KEY ELEMENTS THAT DRIVE INNOVATIVE TEACHING & LEARNING IN HIGHER EDUCATION

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Abstract
Teaching and learning are two essential components of any academic/education system which are also two qualitative factors, too. The advancement of ICT (Information and Communication Technology) has changed the way we experienced the facilities of integrating IT (Information and Technology) and Communication in almost every facet of our life, from business to education and entertainment. Academic policy planners and other key personnel of the education sector are always putting much of their efforts to make the teaching process more effective so that the students can get exactly what the teachers are destined to deliver. This paper will briefly discuss about the key driving elements that could bring significant impact on innovative teaching and learning, particularly in higher education.
Keywords: Innovation, Higher education, ICT, educational technology

What is Innovation in Education?

Innovation is one of the fundamental building blocks of the learning process that is much needed in higher education where both teachers and pupils are working hard to innovate newer branches of knowledge and implicate their learning and innovation in reality. IT and ICT has brought more scopes and opportunities to make both teaching and learning process more innovative and interactive. The followings are some key factors that drive innovative teaching and learning in higher education.

CCR - Creative Classroom

The concept of creative classroom is the pivotal prerequisite for innovative teaching and learning process. Creative Classroom, which is shortly known as CCR is a concept, that ensures an innovative and effective learning environment by embedding the tools and features of IT and ICT for a better learning and teaching practice. Here, the term 'creative' reflects the culture of innovation in both teaching an learning by integrating some core elements of a modern education system including active and creative learning process. One of the central purpose of Creative Classroom is to enable the participants (both teacher and student) to communicate more interactively and get robust and instant access to required resources and learning materials. Creative Classroom also has a significant role to improve the relationship between the teacher and students by being visible and communicate with more participants in usual/conventional classroom concept. Furthermore, Creative Classroom also allows its participants to respond quickly to each other and speed up the whole learning process, too.

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The Dimensions of Creative Classrooms

Creative Classroom itself is a multidimensional concept that encompasses virtually every essential academic aspects and promote the idea of innovative teaching and learning by looking at the following topics:

Infrastructure of a Creative Classroom

The infrastructure of a Creative Classroom comes with almost every required IT and ICT facilities to ensure the innovative learning and teaching environment that sustains the capacity and capability to spread beyond the four walls of the classroom. Digital learning equipments must also be set up properly to facilitate the teachers and students to continue their utmost effort on innovation and creativity. According to the JRC Scientific and Policy Report: "'Creative Classrooms' are innovative learning environments that fully embed the potential of ICT to innovate and modernise learning and teaching practices."(Stefania Bocconi, Panagiotis G. Kampylis and Yves Punie, 2012)

A robust and dynamic IT infrastructure must also be designed, developed and deployed so that the users can get their access to the required resources. Virtualization, which is more

precisely known as Cloud Computing, also has a great impact to confirm an excellent infrastructure, required for Creative Classroom.

Teaching culture of a Creative Classroom

It is a big challenge for teachers to cope up with the Creative Classroom and they are also the key personnel to reach the students and make them feel comfortable with this new and innovative style of learning. The most crucial part of Creative Classroom is to let the teachers blend the innovative teaching approach to the subject matter by using and applying the available ICT facilities in order to ignite and shape the creative potential of the students in an effective manner. Moreover, the teachers must also know the details about Creative Classroom management which is quite different from usual classroom management activities. Teachers should also develop creative thinking ability and multiple learning style by improving their soft skills and teaching strength to foster the culture of innovation through learning. A good teaching practice for Creative Classroom is described precisely in '30 Things You Can Do To Promote Creativity in Your Classroom.' as: "You know that student who often asks the question that goes a bit outside the lecture? Well, engage him. Once a week, intentionally address those questions. Write them down on an assigned space in the board to go back to later. Validate their creativity." (Miriam Clifford, November 26, 2012).

Learning culture of a Creative Classroom

Self-directed and more personalized ways of learning are two core spirits of Creative Classroom concept. Definitely, the learning methodologies of a Creative Classroom are more collaborative and engaging than usual/conventional classroom. Students are permitted and encouraged to learn by exploring, creating and playing their innovative potential through Creative Classroom. Such self-regulated learning through peer to peer collaboration will help the students contribute more vigorously to the learning process. Learners should also develop an adaptive approach to experience an innovative and unique ways to eloquent their thoughts and ideas in one place. The interactivity of the students in a Creative Classroom could also be described as: "Interactivity in online education describes the form, function and impact of interaction in teaching and learning." (C Juwah, 2013, 'Interactions in Online Education: Implications for Theory and Practice').

Emphasis on leadership potential

The purpose of Creative Classroom no confined only within the issues like quality education, rather it also comes with an aim to promote the leadership quality among the learners. The main reason behind this purpose if to accelerate the practice of innovative learning and teaching culture as core part of the academic process.

Ensure robust communication and connectivity

Both external and internal resources of a Creative Classroom are designed to provide a robust communication facility to the learners and teachers through which they could stay connected with multiple factors, which is an essential part of innovative learning process. Such connectivity also allows the participants to experience a diversified learning experience regardless the language and culture of different or same geographical location.Students can enjoy an ample of opportunities to share and exchange both knowledge and views through such a robust communication facility, which they can get from a Creative Classroom.

Considering the organizational IT infrastructure

The Creative Classroom is now becoming a qualitative factor in an innovative learning system, which is mostly depends on the IT infrastructure of the institution or organization. It may not possible to get the best possible output from Creative Classroom without having required IT infrastructure. Such an infrastructure is the backbone of any IT/ICT enabled services which are considered as the key driving forces of creative and innovative learning processes.

Assessing the feasibility

It is highly recommended to asses the feasibility of establishing a Creative Classroom by considering both external and internal factors of the education/academic system. The organization or institute must develop an adaptive capacity before shifting towards integrating the concept and culture of Creative Classroom within its academic process. The true impact of Creative Classroom could only be assured if the newly developed and deployed innovative approach works perfectly and accordingly in synchronization with both external and internal variables and static factor of the organization/institute. Both formative and engagement assessments are needed to recognize formal and informal learning procedure through Creative Classroom.

The Role of ICT in Higher Education

The term 'ICT' is well defined as: "Information and Communication Technologies (ICTs) are often associated with the most sophisticated and expensive computer-based technologies" (Usha Vyasulu Reddi, 2010. Role Of Icts In Education And Development: Potential, Pitfalls And Challenges.) ICT's role in higher education is undeniable, particularly when it comes with a purpose to ensure an optimum quality of instruction. It is now becoming a necessity rather than a choice to look at the impact of integrating ICT in higher education. Innovation is one of the central functions of higher education and ICT comes with all needed tools and means to widen the scopes and opportunities for that purpose. The role of ICT in higher education is well described as: "ICT is the enabler for both innovation and education – without which a knowledge society cannot be realized, supported, or further developed". (Neil Butcher, 2012) Some key roles and impacts of ICT in higher education are given below:

<u>Quality education at a minimum price</u>

The cost of higher education is considerably high and it is one of the big obstacles that has made the issues like innovation and creativity, a luxury which many people can't afford. IT and ICT enabled academic system lower the cost of higher education to a significantly sizeable amount which allows more individuals to join on-board and explore their creative potential for excellent innovation.

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Innovation driven academic approach (revolutionary and evolutionary)

The goals of higher education always centered around the approaches and effort on creative innovation. ICT has its significant impact on this aspect of promoting both revolutionary and evolutionary innovation by allowing the participants to go through an innovative learning process. ICT in higher education can function effectively and accordingly by promoting and ensuring ICT supported and ICT enabled education in large scale.

<u>Measuring the Innovation approach</u>

An innovative learning approach driven by ICT enabled and integrated academic system could also be treated as a performance metrics to measure some key elements of the learning structures. The innovative approach initiated by the organization/institute could easily be measured when ICT has become the core of that education system. The key measuring elements for innovation in learning through ICT enables education are the capacity, capability, efficiency, efficacy and feasibility of the innovation coming.

<u>Scaling the key factors for innovation</u>

ICT in higher education also helps the organization and institutions to scale the key factors of innovation, as well. Analyzing the requirement and sustainability of a newly adopted approach can ensure the stability of such innovation driven learning procedure. ICT integrated academic system also facilitates the participants to unleash their innovative potential by facilitating entrepreneurship and intrepreneurship, encouraging different and diversified ways of thinking, enhancing both emotional and practical intelligence, increasing soft skills, innovating and renovating the required and essential services, and rearranging and reallocating the physical space.

Core ICT and Media Technologies Used in Higher Education

Digital media and digital content have a great role to foster the spirit of innovation through ICT integrated learning approach. There are two different types of media used as the key resource type for ICT in higher education and these media are known as synchronous media and asynchronous media. Technologies used in teleconferencing, online communication (through social media and/or other communication platforms and protocols), audio conferencing, and communicating through electronic media (radio, television) is recognized as the synchronous media. On the other hand transferring and sharing files through FTP, virtual conferencing, communicating through email, multimedia and audio-visual resources and web based online learning programs are known as asynchronous media. According to Pieter Hogenbirk and Peter van de Braak: "Weaknesses were the coherence in the ICT use, the perspective on new ICT developments in ICT and pedagogy, the use of ICT in teaching and the measurement of gains in learner achievement through ICT use." (Pieter Hogenbirk, Peter van de Braak, 2012, 'ICT Action School Development on the Basis of an Inspectorates Assessment').

The Challenges Of Integrating ICT in Higher Education for Innovation

It sounds good to have an ICT integrated learning approach which is a key driving force for innovation, but it also comes with a great deal of challenges at the same time. The scopes and opportunities of integrating ICT with the learning process is described perfectly as: "New technologies are often a catalyst for change in education at different levels, but they themselves do not determine the direction of change or the most appropriate type of change. Equally driven by practice and by theoretical advancements, computer-assisted instruction has various shapes and approaches, many of them leading the domain's knowledge base as best practices. Still, a number of issues remain on the agenda of current e-education programmes design and evaluation, tracing the boundaries that have to be conquered. The present article is looking towards these challenges faced by educators when employing digital application and new ICT tools." (Olimpius Istrate, 2011).

It may not possible to shape the ICT enabled learning processes accordingly if proper and appropriate strategies and plans do not take under consideration in a timely manner to deal with the following subjects:

Accessibility

Ensure the accessibility to the resource is a key challenge for ICT integrated higher education. Most of the resources are stored, shared and transferred online of any ICT enabled learning environment, and connectivity is a big issue to confirm the optimum accessibility to those resources. The IT infrastructure of any ICT enabled learning approach must have enough strength and stability so that the users don't have to face any trouble while accessing their required resource/s.

Rights on digital content

Sometimes it may not possible to all required content available in digital format due to the copyright issue. Hence, the ICT enabled learning approach must have some other/alternative ways to develop a comprehensive content management plan by taking care of copyright and similar issues for the digital content of the system. Here, digital identity is a key issue to be dealt with, and this could also be mentioned as "There is no single viewpoint on one's digital identity. There are only ever partial views each representing different facets" (Steven Warburton, Monday, June 14, 2010).

Funding and budget

The establishment cost of ICT enabled learning approach is considerably higher, as it has to have a robust and stable IT infrastructure. Fundings are becoming available for this purpose from both public and private sectors, as it may not possible for many organizations and institutes to afford the installation cost in order to assemble the required IT infrastructure. The real scenario regarding the cost and cost-effectiveness of ICT enabled/integrated academic process is clearly mentioned as: "With the declining costs, policy-makers around the world are investing large sums

of money in ICT devices for students and teachers in elementary and secondary schools. Despite the reduction of per unit costs, the amount of money being spent on this kind of initiative is non-negligible. The cost of ICT programs consists of much more than the price of buying computers, or other devices, and connecting them to networks. Schools must consider the total cost of being involved in this kind of program". (Oscar Valiente, 2010, '1-TO-1 IN EDUCATION: Current practice, international comparative research evidence and policy implications.').

Participation
 The cultivation of innovative learning approach cannot be ensured if the ICT enabled higher education failed to bring all participants under the same umbrella with equal and required privilege and facility. It is also very important for policy planners think and feel from the users' perspective while they are replacing the usual and conventional learning with ICT integrated services.

The Influence Of ICT in Innovation Through Learning
ICT has great influence on several factors that are directly involved with the culture of innovation through ICT enabled learning approach. Some of those key factors that are influenced by ICT are:

Learning for innovation by exploring
 ICT integrated learning environment allows the participants to come up with innovative concept and ideas along with required strategies to make those ideas happen. Learners can also get their access to different research and innovation centers which also helped them to think outside of the box, too. Participants of innovative learning can explore new and exciting scopes and opportunities with the help of features and facilities, provided by IT/ICT infrastructure, which is becoming the center of the innovation driven learning process.

Learning for innovation by creating
 ICT can foster the practice of innovation through higher education as the learners can develop the prototype of their creative minds within the shortest possible time and utilizing the available resources. It is an outstanding opportunity for the learners as they can develop a model and see if their idea fits well with a real time scenario or not. It is now possible to develop the prototype for anything from business process modeling to high-end computing or IT services and solutions.

Using and utilizing OER (Open Educational Resources)
 The curriculum of any academic discipline could be enriched and standardized by using and utilizing the open Educational Resources (OER) with the help of ICT for an excellent innovative purpose. Educational institutes and organizations can optimize their learning procedure and culture by getting the best out from OER that performs effectively and accordingly through integrated IT/ICT services.

Expanding the network in both virtual and real world
 Learners and participants are now able to share and exchange their thoughts and ideas with a broader scope of audience, as they can expand their network ICT integrated innovative learning mechanisms. This also facilitates the person/s to obtain more space so that they can sustain their creative potential and come up with excellent innovative ideas.

Innovation Management
 Innovative ideas are the reflection of creative thinking and comes as part of innovative learning approach. It is essential to assist and support those ideas and ICT has its influence on this aspect of innovation and learning. Managing the innovation is one very important part of promoting and advancing the culture of advanced scholarship. ICT has all needed tools and means to manage both innovation and innovative ideas and develop effective study plan/strategies to make those ideas happen.

Result oriented activities

There is no point of putting that much effort on innovative learning approach if it has no certain outcome. The rate of success and failure are another issue for discussion, but there must have a result or outcome of every feasible innovative idea. There is no option of delivering an ICT integrated learning approach to get involved with such result oriented activities and IT/ICT has its significant influence on this aspect of learning, too.

Conclusion

As it is mentioned earlier, Innovative teaching and learning in higher education is no more a choice rather, it has now become an essential. The major concentration of higher education involved with the issues like research, analysis, fact findings, and so on. Much space is needed for the learners put their effort on innovative and creative ideas and concepts and IT/ICT has a great role to further such initiatives. ICT can not only optimize the quality of education rather it comes with an aim to ensure a comprehensive development of the learning process in higher education, which is stated more precicely as: "Student engagement with learning technologies must take place within an understanding that their aotion involves in a shift into a new media paradigmin which learner, teacher, and the task of education itself are at least partially re-formed" (S Bayne, R Land, 2013, Education in Cyberspace). It may not easy for many institutes and organizations to integrate and adapt the culture of innovative learning and teaching through ICT enabled services, but they must find and get the best possible ways to do so in order to make 'innovation' easier and flexible to the participants.

ICT enabled learning approach means something more than just having Internet connectivity, multimedia/overhead projector and centralized resource management system, though all these are very fundamental requirements for a robust IT infrastructure of the governing body or institute. The role of ICT enables learning approach is to optimize the study and learning process. Doers, suppliers, influencers and innovators are the key stakeholders of such system and they have different functions and responsibilities to get the maximum out from such an innovative mode of learning and teaching.

Innovation leads to exploration that create something unique and different than usual. That is another key function of integrating ICT enabled services to foster the innovation driven and result oriented teaching and learning process.

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