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Reforms and Innovations in Higher Education

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Abstract

With the explosive growth of knowledge in the past century and with the development of handy tools of information and communication technologies (ICT) as well as of other scientific innovations, competition has become a hallmark of growth all over the world. Reforms and innovations in higher education has been become the need of the hour. Globalization presents many important opportunities for higher education, but also poses serious problems and raises questions about how best to serve the common good. The Indian government has set a goal of increasing the enrollment ratio among Indians of college age (gross enrollment ratio, or GER) to 30 percent by 2020, from a current rate of just under 20 percent. In doing so, the government hopes to bring the nation's GER broadly into line with the projected 2020 global average. It also recognizes that quality standards need to be improved in tandem with access if the GER goals are to have a measurable impact on the broader Indian economy. This essay provides an outline of the major challenges facing universities throughout the world, This then give context to a discussion on current policy reforms and the future of higher education.

Keywords: Information and communication technologies, hallmark, GER

The Indian higher education system has grown in an incredible way, particularly after independence, it become one of the largest system in the world. However, the system has many issues of concern at present. These issues are important and now engaged in the use of higher education as a powerful tool to build a knowledge-based information society of the 21st Century. The government GER goals were laid out in the 11th five-year plan (2007-2012) at the beginning of which India's GER was significantly lower than today's 20 percent, at just 12.3 percent. So, clearly, significant progress has been made with regards to increasing access to higher studies. Noting this success, the 12th five-year plan (2012-2017) goes on to discuss the need to continue improving access to higher education, while also stressing the importance of doing it in conjunction with improvements in quality and social equity. By recognizing the basic fact that the Universities have to perform multiple roles, like creating new knowledge, acquiring new capabilities and producing an intelligent human resource pool, through challenging teaching, research and extension activities so as to balance both the need and the demand, the higher education system

With the explosive growth of knowledge in the past century and with the development of handy tools of information and communication technologies (ICT) as well as of other scientific innovations, competition has become a hallmark of growth all over the world. So that Innovations become the need of the hour. Reforms and innovations are two buzz words often heard these days in almost all areas seeking development, nonetheless, higher

education system also. Reform is a voluntary effort to bring in changes in a system with an intention to improve it in a desired direction so as to make it relevant and useful to the stakeholders of the system and contribute to socio-economic development. Innovation on the other hand is the conversion of new knowledge into new products and services to create value and increasing productivity. In simple terms innovation is nothing but introducing something new that makes the system better than the earlier. Reform is a top-down approach, system-wide or anchored within several different institutions; based on external processes and innovation is bottom-top approach or "grassroots" approach; based on internal processes. But both are collectively used to bring changes in the system therefore they go together. The extent of change to be brought out by innovation can be pre-decided depending on the requirement.

Need of Reforms and Innovations

1. **Pressure of population explosion:** By the census report 2011 the population has reached the figure of 1200,000,000 giving rise to a heavy demand for education. Increase in population results increase in aspiration of people to take up higher education. But resources did not increase reciprocally.
2. **Pressure of a demographic bulge:** India is now a youthful country. According to censes 2011 young population of India is about 600,000,000. The youth need more facilities of specific type in the prevailing higher education system, liberal as well as professional. Higher education is becoming a tool for preparing the youth for employment in the short term rather than a place to gain knowledge, wisdom and scholarship.
3. **Pressure of the process of development:** After globalization, liberalization and privatization in India the pace of development increased enormously. This development required a large number of highly educated human resources to run the increasingly sophisticated department of the process.
4. **Pressure of new generation:** The present higher education system is characterized by new type of students, new technologies, newer aspirations and new expectations that marks the knowledge era. The changes in working patterns are evident in almost all sectors so that the knowledge institutions are still in the process of transformation.
5. **Massive expansion of science and technology:** There is a massive expansion of science and technology in almost all fields of life. It is the responsibility of universities again to direct the society in way to foster optimum use of technological innovations. The knowledge institutions which are supposed to bring about changes in the society are at the receiving end due to mass utilization of information technology generated gadgets like; internet, mobile, i-pod, tablets, MP-3, 3-G & 4-G technologies etc.
6. **Pressure to make knowledge society:** Unlike earlier days of agriculture and industries, where the physical labour was the main source of livelihood and it was valued as the principle resources of development. Today, in the knowledge society, information and knowledge become increasingly important inputs to the development process. All economic activities are becoming more knowledge intensive with the analytical mind, creative thinking and problem solving skills.
7. **Demand and supply gap of required skills:** India over the next five years will have surplus of un-trained and under-educated people is 1.3 million; this means India will fall short of real talent by about 5.3 million. We will have a surplus that we will not need and a deficit that we cannot fulfill, future crises to be caused by mismatch between jobs available and skill shortage. Thus there is gap between the needs of the industry and the availability and on the other side we have a whole pile of unemployable graduates.

Types of Reforms and Innovations

- Active Learning
- Cooperative Education
- Semester System
- Critical Thinking
- Choice- Based Credit System
- Cultural Pluralism
- Collaborative Learning
- Examination Reform
- Faculty Peer Review
- Science Reforms
- First Year Seminar
- Service Learning
- General Education
- Student Peer Teaching
- International Education
- Standards
- K-16
- Technology
- Learning Communities
- Undergraduate Research
- New Wave Calculus
- Writing Across the Curriculum

Innovations in Higher Education

1. **Open University:** Indira Gandhi National Open University (IGNOU), New Delhi set up by Parliamentary Act in the year 1985. Before this initiative at the national level the state of Andhra Pradesh had set up the first Open University named Dr. B.R. Ambedkar Open University (BRAOU) in India in 26 August, 1982. But since 1962 Delhi University and many other conventional university in India were offering various programmes through correspondence mode for those learners who could not get admission in regular/face to face and some universities even allowed private examination system offering opportunities to non-regular students to earn a degree. It is a university founded on an ideal and, like all revolutionary ideas, attracted hostility and criticism. The progress of the university was targeted by the goal set for each decade.
   - **1980s'-** for expansion and consolidation.
   - **1990s'-** for changing curriculum.
   - **2000s'-**for innovation in teaching methods.
   - **2010s'-** for consolidation and new markets.
   - **2020s'-** for knowledge-based information society.

   The university also offer professional training courses alongside its academic programmes using the multimedia mix of teaching and learning methods and began massive exploitation of the internet that has made the Open University the world's leading e-university. The university introduced its first taught higher degree. Its mission is openness to methods. Openness means policies and practices that permit entry to learning with no or minimum barriers with respect to age, gender or time constraints and with recognition of prior learning. These policies need not to be part of a distance education system but are complementary to it.
2. **Virtual Learning**: Virtual education refers to instruction in a learning environment where teacher and student are separated by time or space or both and the teacher provide course content through course management applications, multimedia resources, the internet, video conferences etc. student receives the content and communications with the teacher via the same technologies." It is a flexible mode of learning with learner at the centre. It provides resources to the learner in digital format, 24×7, enabling them to study at their convenience. Virtual learning takes place owing to developments in ICT.
3. **Web-based communication technologies:** The usage of this technology has created an interacted digitally delivered content, network-based services and tutoring support the essential elements of e-learning. E-learning means any technology mediated learning whether from a distance or in face to face classroom setting like computer aided learning (CAL), this creates shift from traditional system of education and training to ICT based collaborative learning with a community of learners, teachers, facilitators, experts etc.. E-learning is a foundation of the globally networked and interdependent economy, which is advanced by ICT.

4. **Collaborative Learning:** New assumptions about learning include: learning is an active, constructive process, learning depends on context, learners are diverse, and learning is inherently social. Student discussion and active work with course material is emphasized in collaborative learning. learning in small groups encourage each other to ask questions, explain and justify their opinions, articulate their reasoning, and elaborate and reflect upon their knowledge, thereby motivating and improving learning. Learning improves significantly when students participate in learning activities with small groups of peers.
5. **Cooperative Education:** In cooperative learning situation, there needs to be an accepted common goal on which the group is rewarded for its efforts. A cooperative group has a sense of individual accountability that means that all students need to know the material or spell well for the whole group to be successful. The development of interpersonal skills is as important as the learning itself; learning to cooperate is key to high quality work, group process skills are developed. Teaches students to work well in group settings (Shift from lecturer to facilitator). Process directly tied to outcome.
6. **Avatar–based virtual technology:** Education is costly but e-learning/online learning has shown the potential to provide a broad range of training at the possibly lower cost. But in online learning, there is a need to create more effective interaction between online educational content and learners that recaptures some of the benefits of interacting with a good teacher, including the creation of a more natural and friendly environment. As per the capability of technology improves, educational institutes seeks new opportunities to take the classroom on line. During the past decade, three-dimensional (3-D) virtual world environments have increase in popularities. In this the users/learners presence is established through an Avatar character, usually some type of fantastic representation of living creature or online manifestation of self in a virtual world. Another used term in communication protocol called '**AVATAR**' (Advanced Video Attribute Terminal Assembler and Recreators). It has following characteristics:
   - ✈ It enhances interaction in a virtual space.
   - ✈ It gives visible persona to the user within a virtual world.
   - ✈ It gives the opportunities to engage in dreamlike and imaginary experiences that transcend the actual world in which they live.
   - ✈ It functions as the user's agent of action in the virtual world.
   - ✈ Avatar's are 3-D humanoid characters inhabiting virtual space with varying degree of animation and behavioural abilities.
   - ✈ In it user's status can be checked whether a user is logged in or not.
   - ✈ It has an interactive chat function.
7. **Hybrid or blended learning:** Face to face and distance learning/ online learning has its own advantages and disadvantages, the need would be arises for a method that will combine the positive features of both, and would provide the educational institution and students with competitive and learning advantages respectively. This need is being satisfied with the emergence of a new wave of learning called "Hybrid or Blended learning". While face to face learning is referred to as synchronous, online learning is termed as asynchronous. As it is commonly known, classroom instruction-learning takes place inside the classroom, where students gather in a physical place/classroom, listen to lectures, having home assignment and have scheduled examinations. On the other hand, in on-line learning, students complete their assignments on the internet, post their questions/comments on a discussion forum or electronic board and meet with their instructor and their peers in an internet chat room.
8. **Electronic thesis or dissertation (ETD):** Electronic thesis or dissertation is an electronic version of our thesis or dissertation. Generally, speaking it is the same product as a paper thesis or dissertation, simply in electronic form. It was firstly used by Virginia Polytechnic Institute

and State University (Virginia Tech.) in 1997, in India too University Grant Commission (UGC) released 'Regulation 2005' for submission of metadata and full-text of Doctoral thesis in electronic format, yet there is lack of awareness among the academicians in India and most of the universities are still not given any heed to this effect. As we come to rely upon technology in an ever increasing manner and where 'E'- 'Electronic' word has become very common and we hear it every moment, it seems natural that scholarly works would be affected. The universities are committed to providing new capabilities to support the creativity and innovation of their scholars. To this end, we are in the beginning stages of making the electronic submission of dissertation available to all doctoral degree candidates.

The ETD provides a technologically advanced medium for expressing our ideas its' main goal is to make the research and scholarship conducted by researchers freely and openly accessible. Others goals are:

- To give future academic opportunities to prepare electronic works such as; book chapter, journal articles and seminar/conferences presentation, assuming that they will be publishing electronically in the future also.
- To expand the medium of expression more than words and figures that can be reproduced on paper, in other media like; Television, Radio, News papers, magazines, journals etc..
- It is less expensive for research students to prepare it also does not require multiple copies of thesis/dissertation while submitting, avoid lots of paper works by hand and binding cost.
- It promotes greater access to our research. It is easily available to anyone on World Wide Web (WWW).
- These consume virtually no library shelf space and never collect dust.

9. **Cloud computing**: The name cloud computing was inspired by the cloud symbol that's often used to represent the internet flow chat and diagrams. Cloud computing is a general term for anything that involve delivering hosted services over the internet. These services are broadly divided into three categories; Infrastructure-as-a-Services (IaaS), Platform-as-a-Services (PaaS) and Software-as-a-Services (SaaS). Cloud computing have some features as:

   - It is sold on demand, typically by the minutes or the hour.
   - It is elastic; a user can have as much or as little of a service as they want at any given time.
   - Service is fully managed by the provider; consumer needs nothing but a personal computer (PC) and internet access.

Significant innovations in virtualization and distributed computing, as well as improved access to high speed internet and a weak economy, have accelerated interest in cloud computing. A cloud computing can be private or public. Whether it is private or public the goal of cloud computing is to provide easy, scalable access to computing resources and IT services. Buying computers for everyone is not enough, we also have to purchase software or software licenses to use the tools we require; whenever we have a new hire, we have to buy more software or make sure our current software license allows another user. It's so stressful that we find it difficult to go to sleep our huge pile of money every night.

Soon, there may be an alternative for us instead of installing a suite of software for each computer; we did have to load one application. That application would allow us to log into a web-based service which hosts all the programs the user would need for his or her job. In a cloud computing system, there is significant work load sift. Local computer no longer have to do all the heavy lifting when it comes to running application. The network of computers that make up the cloud handles them instead. Hardware and software demand on the user's side decrease. The only things the user's computer needs to be able to run in the cloud computing systems interface software, which can be as simple as a web browser and the cloud's network takes care of the rest.

10. **Innovation University/World Class Universities:** The Ministry of Human Resource and Development, Government of India (MHRD, GoI) has started so called 14 'Innovative' or World Class Central Universities in various part of the country in the 12th –Five year plan. These universities will be new model universities which are intended to become platforms of globally acceptable best practices and innovation in the field of education. These universities will have cluster-based approach to encourage innovations. They will have collaborative research with industries and scientific institute so as to transform the end product into marketable products and services for reaping last mile benefit. It is quite likely that these up under public-private-partnership (PPP) model. These universities will have total autonomy in appointment to appoint faculty and admit students all over the world. It would be at the source of making India the global hub and set benchmarks for excellence for other central and state universities in research, recognized by society and peers in the academic world. It will be able to provide knowledgeable manpower needs of the country, in training professional, specialists, scientists and researchers needed by the economy and in generating new knowledge in support of national innovation system.

11. **Meta University:** With the open content and open- access movement, we are seeing the early emergence of a Meta University- A transcendent, accessible, empowering, dynamic, communally constructed framework of open materials and platforms on which much of higher education worldwide can be constructed or enhanced. The internet and the web will provide the communication infrastructure, and the open-access movements and its derivatives will provide much of the knowledge and information infrastructure the Meta University will speed the propagation of high-quality education and scholarship. It will give teachers and learners everywhere the ability to access and share teaching materials, publications, research works in progress, tele-operation of experiments, and worldwide collaborations, thereby achieving economic efficiencies and raising the quality of education through a global endeavor.

12. **3G Mobile technology:** 3G is the third generation of wireless technologies. It comes with enhancements over previous wireless technologies, like high-speed transmission, advanced multimedia access and global roaming. 3G mobile phones offer new features such as video calls, video streaming, enhanced web browsing. 3G is mostly used with mobile phones and handsets as a means to connect the phone to the Internet or other IP networks in order to make voice and video calls, to download and upload data and to surf the net. The main features of 3G services are:

    - Always – on connectivity
    - 3G networks use IP connectivity, which is packet based.
    - Multimedia services.
    - E-mail with attachments like PowerPoint files
    - Instant messaging with video\audio clips.
    - Fast download.
    - Global roaming.
    - Data handling and High speed bandwidth.

This technology is very useful as a supplement of ICT, online learning, e-learning, virtual learning and other traditional learning methods. It is playing a central role in globalized approachable learning. It makes young adults busy in learning where traditional method does not able to do so.

Hence, the expectations from higher education or university are growing all the time and there are some pressures that are hard to balance. For instance, higher education institutions are being asked to produce more research, and also to teach more students in a more personal way. Perhaps more importantly, universities do not exist just to produce economic benefits. They are also important in providing equity, social cohesion and social justice.

Conclusion

In today's fast changing world where educational possibilities and opportunities are endless, higher education has to adapt itself to existing requirements and respond to new challenges. In other words, in higher education system, reforms and innovations have maybe become unavoidable to cope up the thrust exerted by various factors, particularly the ICT and Globalization where the process of change and progress are happening at very fast speed.

It is peak time that Indian higher Education System prepares a vision statement for Reforms and Innovations after clearly assessing and demarcating the country's needs. The process of reform and innovation is best initiated with the vision of; creating a culture of innovation and initiating a movement of reforms in Indian Higher Education System. The goal is to help Indian higher education system payback to the country by producing highly skilled, mature intellectuals and build a knowledge-based information society of the 21st Century.

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