time and fixed place

Locus of Control	Self- motivated & self - directed	Active user	Active user with sensor facilities
LT tools	PC, Notebook Computer, Internet-supported device	Mobile devices like PDA, Cell Phone, Portable Computer without wire connection	Sensor supported technologies in mobile devices and Wire-less communication
Learning Ambience	Passive online receiver	Real World and passive online context	Real world and more active online context
Pedagogy	All pedagogical theories	All pedagogical theories including project-based learning, authentic and scaffolding	All pedagogical theories along with project-based learning, authentic learning, scaffolding, cognitive apprenticeship
Permanency	Lose their work	Learners lose their work if device is changed	Learners never lose their works
Interactivity	Limited Interaction	Learners can interact with peers, teachers, and experts in specific environment	Learners interacts with all through interfaces of U-learning system

Furthermore, tech-oriented society and the need of life- long learning also changes the pedagogical basis of education. Knowledge society gladly grabs all the tools and techniques which transform the society as well lives. Technology has proved itself as a blessing for socially disadvantaged people and children with special needs (Bhattacharya & Pal, 2021). Shifting of pedagogy confirms shifting of locus of control as per needs and demands of the society. Along with shifting of pedagogy the role of teacher's students towards their contribution and teaching learning process also have undergone a change. The number of research paper had been published throughout the world were approximately getting doubled in number and this situation has been presumed to be got repeated between 2016 and 2020. India on her own self has been published 1,36,000 research articles in the genre of science and engineering in the year 2018 with an acceleration rate of near about 11% yearly (Contact North Nord, 2020). Today's informative society doesn't exist within syllabus and curriculum, it rather encourages to apply knowledge, using skills such as rational thinking, critical utilisation of knowledge, independent and priority-based learning, exercising the knowledge of information technology which require active learning to address. The rapid growth of employment creates a havoc impact on work field with rapid changing on work field. The entry of matured students, students amalgamating work with study look for flexible learning approach. Students need to be developed along with academic skill must competent with technical and computer literacy skills and these scenarios breed up the necessity to mingle traditional learning with the flavour of technological approach whose fine tuning is termed as blended learning approach. The new version of tech savvy approach is U learning which satiate anytime, anywhere and any size learning.

Teaching & Assessment Strategies in U- Learning Ambience

An assessment or evolution is conducted in various situation parameters which are five in numbers accumulated in U-learning environment to get whole preview.

Situation of the Aspirants beheld by the system: includes the location, arriving time, heart beats, blood pressure etc.

Environment related situation perceived by the sensor: location, temperature, weather condition including humidity, components of air and all the parameter related with environment

Feedback from the Sensor of the device: all the pictures and information related to environment and nature.

Personal data derived from database: learners' learning portfolio and profile such as beginning time of learning activity, duration of it, place of learning, sequence and pattern of learning, difficulties etc.
 Environment Data received from Database: detailed database of learning site
 Based on this the model of U-learning is prescribed which can help to evaluate learning activities of students and also draw a difference of behaviour based on real word ambience and online behaviour.

Table 2: Application Scenarios of U-Learning

Model Name	U- Learning Strategies
Real world learning with online guidance	Students learn in the real world and is guided by sensor based on his steps. Suppose a student does a math, hints and guidance are provided by sensor based on his steps and wrong approaches are corrected
Learning the real-world scenario with online support	Students learn in real world and support is supplied by the sensor collecting information from World Data Bank. Suppose a student learn a lesson on the work of river on plain, necessary pictures and supportive information are delivered automatically at student's help
Online Test	Students give their respective answer through mobile device. E.g. name of the protagonist is shown in the picture?
Connection between online and real world	Students can be questioned to find out structure of a bean seed what he/she observes in online class.
Data collected from real world via observation	Students are asked to collect data from the real world and send data via device. Make 10 sheets of herbarium and send those as pdf file.
Collection of data in real world via sensor device	Students are asked to gather data from real world and upload them via device. E.g. Find the three sources for which air is contaminated and upload them through device
Identification of object	Students are instructed to provide their answer through device. e.g. find out the deciduous tree near you.
Observation of learning ambience	Students are advised to provide their answer through device. e.g. find out how many types of herb plant in the garden.
Problem Solving via experiment	Teacher delivers lessons on lever and asks students to make an object of each type of lever including a complex one and describe it by showing why it is considered what. e.g. Students take help from internet and make it following the hints.
View on real world through online data	Students are asked to show the position of India as per Global Hunger Index and also asked to find out the cause behind it along with draw a solution. Students search data on it through device and make the presentation
Dynamic Grouping	A group of students, two separate individuals and many more are asked to work collaboratively on a single issue by collecting data from real world and get the reason and solution by group discussing. e.g. collect data from different class about father's occupation and the particular students' performance and bring out the picture of relationship on it.

Teachers' Role in U-learning

With the change and shift of paradigm, teacher's role has been changed also from the conventional teaching methods.

They have to analyse the learning pattern along with the characteristics of students. They have to supply content as per their learning outcomes and needs.

They have to keep in mind while delivering lessons in blended learning or only u-learning platform about creating learning materials as per the pedagogy of u-learning along with competent with andragogy.

- Teacher has to be competent with creating different u-learning materials on the same topic with various approach as per students’ portfolio in view of making lesson more understandable and for bringing out the most desired learning outcomes.
- Teachers need to have command on multimedia approach for creating competent learning contents.
- Teachers need to have desired credibility to moderate online discussions
- Teachers should know the skill to monitor students in online
- Teachers need to have command over creating automated knowledge assessment.

With students from different part of the world, teacher can able to build a world community to share knowledge and culture to promote ‘learning to live together’. It is the priority of this era in global village to stop bloodshed and war.

Again teachers through knowledge sharing with the students of different part of the world by making a world community can make students aware about disaster management and helps them to overcome different psychological sufferings (Bhattacharya & Pal, 2020b).

The Probable Framework of U-learning:

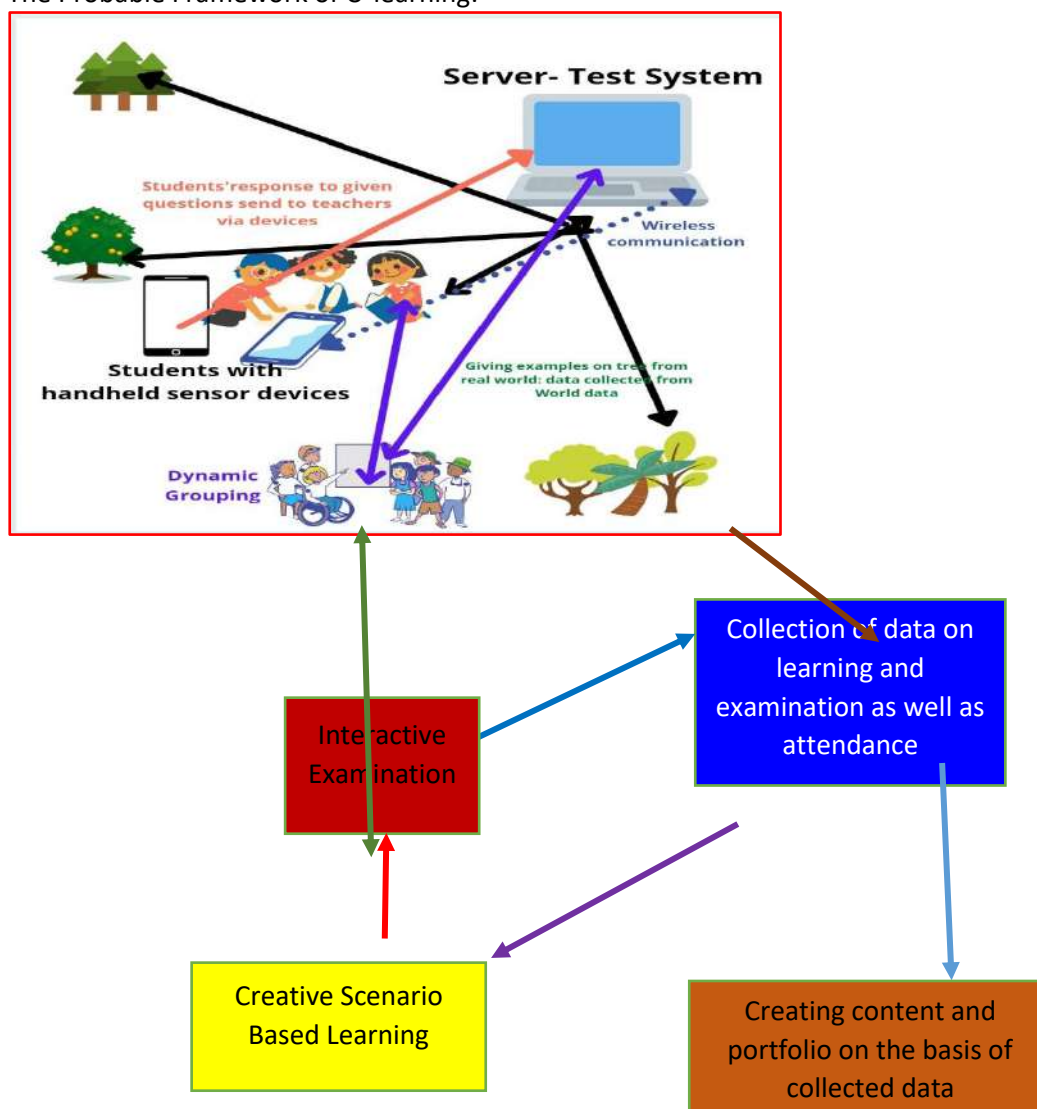


Figure 2: The Probable Framework of U-learning
Source: Author

Challenges

Poor economic condition of maximum parents is unable to provide smart device with constant network connections.

Low-cost devices have very poor storage facilities

Teachers are not competent with usage of smart devices

India Government does not have any proper blue plan regarding that

A lot of grants are needed to promote this programme with desired success

School's infrastructures are badly needed to be upgrade to avail this facility

More researches should be done on methodological and pedagogical approaches for fruitful implementations of U-learning

Devices have to be invented for low radiation exposure and for benefit of students' health

Conclusion

There is a lot to go before adopting and implementing U-learning fully. In this paper, a lot of focus is made on how the paradigm shift from conventional classroom scenario to e-learning then m-learning and now gradually U-learning has begun to knock our door and is tried to figure out the possible shifts in this regard. Again, in this article we elaborate proposed varied models of U-learning activities indicating various parameters of it. Furthermore, how the real world and problem-solving approaches of students can be enhanced by context aware U-learning environment has been elaborated here. The pros and cons of this transformation should be in calculated to bring out desired learning outcomes and quality education. The key for success of this new trend is to have a learning paradigm that could address such limitations and maximise the benefit of ubiquitous learning environment that is 'anytime, anywhere'.

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