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ICT FOR VALUE – ADDED EVALUATION IN HIGHER EDUCATION

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ABSTRACT
Higher Education Institutions now rely on information and communication technologies for all aspects of their activities: administration, teaching, research, public services etc. Information and communication technologies (ICT) are increasingly becoming crucial parts of the higher education system. The rapid progress in the spread of information and communication brings important influences and opportunities to higher education students. The fundamental factors fuelling the growth of the technology in higher Education paradigm are globalization and cross bordering the institutes of higher learning, the explosion of knowledge, the challenges posed to cope with the easy access and capacity demands. It is believed that there are four reasons for using technology in higher education, viz., improving quality of learning, and facilitating access to education and training, reducing cost of education and improving cost effectiveness of education. The present article focuses on harnessing of technology in different dimensions of evaluation pertaing to higher Education.
KEY WORDS: Higher Education, Information and Communication Technology, Globalization, Evaluation.

INTRODUCTION
Education is the driving force of economic and social development in any country. Considering this, It is necessary to find ways to make education of good quality, accessible and affordable to all, accessible and affordable to all, using the latest technology available. The last two decades have witnessed a revolution caused by the rapid development of information and communication technology (ICT). ICT has changed the dynamics of the various industries as well as influenced the way people interact and work in the society. Internet usage in home and work place has grown exponentially. ICT has the potential to remove the barriers that are causing the problems of low rate of education in any country. It can be used as tool to overcome the issues of cost, less number of teachers, and poor quality of education as well as to overcome the time and distance barriers (Mc Gorry, 2003). In India Telecom has become the second largest wireless network in the world after china. India has a billion plus population and a high proportion of the youth and hence it has a large formal education system. The demand for education in developing countries like India has skyrocketed as education is still regarded as an important bridge of social economic and political mobility.

The various kinds of ICT products available and having relevance to education such as teleconferencing, email, audio conferencing, television lessons, radio broadcasts. Interactive radio counseling interactive voice response system, audiocassettes and CDROMs etc have been used in education for different purposes. Today ICTs – including laptops wirelessly connected to the internet, personal digital assistants, low cost video cameras and 3G/4G cell phones and tablets PCs have become affordable, accessible and integrated in large section of the society throughout the world. It can restructure organizations, promote collaboration, increase democratic participation of citizens, improve the transparency and responsiveness of governmental agencies, make education and health care more widely available, foster cultural creativity, and enhance the development in social integration. It is only through education and the integration of ICT in education that one can teach students to be participants in the growth process in this era of rapid change.

The use of technology in educational systems is becoming more and more imperative. Educational policies are increasingly advancing in this sense, and the educational centers with their own rules are also contributing to this "wiring". The fundamental factors fuelling the growth of the technology in the Higher Education Paradigm are globalization and cross bordering the institutes of higher learning, the explosion of knowledge, the increasing pervasiveness of the information and communication technology (ICT) and the challenges posed to cope with the easy access and capacity demands. Traditionally, it is believed that there are four reasons for using technology in higher education, viz., improving the quality of learning, facilitating access to education and training, reducing the cost of education and improving the cost- effectiveness of education. The present article explores yet another potential of the technology, i.e., evaluation of the institutes. The recent policy initiatives of the Government of India and the apex bodies of Higher Education, prominently portrays efforts to inculcate technology as the key driving tool for accomplishing quality and in a way to bring in a framework of fair evaluation of institutes of higher learning. With the motivation received from the apex bodies, the institutes of higher learning in India are striving their best to initiate a fair evaluation system for its constituent sections, such as, Examination, Admissions, Human Resource, however this has been exercised as islands of excellence and hence failed to perceive significant overall impact.

The focus of the present article is to exemplify harnessing of the technology in different dimensions of evaluation pertaining to higher education. The paper presents variety of perspectives on the issue of evaluation in different directions, such as, students' performance assessment, institutional evaluation, assessment of administrative efficiency and perceiving the stakeholders' expectations in general. An insight, as regards to different tools and techniques for using the technology in different dimensions of evaluation, is provided by the institutional view of the evaluation process rather than a macro view.

ICT IN HIGHER EDUCATION: OBSESSION WITH BALANCE

The state of art scenario of Higher Education reveals that we have gone beyond the desktops. Technological tools dominating the Higher Education, and their intended impact, prompts to present a pervasive model shown in Fig. 1. The figure shows an onion-skin diagram illustrating diffusion of various technologies in the paradigm of Higher Education. Through this model it has been accentuated that the core issue of knowledge dissemination and evaluation of learning outcomes is going hand-in-hand with the emerging technology for the benefit of students, teachers, parents and society at large. The penultimate layer shows the tools available for this purpose, while the most outer layer shows the desired goals. The findings of an analysis of the "hype cycle" of technology in education has been published by Gartner, an IT advisory firm, which provide several interesting insights for the Higher Education policy makers. In this extensive exercise by the Higher Education Management Group of Gartner, the popularity of emerging technologies, from internet, TV and e-books to micro blogging sites, such as, Twitter, was tracked with evaluation of their progression as a function of expectations. It is interesting to see the chart of Gartner's hype cycle for Education Technology. An emphatic insight provided by the above mentioned report is, "Virtual worlds are about to plunge into a trough of disillusionment", lecture podcasts are fast becoming obsolete, but cloud computing will soon be on the "slope of enlightenment". There are a couple of observations that would like to put together for the benefit of the Indian Higher Education community.

Although the report implies failure of sophisticated technology, the implications should not be taken in 'Toto' for the Indian scenario. This is because the report is based mostly on the western educational institutes where there is over-diffusion of the technology. In India we still have to proceed a long way towards adequate technology diffusion. However, an interesting insight for the policy framing is the indication towards the success of simple technological tools, such as, e-text books, cloud email and podcasting the lecture contents. In an Indian scenario, the above mentioned technologies have specific implementation benefits, if combined with the ubiquitous 3G and 4G mobile systems. The customized version of the above

mentioned techniques have a potential for using them as evaluation tools that might advance by leaps and bounds our assessment techniques.

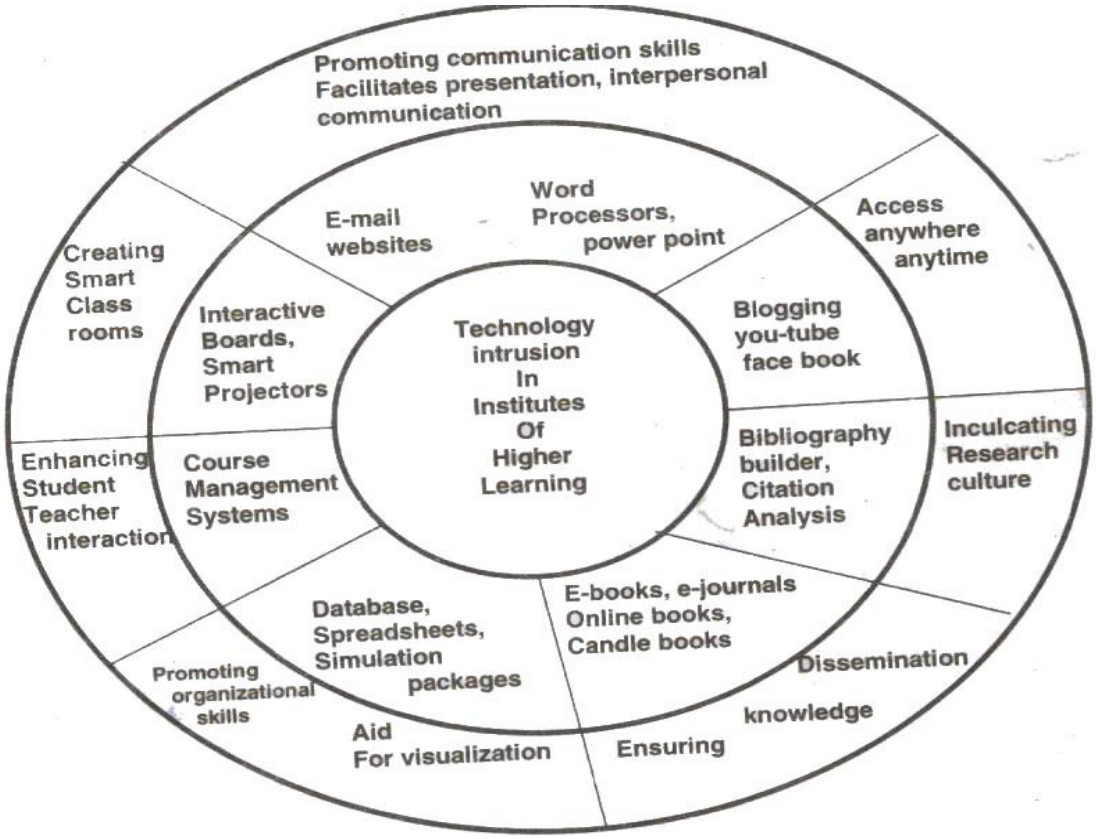
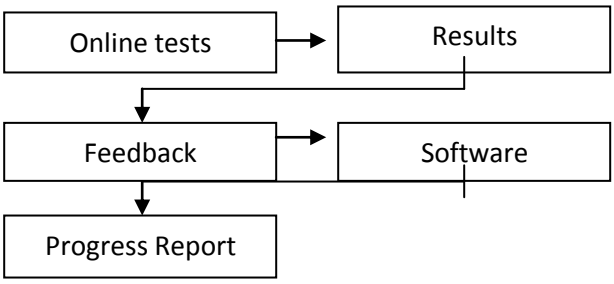


Fig. 1 : An Onion-skin Diagram illustrating diffusion of Technology in Higher Education paradigm.

THE CONCEPTION OF 'EVALUATION'

After a brief discussion regarding the role of technology in the higher education arena, it is now sensible to put the notion of evaluation in place. Evaluation, put simply, is the practice by which people make value judgments about things. In the context of learning technology, these judgments usually concern the educational value of innovations, or the pragmatics of introducing novel teaching techniques and resources. It is a very essential and vital phenomenon for the higher education in order to ascertain the realization of the policy planning as well as to get a feel regarding the successful cultivation of the vision, mission, goals and learning outcomes amongst the learners. Our basic conjecture for using technology for evaluation is based on the theory proposed by Preskill & Torres. They perceive evaluator as a facilitator of learning where stakeholders and program participants learn about themselves and each other, and the programme, through their involvement in the evaluation process. In this context the evaluator seeks to teach clients and stakeholders evaluation skills and processes so that they may continue to engage in evaluation practice when the 'evaluator' has left the scene. This ideal situation could be realized only by synergizing the technological frame work used in an appropriate manner in conjunction with the expert academicians. After clarifying the notion of evaluation, we further approach to the overview of using technology for evaluation of various dimensions in the institutes of higher learning.

EVALUATION:



ADVANTAGES OF ICT FOR EVALUATION

- Student accepts more responsibility for their own learning and its assessment, developing, expertise in the process.
- Teacher application of curriculum can be monitored by analyzing test results.
- This can be used by teachers for assessing and improving their own performance meeting state and national standards.

STUDENT EVALUATING FACULTY: FROM ROOM WARE TO WEB FORUMS

Room ware pioneered by GMD's Integrated Publication and Information Systems Institute (IPSI) in Darmstadt consists of computer-augmented room elements with integrated information and communication technology facilitating new forms of human-computer interaction. Student appraisal is the key to the accomplishment of the learning, training and certification processes. However, the optimistic progression of the student achievements is only possible with the successful transfer of the course contents from the faculty to the students. One of the major problems especially in the Engineering Programmes is in getting the feel of students while a faculty delivers the lecture. The main hindrance in this case is the large size of the class. In such situations the audience response technology (ART) or Group Response systems can be successfully put into action.

This helps the faculty in successfully retaining the students and the immediate feedback facilitates in customizing the lecture contents and delivery style to accomplish the course goals. Another hindrance in this process is probing the misconception or preconceptions of the students. Here the common web-forums per class administered by the respective course faculty would help in picking out the students with misconceptions and with an added advantage of identifying slow and advanced learners ahead of the actual course delivery.

ELIMINATING THE CLAUSTROPHOBIA OF EXAMINATIONS THROUGH ONLINE MODE

The main hurdle in students' achievement is the ever burdening of the examinations and the manner they are still been conducted. It is a common observation that many students experience anxiety when faced with, end-of-semester or public examinations. Moreover, conducting the examinations in a traditional pattern has become a real burden on most of the institutes. Online examination seems to be the practical solution to resolve this issue. Nonetheless they should be used only partially in a manner so as to compliment the traditional or to say, off-line examinations.

As far as the sole online i.e. completely automated mode of examinations is concerned, there are limited types of questions which can be put forth through web. Assessment in this mode can be done for multiple choice, multiple response, fill in the blanks, hot spot (to identify area of graphics on the screen), matching the pairs and numerical calculations. The advantages of this system are quite obvious. Apart from rapid evaluation, without any human bias, the technology can be put to use to set random parameters, chosen by

the system, for instance, random selection of questions from the question bank, numerical calculation of right answers, wrong answers, and marks obtained for right answers, negative marking for wrong answers, final marks obtained, relative grading, position in the class etc. With this mode, the students would not only access their performance as soon as they complete the test, but even the paper setters can also enter these questions in databank so as to build a repository of question papers. Although implemented successfully by the corporate giants such as Microsoft and Cisco this mode of examinations has still to go a long way to establish their repute in higher education circle. Few issues still lingering in the mind of administrators are the concerns of infrastructure, reliability, control mechanism and lack of the prerequisite skill sets amongst the students while implementing the online examinations. Nevertheless, a mixed hybrid model comprising of online and traditional paper based examinations has a good potential in the near future to ascertain fair assessment. There are instances that even the assessment of the long answer type questions can also be done in online mode by offering free format on the students' screen and the software package converting the answer into a portable text or pdf format. Evaluation by multiple examiners becomes trouble-free with this mode of assessment.

EVALUATION BY STAKEHOLDERS: CARVING A SHARED VISION

In the context of higher education quality, stakeholders are those groups that have inter alia an interest in the quality of provision and standard of outcomes. This intent of definition encompasses many more elements in addition to the students and parents, such as the government, apex bodies (NAAC, UGC, AICTE, NAB etc.), industries, taxpayers and finally society at large. Technology can perhaps be the only alternative to seek the feedback and get the evaluation of any institute of higher learning from such a diversified range of stakeholders. Surveys regarding the institution's vision, mission, goals, achievement and future roadmap can be conducted by using the technological means such as email, fax and web based interface. The web based surveys are effectively used globally with the inherent benefit of minimal response time to seek the opinions of the stakeholders to govern the institutional roadmap. This would also help in building a community of alumni and well wishers whom the institution can always consult while framing the policy issues.

EDIFYING THE DATABASE THROUGH TECHNOLOGY BASED ASSESSMENT

One of the main drivers for using technology for assessment of various dimensions of the institute of higher learning could be building a comprehensive database for the policy makers. With the growing web of institutes, these days it is difficult and painstaking to get the appropriate data regarding the institute for the accreditation and funding decisions. A welcome initiative in this regards has been initiated by the University Grants Commission (UGC) in India from the 10"' plan in the form of development radar of the institutes for visualizing the academic, research and governance performance. In addition to smoothening the decisions regarding the grants for the UGC, the development radar can also serve as a valuable self analysis tool for the institutes to foresee their performance impact. Usage of this radar will not only help in rationalizing the performance of the institutions for the accreditation purposes, but also help to congregate the pockets of excellence by sharing the healthy practices an institution is adopting. Thus technology again can play a useful role to spread the best practices amongst the institutions and build a healthy academic network. In our view, there are still few possible measures to augment the effectiveness of this radar by using technological means. For instance, the citation analysis can be possibly done centrally by using the publishing gateways. Even the usage of e-journals and e-databases can be obtained through the number of hits at the Inflibnet gateways so as to make a decision regarding extending more e- resources and/or internet bandwidth to an institution. Inflibnet is undertaking praise worthy plans in this regard in influencing the knowledge networks through development of E-Libraries.

TOOLS AND TECHNIQUES FOR EVALUATION: COST AND EFFECTIVENESS PARADOX

After a thorough discussion on various assessment alternatives through technology, now it is the time to take a brief review of the tools and techniques to serve the purpose. There are a good number of commercial tools for assessing the various parameters of the institutes of higher learning. These tools are available in two flavors, namely, surface assessment and deep assessment. Surface assessment, in this context, refers to evaluation requiring the students to provide closed; expected responses such as multiple fill in the blanks, true/false type questions. Conversely, deep assessment assigning exercises necessitate learners to present open-ended answers, which are less predictable in nature. A review of some of these tools is presented for the benefit of the readers.

WebCT now owned by Blackboard is an integrated Web publishing environment, specifically tailored for the design and development of teaching and learning material. Provision of quiz on the course material in this package can be effectively used to access the leaning outcomes. The tool has established its rapport in tertiary education for delivering solutions that helps to enrich all aspects of the academic experience - engaging and assessing students, making their daily lives more convenient and secure, and keeping them informed about what's important. As far as the deep assessment is concerned, again there are several tools such as Intelligent Essay Assessor (IEA) that automatically assesses and critiques electronically submitted essays, providing assessment and instructional feedback useful in almost every subject area.

Yet, there are many issues especially in the Indian scenario, hampering the implementation of the tools similar to WebCT and IEA. The foremost issue is the exorbitant cost and licensing of these commercial packages. Second issue is their interoperability and platform dependence that dictates a particular flavor of hardware (servers/workstations, nodes) and operating systems (most of them work on commercial operating systems). It has also been observed that these tools are bandwidth hungry and therefore intricate implementation by the institutes residing in rural areas. Since most of them are conceived in developed countries, there is little scope for customization. In Indian scenario, sometimes the multi-lingual interface becomes a necessity to comprehend the desired meaning for the benefit of learners.

A way out preferred by many institutes of higher learning is making their own software suites through the Indian vendors. These tools offer many useful features such as e-submission of written assignments, identifying online diagrams, manipulation of graphs etc. Additionally, they also offer a mixed assessment comprising of options such as parallel print and online checking. However, again these diversified packages working on myriad of software platforms are surely incapable to resolve the "Excellence of Pockets". The recent emergence of 'Google Docs' a free, web- based word processor, spreadsheet and presentation tool has a potential to some extent to address the cost issues. With a mere requirement of browser and internet connection, it is being used successfully to evaluate the students' assignments with online comments and grades. Even the survey or poll feature is a valuable tool to get an insight regarding a certain policy initiative from the stake holders.

Yet another alternative is using the 'Open Source' for the evaluation purpose. The widespread use of Linux, with Apache web server and MySQL database has a great potential to address the cost and interoperability issues of the software suites. In addition to the operating system and database many free web based open source and share-wares are infiltrating in Higher Education for evaluation of learning outcomes. One such widely used tool is 'Moodle'.It is a Course Management System (CMS), available as a free web application to create effective online learning and evaluation sites. Another good example is 'Sakai' a courseware management system, designed by educators for educators and distributed as free and open source software under the Educational Community License. It helps instructors, researchers and students to collaborate online

in support of their work, whether it is a course instruction, research or general project collaboration. Authors have dealt with many of these issues in their recent publications.

CONCLUSION:

To conclude, we would like to quote Stirling Moss: "If everything is under control, you are just not driving fast enough", Higher Education has been regarded as the engine driving the national economy. In order to keep this engine in its best form, evaluation is of supreme significance. It is the right time for the institutes of higher learning to gear up in using technology for the evaluation purpose. This will definitely tell apart the mystification between "real" and "perceived" assessment of the students, teachers and the institute itself.

There are some bottlenecking issues holding back the practical implementation, such as, crunch in funding, common standard design, prerequisite skills sets and so on. However, with the right policy framework set by the apex bodies in Higher Education with the adequate earmarking of the funds by the Government of India for strengthening the infrastructure, the technology based assessment will soon be an asserted direction.

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