DISRUPTIVE TECHNOLOGIES IN EDUCATION: A REVIEW

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Abstract: Disruptive technologies in recent education system cannot be denied. Technology transformation in education system provides students a cost effectively scale education. This paper reviews the research on the subject of disruptive technologies in education and found that many disruptive technologies are there such as Online resources, internet of things, virtual reality, artificial intelligence etc. that have important impact on higher education system around the world. These technologies are now widely used to support learning and teaching. Use of ICT helps students to reach the resources which they need in their learning process. Online delivery of different courses such as MOOCs at lower cost makes it easy for employees also to combine work and training. Mobile technology is also useful not only for learners but also for teachers to connect with the students from anywhere, anytime that makes learning more collaborative and effective. However some studies found some negative results also as huge investment is needed to implement these techniques in higher education system.

Key Words- MOOCs, Artificial intelligent.

I.   INTRODUCTION

Before the age of computer and digital communication technology, traditional classroom education has been used for the transfer of knowledge from teacher for the student and high dependency was there on the capabilities of the tutor. Knowledge transformation was also limited in time and space by the resources available to students such as libraries etc. But the scenario is change now. There are many digital technologies are available which have high impact on education system (Wortley D.J., P C L., 2017. Also due to globalization, there is a pressure on nations of the world to use new technologies in teaching. There are many technologies have disrupted both our every day lives and commerce (e.f. the w.w.w., wifi, google etc.). Many disruptive technologies in education are also introduced and the students (according to their needs and teachers can use different technologies controlled by different higher education institutions to support and entire their learning and teaching (Flavin M., 2012). The use of ICT is rapidly changing the technological forces that will shape the structure of educational systems of the world (Kingsley A., 2017).

The role of teaching in a classroom is to help students who are slow learner and to catch up them with other students. But what is about them who are faster at learning? For those students, there are additional courses according to their interests to fulfill their requirements of free elective students. MOOCs is there to enhance online learning with technology. The teachers can post their instructions online to participants through MOOCs, which is helpful to students to know how to complete the course. The integration of online course material can increase interaction among students and between the students and the teacher, for exp. through virtual group work, building an online community for module, discussion questions, instructor participation and so on. A number of institutions offer virtual distance learning which allows teachers and students to interact with each other. Digital technology thus provide the potential for establishing communities of inquiry in which elements of social presence and teaching presence interact to create an education experience (Lichy J., Khvatova T., Pon K, 2014). Disruptive technologies are also provide an opportunity to those students who can't not come to traditional institutions due to scheduling issues. There are other disruptive technologies also which are useful in education such as cloud learning, mobile learning, e learning, artificial intelligence etc. (Kricka L.J., 2016) and are mentioned in the next section of this paper.

II.   DISRUPTIVE TECHNOLOGIES IN EDUCATION

Online learning

This allows students for using class online. They can see the detail of courses, duration of courses, number of lessons etc.

MOOCs

It was started in 2008 and is the short name of massive opening online courses, which can use for unlimited participation and open access is the world wide. It was introduced for students who are learning from distance. In these courses, the material is by educational institutions, who have license of these courses for completions. MOOCs will disrupt different educational institutions in different ways.

LMS

It comes from learning management systems. It have different features such as student teacher interactions, courses collaboration, delivery content, master courses, practical and exams, connecting programmes, online assignments of students etc. It can enhance the learning experience of students with the help of video recordings and presentations with recorded audios. It can create a different kind of continuous learning experience which is not restricted by a single lecture but by repeating the reading material.

III.   LITERATURE AVAILABLE ON DISRUPTIVE TECHNOLOGIES IN EDUCATION

Jones M. and Lau A. explore e learning's potential as a change agent for higher education as a case study and highlight how the emergence of new demands through an e- learning project in university adapting and evolved to a new teaching. The author also discussed learning and teaching pedagogy, organization structure, teaching, strategy and management and culture of university. In this paper, e -learning described as a change agent for university and conclude that e learning helps to support changes in teaching and learning.

Lafferty S. and Edwards F. (2004) relate the christensen's theory of disruptive technologies o academic libraries and higher education and also explain this theory in detail. The author concludes the effects of the theory of disruption on universities, their libraries and academic publishing together and separately.

Flavin M. (2012) concluded a survey on 28 peoples (students and scholars and also included six lecturers and four academic related staff) for the time period from Nov. 2010 to March 2011, using a questionnaire and found that the respondents have limited awareness of emerging technologies. 15 respondents use teaching for formal learning and 16 for work. A new survey in Oct. –Nov. 2011, was conducted on four students and 3 lecturers and found that 12 respondents use technology for work and 10 for formal learning. The results of interview conducted in Feb. 2011 of two participants shown that the first respondent (the lecturer) said that the student use their own preferred technologies for learning, does not prefer the learning techniques supplied by their higher education institution. The second respondent (the Post graduate student) was unable to construct a personal meaning of disruptive technique in teaching. The observation study show that the participants using narrow range of technologies. In the structured interview conducted in June 2012 on a lecturer and two students show that where the students get the resources. They use for assessed work and her students prefer google scholar as disruptive technology.

Sankar S. (2012) explained the use of ICT in higher education. The study concluded that the use of ICT in education are mainly due to large classroom size and increasing access to education. The use of ICT provide an environment to students and teachers to enable the storage and the sense of information materials.

Lichy J., Khvatova T. and Pon K. (2014) analised the approaches which are used for technology led teaching in two different institutions and the factors which are critical to the success of those strategies. Documenting general information, direct observation and face to face interviews methods are used to reach the objectives of the present paper. In documenting sources, number of macro literature aspects such as the higher education environment, technological considerations etc. were used. In direct observation method, the author list the Russion institution and the French institutions to collect information about their culture and their capacity to teach with teaching. Face to face interviews was also conducted between Jan. and March 2012 with teachers in the above institutions. The sample was composed of teachers from both the institutions and invited by e mail in Dec. 2011 to have their experience of using technology for teaching. The findings show that both the institutions are struggling with the same issues regarding implementing new technology. For exp., managers support staff and teachers are facing difficulty dealing with user friendly of the institutional plateform. Moodle was used by teachers of French institution and faculty mostly deliver oral lectures by PPT. In French institution, the plateform spiral is available to faculty and mostly classes are taught by PPT. Laptops are not allowed in classroom. The data retrieved from direct observation, shows that less than 5% of total faculty have adopted the plateform for teaching. Older staff are much less likely to use new technology in classroom compared to younger staff who are familiar with modern ICT. The staff should be encouraged to use it before the implementation of it.

Ahmad T. (2015) emphasized to assist teachers in preparing for the future of higher education. The author describe internet as disruptive power. Fear, anxiety and lack of confidence were discussed as the basic obstacles in using the new technology in teaching especially by old teachers. On the other hand, job security, compensation, tenure, promotion and career advancement were linked with the increasing use of technology in classroom. The author explained MOOCs, web. 2.0 technologies, mobile support devices s the present technology plateform. For future, the Augmented reality (AR, 3D images and workspaces, mash up models in AR etc are the future teaching plateform in education. The author also discussed about how the academies and student can make learning partners with each other.

Borge M. (2016) gave uses of artificial intelligence tools in education such as AI can automate the basic activities in education, students can get additional support from AI tutors, better feedback from students to educator, AI could change the role of teacher etc. According to the author, AI can assist teachers by teaching in the management of their class and help to deliever higher standards of teaching. The process of learning and teaching, with the help of AI is explained in this paper. At last, the conclusion is that AI can identify the root cause of problems and also drive towards more consistent outcomes across different classes, regardless of the experience of the teaching staff.

Hilmi M. F. (2016) discussed about the advantages of Massive Open Online Courses (MOOCs) in higher education and give recommendations that it is important to recognize the nature of disruptive technology in education according to individual needs.

Pathak K. and Manoj N.K. (2018) gave light on the need, role and importance of ICT in education. Easy access to learning resources, learning -any time, any where, distance and online learning, better teaching make interesting and up to date etc. are the different needs of the ICT in education. Learning management systems, student management systems, online collaborative workspaces, virtual classroom software system, laptops etc. are different categories of ICT described in this paper. Cost effective, remove social and economic barriers, creation of independent learning environment etc. are the advantages of ICT in education. There are some disadvantages also mentioned in this paper such as requirement of high investment, problem of accessibility, difficult evaluation, ignore individual needs etc.

Karsenti T. (2019) gave some concepts of artificial intelligence used for education, namely big data, algorithms, machine learning, deep learning etc. The author also gave 26 positive impacts of artificial intelligence on education such as personalized learning, greater academic success, ongoing students assessment, teachers can adjust their courses using MOOCs, intelligent tutoring plateforms for distance learning, education feedback, adapted teaching content, more learning, immersive environment, dropout prevention, home work assistance, better classroom management etc. The paper conclude that there is a need to prepare teachers by training to work with artificial intelligence. AI have already an influence on individual and society, so we need to develop critical perspective on AI issues. To make AI real contributing to academic success for all the students, the teacher's role remains central. Finally, the conclusion was that the uses of AI must be carefully planned by the entire spectrum of the teachers and learners.

IV.   CONCLUSION

The technology needs to be kept in perspective, as a tool to enhance learning. Teachers felt that roll of the institution is to deliver more than mere academic facts, students need to develop their interpersonal skills. For this reasons, teachers need to make every effort to ensure that students are able to use the technology intelligently and critically in order to succeed in today's online global workplace. Teachers maintain that technology is not to be considered as a finite entity, it need to be carefully integrated in to the culture of the institution. Above all, technology enhanced learning needs to be approached with caution, in order to not lose sight of the basic fundaments of higher education. Give sufficient training to teachers to use the technology and to be able to pass those skills on the students (Lichy J., Khvatova T. and Pon K., 2014).

Some disadvantages are also mentioned in some papers that huge investment is required to change the teaching culture and there is a need to change in mentality, installing new technology is not enough for people. Even when the technology is freely available, faculty need to be nurtured in to trialing new methods of teaching.

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