
An Exploration on Evolution in the Teaching and Learning System

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Abstract

When the whole world is going through a pandemic, a global shift in the teaching-learning system has become a necessary measure. The physical classroom lectures are replaced by the virtual classroom lectures with the help of technology and resources. But was this shift really required? How will this change affect the lives of the students and the teachers? Is it beneficial for the learners or one should resist the technological changes? Researchers and analysts opines this global pandemic as an opportunity for the students to learn new and extra skills which would give their careers a thrust start, yet some analysts believe that this new and advanced pedagogy is robbing the students off of their moral and ethical conduct. Online education is both a boon and a bane, where it is proved to be advantageous it also carries along with it its own disadvantages. For students suffering from poverty, it is a great opportunity as it cuts the costs and time of travel and the fees for the courses. It is comparatively less as compared to the offline courses but while it is beneficial for these students we must also consider the fact that some of these learners might be the first-generation learners and might not have the same resources or opportunities or knowledge as others. If efficiently used online education can prove to be very beneficial, a student has to be determined, motivated and dedicated when it comes to attending classes which are not supervised. This paper intends to explore the role of ICT's in the teaching-learning system and its impact on the skills, patience, determination level and working ability in an individual.

Keywords- Online learning, traditional learning, E- learning Industry, student centered learning

Introduction

As quoted by Kirk Douglas, “the learning process continues until the day you die”. With the whole world facing the pandemic and capitulating to national quarantines, it had almost become impossible for the mentors to impart the required training to their entrants until the introduction of electronic learning. The sole purpose of these classes is imparting knowledge and it largely depends on the students whether they take or lose the opportunity. Online teaching is on rise in this decade and the current pandemic situation has taken it to every nook and corner of the globe. It is widely preferred due to its convenience and flexibility and the plethora of platforms available for the same. The current Coronavirus pandemic has brought about a tremendous evolution in the teaching and learning process and its assessment system.

Traditional education

The conventional education system is one where the teaching and learning is limited to classroom environment. Traditional learning environment enhances the interpersonal skills, standards of morality, and conceptual knowledge among the students. The values, social skills and manners are delivered to the next generation which is necessary for their survival in the contemporary competitive world. Benefits gained from the traditional education are not just restricted to studies but go beyond that. Interaction with the teachers, classmates and on-campus students and seniors plays a notable role in boosting one’s confidence. It refines the communication skills of an individual by openly expressing his views and thereby improving interpersonal skills that one can take to any workplace. A little bit of confidence will go a long way in securing a successful and respectable career. Active participation is the biggest advantage of traditional learning, as stated by Bonwell and Eison 1991 “students are actively involved while listening to formal presentations in the classrooms”. Analysis of the research literature (Chickering and Camson 1987), however, suggests that students must do more than just listening and must read, write, discuss, or be constantly engaged in solving problems. Most important, to be actively involved, students must engage in higher-order thinking tasks as analysis, synthesis and evaluation. Also, if a student considers major in practical subjects such as those in natural sciences, economics, medicine or engineering, traditional classroom method becomes a mandatory course of action, as it familiarizes the students with the equipments and tools that would be required in the respective fields. Practical learning improves the experience-based learning in an individual and enhances their working skill and self esteem. The easy access to library, labs and research material gives a comprehensive idea about the topics being studied by the students. As the students were being taught using the conventional pedagogical approach for many years, it is seen that this method is a little flawed when it comes to adapting to the modern or the contemporary learning.

Online education for a blended learning

The most widely used form of modern education is electronic learning through online classes. Electronic learning or e-learning platforms are where an individual acquires

knowledge and training using the modern technology and digital resources. E-learning evolved with time, the use of transferring information over emails or on internet has upscaled to the use of images, videos, graphics and presentations for explanation of various topics and methods. This makes learning more engaging and fun for the students as compared to the traditional methods. The web-based training is tailor-made to fit almost everyone's schedule and students can attend classes while doing other skill developing activities as well. This is highly beneficial for students who want to gain education but find it difficult to attend physical classes due to varied reasons. More than 6 million students are currently enrolled in online courses as part of their higher education program. Out of those almost half of the students enrolled in online courses are educated exclusively through distance education. The resources provided by the institution can vary from e-books to journals to recorded lectures or quizzes or discussion forums. As quoted by Matthew Guyan "think about what your learners need to do with that information after the course is finished and design around that", online classes serves the purpose of enhancing the skills provided by the traditional classrooms whilst keeping in mind the au courant needs. With the coming of online courses there are a boatload options of subjects that can be studied by an individual simultaneously, it helps a student refine his time management skills with the ability to meet deadlines, because the online courses save time and cost on travelling and books, the students have plenty of time and resources to research in depth about the topics studied in the course. They have access to courses across the world which provides them with the opportunity to interact and communicate with people from different countries. This makes them culturally sensitive and much more diverse and adaptable to fit in wide ranging environments when compared to students who did not have the opportunity for the same. The availability of experts and online recorded lectures are two of the most attractive features of online education, students can contact the subject professionals at any time and their query would be solved in no time. When it comes to repeating or revising any topic, learners have the access to recorded lectures which prove to be most beneficial at the time of competitive examinations.

Types of online learning

Cyberspace classes provide students a wide variety at their disposal to choose from the available type of online classes tailored to match their comfort. Some of the options available are computer managed learning (CML), computer assisted instruction (CAI), synchronous online learning, asynchronous online learning, fixed e-learning, adaptive e-learning, linear e-learning, interactive online learning, individual online learning, collaborative online learning.

Computer Managed learning is the computer-based learning done with the help of presentations. The computer program is specialized in evaluating, record-keeping, retrieval of reports and controlling lessons. It is an aid to the teachers and helps them bridge the gap by periodically updating the learner's performance. When it comes to the computer assisted instruction, teachers have the liberty to prepare quizzes and questionnaires with the automated answers. This is a fun way for the students to learn and practice questions at any

time. Synchronous learning is the live class sessions through video conferencing or in-person classes. It follows a systematic way with a proper schedule where the teachers and the learners are present at the same time. Asynchronous online learning is the learner-centered online teaching method where the students or learners can study according to their time line. With this method an individual is able to keep track of his classes, one can skip a class and recover it the next day.

The recorded audio books, lectures, videos require less data as compared to live sessions, inspite of good network connectivity, students may face network issues which creates hindrance to their understanding of a concept. Asynchronous method is preferred over synchronous method as it is flexible and allows an individual to work according to their will and comfort. When it comes to fixed electronic learning, students do not have much of a choice as the content or synopsis shared by the teacher is the same to all. There are little or no interactive sessions this is where adaptive learning helps. With adaptive learning the content provided to the students is according to their abilities, performance, interests or knowledge. The study material is personalized to the use of the students which helps in achieving the desired goals. Linear online learning is the passive form of education such as television, radios and newspapers where the time when a receiver receives message or some information is decided by a sender.

Unlike linear learning, interactive learning is the active form of communication where the time of receiving any message or information is decided by the receiver. The other two forms of online learning are individual online learning and collaborative online learning. When an individual opts for a course alone it is termed as individual learning. The practice, problem solving and brainstorming sessions focus on individuals' development. In collaborative online learning the individuals opt to learn in groups. This enhances their interpersonal skills and inculcates discipline, commitment and encourage active participation, students in a group also keeps a check on their partners work which helps to broaden the creative side and enhance the quality of the work or research.

Instructor's tools and practices

Online education system can be either complex and varied or simple and direct, it depends on the programming software that is used to create the required platform. Some of these widely used software in the making of these tools are Microsoft visual studio, Developer Center, Channel 9, Office Dev Center, Application Programming Interface (API), Webhook, Software Development Kit (SDK), Optical Character Recognition, VooV meeting, Tencent Real Time Communication, Media Processing Service and ByteDance, P2P Network (Peer-to-Peer Network). The applications and software used for the electronic mode of education uses programming or coding to develop websites, web applications, web services and mobile applications which connects two or more server and client computers to share resources and documents. Millions of individuals use this user interface to conduct and attend online classes. It gives the user the liberty to have face-to-face meeting and share study material in the form of files, documents, resources or graphics. Some software uses

cloud- based multimedia transcoding which is capable of performing adaptive transcoding for audio and video files. Software such as SDK or Software Development Kit has all the tools required for developing an application in a single package.

Navigating a student-centered learning

Maryellen Weimer in her book “Learner-centered teaching”, opposes the teacher-centered learning pattern in the following five points: (1) the balance of power in classroom; (2) the function of the course content; (3) the role of the teacher versus the role of the student; (4) the responsibility of learning; (5) the purpose and processes of evaluation. In a classroom be it the offline mode or the online mode of education the pedagogical method of teaching should be learner-centric. A learner- centered education is customary, habitual and expected procedure of doing things based on their skills and abilities. These results are compiled by the software by recording his or her progress over time. The mentor can likewise initiate participation and retention of knowledge by conducting various brainstorming sessions, extempore, improved communication and giving students the opportunity to make selections from the different learning modules. Student-centered learning helps improve self-confidence, enhances the public speaking skills and makes an individual capable enough to make their choices wisely. It increases their problem-solving abilities, aptitude and intellect which otherwise is not possible in a teacher – centric module of education. “Interacting is the key to improving when it comes to the specific”. Learning about the students and providing them the suitable platform not only increases their determination and consistency but also makes them morally and ethically aware which is the ultimate goal of student- centered education.

Pros and cons of online learning

Online education has its advantages as well as disadvantages. The key difference between both the classrooms is that one is held physically whereas the other takes place virtually. Both the classes provide exposure to the students. With the whole world shifting to the online sources for continuing with their education, there are certain disadvantages faced by the students and as well as the teachers. The lack of facial or classroom interactions might make the lectures boring. Where students only have to listen to what the teacher has to convey, it becomes really difficult to focus on the subject without getting distracted or captivated. It requires great amount of self- discipline, motivation and determination to attend teacher-centered classroom. It discourages interaction, creativity, ideas, collaboration and brainstorming sessions during the lectures. The assignments, practice papers, and research works are all relied on the internet. These are troublesome as all the study material might not be available and compiled in a single document and teachers and students might have to spend hours researching on a single topic, it has increased the workload both for the teachers and the students and elevates the work related pressure and anxiety. Online classes may be great for theory subjects but when it comes to the practical subjects the students require first-hand experience and constant supervision. The teacher might use the different multimedia options for this purpose but this does not solve the problem as it does not help

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students getting familiarized with their tools and equipments. Usually in practical subjects' students work in groups of two to six but this is not possible with the electronic learning, this creates isolation among the students and they are less likely to get involved in the training. When it comes to teaching it is important for the mentor to evaluate the performance of the students, cycle tests and examination is a great source of evaluation of a student understanding of a topic. But as far as the online classes are concerned students have the option to commit fraud by copying or cheating during the examination. It is not really possible to prevent cheating without supervision. In many public school's mid-day meal is provided to the students which resulted in high enrollment of students, whereas in the current scenario, with the mid-day meals gone, many students are not willing to attend schools and are rather focusing on the means to earn bread for them and their families and hence dropping out of schools. It has reduced the opportunities for the down-trodden communities, the vulnerable and for people living in the rural areas. Some of these might be the first-generation learners and might never get the same opportunity to improve their lives. Online education is completely dependent on the technology and network which means for people living in areas where there is yet no network facility available, they will not be able to pursue their education any further. This takes a toll on their mental health as they lose sight of their future and are left with no choice but to indulge in the traditional family means of livelihood. With the lack of proper infrastructure and environment for studying students are facing health issues. By attending the virtual classes every day for five to six hours the students develop sore eyes and the use of headphones or earphones triggers headache which lasts for longer durations. Lack of proper seating arrangement at home gives them a chronic backache which can be a cause of concern in their future as well. But as W. Clement Stone quotes, "To every disadvantage there is a corresponding advantage" and we would likely agree to the new doors opened by the online education for us. The introverts and hesitant students are able to learn more efficiently as they need not be physically present in the classrooms, this saves them time and energy on focusing on the surrounding people and instead makes sure that they concentrate well on their lectures and grasp better as compared to the physical lectures. As online classes focus more on skill development, learning and knowledge through quizzes, questionnaires, presentations and graphics students have a better hand at understanding the subjects and topics. The biggest advantage of this mode of education is that the learner can enroll oneself for more than one course, they have the option of opting for courses other than their degree programs with the boatload of available curricula across the world, this helps them in improving their knowledge and enhances their expertise and practical intelligence. Online classes give the ease and comfort with which the students can easily attend classes from any part of the world while running errands, this results in increased attendance and students are now willing to participate and interact more than usual. There is little or no pressure from the associates and students can learn the way that suits them. The education system is tailored to fit individuals' interests and needs and is based on individuals' performance. The program keeps a record of the progress and patterns

of the students which allows the teachers and mentors to cater to the needs of the students and adapt to the lectures likewise. Furthermore, teachers can quickly assess the understanding by posting quick quizzes or subjective or objective type questions. Online education mode also saves travel time and cost as students need not travel places to attend lectures, it can be done sitting in their bedrooms or study area. If someday a student is not able to attend his classes due to any reason, he can cover the topics later with the option of recorded lectures.

Strategies for effective facilitation

In the wake of the pandemic, the education sector is forced to change its teaching method and resort to the online services globally. While this method has proved to be a bane at some places it is coming off as an excellent mode of education at other. The technological teaching and learning are new to both the teachers and the students, it is necessary for the mentors and the learners to understand how these classes work before jumping right into the classrooms, only then will one be able to fully take advantage of this mode of education. For the starters, it is very important to find the e-learning technology that caters to their needs, this includes software programming that let you share audio, video, presentations, graphics, write-up, digital board, files and documents whilst attending the class. Choosing the type of software is important as that is the only medium of connection between the student and the teacher while learning the subject. The next important step is to have a stable network connection, as these classes are conducted online a poor or unstable connection will only cause hindrance in learning. In order to effectively impart and perceive information it is important for both the parties to have a stable connection. One might also keep a backup network handy just in case something goes wrong with the main connection. As the interaction is only through computers it becomes mandatory to make the learning more engaging, this can be done by constantly putting up questions by the mentor and by responding to the questions making the classrooms interactive and fun. Such brainstorming sessions can be conducted in order to comprehend the understanding level in a student.

The video lectures can also be made enthralling by the use of the polls, questionnaires, quizzes, subjective and objective type questions. This has two major benefits, one, it lets the mentor know about the grasping level in a student and two, it makes the education more student- centric. It is important to prepare the topics and activities beforehand as it proves to be beneficial and saves time, rather than figuring out what to do the teachers can meticulously pay attention to the students needs and patterns. To make the classes a success it is not just the faculty who should upgrade their skills, the students equally needs to play an active part and engage themselves in the classrooms. They should respect the efforts of the mentor and help in conducting the classes in a smoother manner. This can be done by communicating to the teacher, asking doubts, interacting on social happenings related to the subject, taking part in classroom debates, completing the worksheets and assignments provided by the mentor. By adopting a two communication process the learning can become more delightful and engaging.

E-learning industry

Electronic learning or e-learning industry provides its users the platform to carry on with their learning experience on various operating systems. Some of these computer programs provide the user with organizing lectures with the help of audio and videos while some other computer programs are specialized in using audio, video, graphics, presentations, screen-share, transferring of PDFs or documents, etc. the options given by the industry are numerous depending on the needs and requirements of the user. Some of these widely used platforms are Microsoft Teams, Zoom Application, Google Classrooms, Skype, Eyeson, GoToMeeting and Jitsi. The common features shared by these software are that these software can be used on any devices as websites, web applications or mobile applications. They are user friendly and give a wide variety of options to choose from, from scheduled meetings to setting timetables, making a separate group for each subject, live-in video conferencing, sharing notes, sharing screen and presentations in the form of PDF or word documents or even PowerPoint presentations are some of its features. Other than these applications Tencent (Cloud and Education), Lark, DingTalk (ZJU), Los Angeles Unified School District and PBS SoCal/KCET, BBC Bitesize Daily along with BYJU's and many others are helping in educating the students. Some institutions are also focusing on developing their own platforms accessible within the student dashboard to make it easier for the students as well as the teachers.

Embracing the change

It is a known fact that this pandemic has affected lives globally, be it the education sector, business sector, agriculture sector, everybody is affected by the change. But changes are said to be the only constant, it is up to us to let a change recondition our living or embracing it gracefully and gaining the maximum we could. Online education opens new and wonderful ventures if utilized properly, it has been operational ever since and has changed lives as well. One can constantly criticize the situation and stop working or find new opportunities to build up his intelligence. Seeing change as a positive outcome and responding to the situation in an appropriate manner is important. Doing so changes and gives you a new perspective to life. It makes our everyday tasks livelier and more enjoyable.

Rationality behind online education

When a disease is contagious and spreads at such a faster rate that it becomes a compulsion for the government of any country to protect its citizens. COVID-19 affected the countries globally, the best decision by the government for the people was to shut down the countries in order to prevent further spread of the disease. Shutting down the countries meant imposing lockdown which is complete isolation of people in their homes. This is an emergency situation which requires home quarantine and closing of businesses and other non-essential outlets. Education is the part of the society which is important but has alternatives. One can attain their degrees without actually attending the physical classes in distance learning modules, this was the idea behind conducting the online mode of learning for all the students across globe. The plan was to change these online distance modules into

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regular classrooms to prevent a student's year getting wasted. Nobody knew the exact amount of period quarantine would take, yes it couldn't go on for forever as it disrupts the economy of a country, Sooner or later the country is to come out of the lockdown while maintaining the standard norms of protection, but the question that still remains, "will all the students be able to perform the required standards of protection?" the answer was no! but a decision has a to be made. The safest way to conduct classes was through the electronic medium where a student would be able to attend their classes while staying at their place, safe and sound. This also proved to be a good idea as nomatter what stretch the lockdown covers, the students would not waste their crucial time by sitting ideal at home, unproductive. A gap of two to three months brings a lot of change in a child's learning behavior hence it was mandatory for the educational authorities to bridge this gap by conducting the classes on electronic platform.

Conclusion

"Education is not the learning of facts, but the training of the mind to think. Education is what remains after one has forgotten what one has earned in school." As rightly said by Albert Einstein, they are the skills and knowledge that are required in the real world. We do not always require degrees to excel in our respective fields, experience and familiarization of the subject is equally important. With the change in the learning techniques, it is evidently seen that experiential knowledge is added to the curriculum on a large scale. The new education focuses not just on achieving degrees but also nurturing in a learner his skills, developing his potential and giving him the required experience and opportunities in the field, and the list goes on. Adaptation to the changing trends is very important for human growth, capturing the right opportunity at the right time is important for the overall personality development along with getting the desired success. In today's contemporary competitive world, it is important to develop extra skills in order to stand out. Humans have the ability to perceive things the way they want to, if we think about the positives of the pandemic and the opportunities it has provided, we would channelize ourselves on the improvement factor and constantly work for the results.

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