Report of
ASSESSING TECHNOLOGIES FOR HIGHER EDUCATION
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Task Group on Educational Technology for Higher Education in Karnataka and EduSat Utilisation Review
In cooperation with

Bangalore University, Bangalore

Karnataka Jnana Aayoga
(Karnataka Knowledge Commission)
Government of Karnataka
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FOREWORD

Education is on top agenda for society and all round efforts are being made in Karnataka state and the nation to further enhanced and advanced education goals. Effective adoption of advanced technologies in Higher Education in Karnataka has received highest attention. In order to prepare an action plan and to bring out a comprehensive and actionable report, Karnataka Jnana Aayoga constituted Task Group on Educational Technology for Higher Education in Karnataka and EduSat Utilisation Review (TG ET-EUR) to assess the best of education technologies and address propose a scheme-oriented input that can be recommended for implementation to GoK.

One of the important aspects in this direction the KJA TG took up was to assess the usage of education technologies, and challenges thereof, to determine the most suitable, effective and efficient technologies that can mesh with the existing educational system in the state. TG has emphasised the importance of faculty and teachers in this overall scheme and stress for faculty orientation and involvement is given top priority. The TG convened a series of consultation meetings/dialogue with faculty/experts of higher education of the State and generated necessary inputs. One such consultation meeting was successfully held in Mysore in Feb, 2015.

As part of continued consultation, KJA has now collaborated with Bangalore University in organizing a 2-day Workshop on ‘Assessing Technologies for Higher Education’. The workshop brought together ~300 faculty and experts and discussed on the various educational technologies – class-room technologies, self-learning technologies, evaluation technologies etc. The workshop also discussed the status of existing usage of technologies in BU.

The report of the workshop has been prepared by the KJA TG and Bangalore University and includes discussions and presentations, as well as panel discussions, with key recommendations. KJA hopes that this report will be a core input to TG for finalising its recommendations, along with other inputs/reports that TG has referred. KJA is happy to bring this 2nd consultation report.

I would like to express my gratitude and thanks to Dr. B. N. Suresh and Dr. P. Balakrishna Shetty – Co-Chairs of the TG; to Prof. Thimmegowda, Vice-Chancellor of Bangalore University; Prof. Viraj Kumar, Member-Secretary of the TG and Dr. Prabhakar, Director, IQAC, Bangalore University – specifically for organising the workshop and for steering the discussions with specific recommendations as outcome. I also would like to thank all the KJA TG Members who participated and involved fulsome in this initiative to make it successful. On behalf of KJA, I would also like to thank and acknowledge Bangalore University – its faculty and many others for a well-organised workshop. Thanks to all participants for providing valuable inputs.

September 30, 2015

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PREFACE

With the advancement of technologies, education has taken a whole new meaning and there is no doubt education coupled with the right combination of technology would enhance the quality of education. The main aim of the Task Group constituted by the Knowledge Commission of Karnataka is to recommend suitable technologies for improving the present education quality and outreach. It therefore becomes imperative to integrate seamlessly the present education system with the advanced education technologies. These efforts certainly would lead to effective improvement and modernization of the education system in the State especially in the Higher Education sector.

Technology has great potential to enhance the education qualities since it enables the interactivity, multimedia operations and many other services to educators. But how best they are utilized by the educators for teaching and learning is very important. Considering this factor the second workshop was convened by the Task Group in association with Bangalore University to explore many salient features of the technologies and the experience of the educators who have been utilizing the same. The objective of the workshop was to get necessary feedback from all stakeholders and to generate the factual information relating to all educational technologies including the Satellite-based education. Many prominent technology/service providers were invited to present a range of technologies available for education.

The Workshop spread over two days provided very valuable inputs in respect of various technology tools, content creation tools, content delivery methods, automation of the examination processes and creation of the interactive environments (virtual labs/classrooms). This report presents the entire proceedings of the workshop, summary of various presentations, outcome of the workshop and recommendations.

The Task Group is in the process of completing its consolidated report and finalizing the recommendations. The two workshops at Mysore and Bangalore, the various presentations by the subject experts, discussion and interaction with all stakeholders have helped vastly to finalise the recommendations of the task group on the educational technologies for the higher education Institutions. We earnestly hope that the recommendations of the task group would greatly assist the Government of Karnataka to implement Task Group recommendations for the benefit of higher education in the State of Karnataka.

Dr. B. N. Suresh
Co-Chair, Task Group

Dr. P. Balakrishna Shetty
Co-Chair, Task Group
MESSAGE

The term “Technology” refers to advancement in the method and tools we use to solve problems or achieve a goal. The advancement of education and educational techniques have to follow the progression of time. The development of ICT and its emergence as a new social communication tool has impacted all sectors of the economy/society. In educational sector, application of technology in the form of next generation web based learning, digital curriculum, and open learning, competency based and personalized learning, e-learning modules, has already changed the way the teaching and learning should proceed. Technology and education are a great combination if used together with right reasons and vision. Technology improves education to a great extent. It has now become a need for revolutionizing education for the better.

Karnataka Jnana Ayoga has taken a right initiative by conducting Workshops in order to prepare an action plan and to bring out a comprehensive report towards improving education quality and outreach using advanced education technologies in Higher Education in the State.

I hope the recommendations made in this report would bring out revolutionary changes in teaching-learning process in higher education in Karnataka.

B. Thimmegowda
(B. THIMME GOWDA)
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1. INTRODUCTION

Karnataka Jnana Aayoga (KJA) (www.jnanaayoga.in), at the behest of Higher Education Department, Government of Karnataka, is looking into the issue of improving education quality and outreach using advanced education technologies in Higher Education and review of the current EduSat utilization in the State. KJA needs to assess gaps/issues in current education technology deployment and recommend actions required for enhancing educational outcomes in the State with improved educational technology usage.

In order to prepare an action plan and to bring out a comprehensive actionable report, KJA has constituted a Task Group on Educational Technology for Higher Education in Karnataka and EduSat Utilisation Review (ET-EUR) under the co-chairmanship of Dr. B. N. Suresh, Former Member, Space Commission and Former Director, Indian Institute of Space Technology and Dr. P. Balakrishna Shetty, Member, KJA and Vice-Chancellor, Sri Sidhartha Academy of Higher Education. One of the important aspects in this direction is to assess the usage of education technologies and challenges thereof and determine the most suitable, effective and efficient technologies that can mesh with the existing educational system in the State. Therefore TG ET-EUR proposed to undertake wide consultations/dialogue with faculty/experts of higher education institutions and generate the necessary inputs by organizing workshops. The TG has conducted its first workshop on “Technology in Higher Education” on February 7, 2015 at Senate Hall, Manasagangothri Campus, University of Mysore with educational institutions to understand the gaps in education system with reference to use of suitable technologies. Now, TG along with Bangalore University convened its 2nd consultation workshop on “Assessing of Technologies for Higher Education” at Jnana Jyothi Auditorium, Central University Campus, BUB.
2. RELEVANCE OF THE WORKSHOP

Technology is significantly contributing towards efficient and effective education at university level, the importance of teachers/faculty and formal class education systems; this must be recognized, in the larger contest of the education environment in the State. Application of modern education technology in continuing education will be a driving force to continuing education innovation. Technology and education are a great combination if used together with a right combination and vision.

Smart mobile devices, social networking, virtual classrooms, identity management systems, faculty evaluation systems, data analytics and array of educational technologies have taken education to all new heights—both within and outside the classrooms. Assisting these learning methods is a multitude of smart devices, which were earlier considered as distractions for students. But the very devices are now leading way for immersive learning. There are array of such technologies that are changing education landscape for good. Now the teachers have better instructional tools, administrators have better management tools and students have better learning tools. Behind the scenes are group of companies that are fueling this educational transformations through their innovative technological solutions which need to be utilized and addressed and make utilize for betterment of education sector is great need of the hour.

To study and to assess the available technologies for content generation and management, effective educational content delivery technologies and also explore interactive learning environments is very important for the TG to prepare a blue-print for education technologies – action plan for Karnataka which will help in standardizing the use of most appropriate technologies across the state in universities, actions for assimilation/embedding the technologies into the present education system. The above concepts became the core topics for the workshop and accordingly the program/discussions were worked out by the Task Group.

3. OBJECTIVES OF THE WORKSHOP

The main aim of workshop was to assess/evaluate the various educational technologies available and their efficacy and to deliberate on future methods of technology assimilation, including satellite based education and IT
Given the background for the conduct of the workshop, the objectives were defined as:

- To address the educational technologies available in the market place and determine the relevance for higher education in the State

- Review technological tools to learning outcomes to be used to get students to interact with course content in an engaging and productive fashion

- To analyse range of technology-enabled assessment (e-assessment) options that are available for the design, delivery and administration of required assessment activities in an education sector

- To create a platform which enable real time interactive environment between industries and teacher community which can interactively raise and answer questions using educational technologies

- To foster collaboration not only end-users, but cross-platform which encourage rapid innovation and content sharing to ultimately benefits all stakeholders

- Obtain inputs on way forward for most suited technology upgradation and faculty involvement process

Based on these objectives, it was decided to invite key speakers who can talk on these lines and to understand the gaps in education system with reference to use of suitable and appropriate technologies. The suggestions/inputs would be documented and used as supportive materials for preparation of action plan and suggest suitable and modern education technology packages.
4. DETAILS OF THE WORKSHOP

The program for the workshop is appended as Appendix A. The workshop was witness for a large presentation on Educational technologies which are available in the market-place and witnessed for a detailed discussion. The varied deliberations of the workshop have generated inputs and suggestions were indeed a great success.

4.1. INAUGURAL SESSION

1. Inaugural session began with the invocation by a staff of Bangalore University, Bangalore (BUB) and concluded with lighting of lamp by dignitaries. The list of TG members and invited speakers as Annexure I.

2. Dr. B. Thimmegowda welcomed the dignitaries – Sri. R. V. Deshpande, Hon’ble Minister for Higher Education and Tourism, Sri. S. V. Ranganath, Vice-Chairman, Karnataka State Higher Education Council, Sri. B. N. Suresh, Co-Chair, TG and Sri. Balakrishna Shetty, Co-Chair, TG. He expressed that technology and education are a great combination if used together with a right reason and vision. Technology improves education to a great extent and it has now become a need for revolutionizing education for the better.

3. Sri. R. V. Deshpande, Hon’ble Minister for Higher Education, in his Inaugural address, said that he is extremely delighted that KJA has organized this consultation workshop in education technologies which is timely and most urgent need in the state. He mentioned that KJA has taken up some challenging tasks – the development of a holistic Karnataka State Education Policy – an all encompassing policy for forward-looking and futuristic education encompassing school, college and professional level and research and innovation development with an aim of making Karnataka have a state-of-art education system in a quest to further the cause of creating a knowledge based society which is again based on access, equity and quality. One really needs to critique the present educational system from a policy perspective and identify critical areas of development. Studying and looking at some of the advances that other nations and states have planned in education sector is important. This will ultimately lead to policy and plans for the improvement, growth and delivery of the education system – addressing technological, human resources, regulation, institutional and
legal frameworks for a futuristic education system with student centricity. Special emphasis to be placed on public Vs private education systems and faculty development and encouraging/motivating teachers – as good teachers are fulcrum to a good education system.

4. Karnataka being a Knowledge capital, situations in the education sector needs to be remedied and drastic action has to be taken if Karnataka has to regain rightful place in India and elsewhere – which can only be done by increasing the GER, improving the quality of education, low dependency on the human resources and overall greater investment by the State in higher education. Karnataka was one of the first few states that established a satellite based Edusat network in 2007 – with a hub and connectivity to various colleges/institutions. While the Edusat network has been in operation, current Edusat utilisations in state has gaps/issues and recommend actions required for increasing usage of satellite communications for education activities in the state. Given this status, Karnataka aspires to rise to greater heights so that its future generations can be assured of a high-quality education that will prepare them for an effective role in state and national development processes. Development is the need of the hour in the state and in the nation. It is recognised that holistic development of school, collegiate and professional education - inter-linked with skill-based education, research and innovation, integrating analytical and technical skills for research and innovation is extremely important.

5. Information and Communication Technologies (ICTs) and Satellite-based Education need to be extensively utilised for imparting education. There are a wide range of technologies available – in the form of Audio and video technology; Computers, tablets and mobile devices; edu-conferencing, dedicated Satellite-based Education, high-speed computer networks for students/faculty etc; Whiteboards; Screen casting; Satellite Virtual classroom and many others. There are also operational examples of self-instructional digital materials, Audi/Video digital instructional materials, Learning Management Systems, Learning Content Management System, Computer-aided assessment and Electronic performance support systems (EPSS) and other classic applications for education. Recently, we have started and initialised Smart Class teaching facilities successfully.
6. While technology can significantly contribute towards efficient and effective education at university level, the importance of teachers/faculty and formal class education systems also must be recognised, in the larger context of the education environment in the state. A technology-drive must not and cannot be the main solution; at same time resistance and non-acceptance to modernisation also cannot become a limiting factor for the future generation of students. The goal must be to see how present education technologies is best adapted/assimilated to effectively improve and modernise the education system in the state at the university level.

7. A plethora of technologies are available, it is important to utilise the most suitable, effective, efficient and progressive technologies that can mesh with the existing educational system in the state. I am sure the wide range of technologies available in market will be discussed in detail in the workshop. He pointed to address many of these points in the discussions/inputs of the workshop. He also is that he will look forward to the recommendations and deliberations on future methods of technology assimilation including satellite education and for a most visionary Policy for Education.

8. Dr. B. N. Suresh delivered his introductory remarks. He shared that the Higher Education Department, GoK requested KJA - for the need for improving education quality and outreach using of advanced education technologies in Higher Education in Karnataka and requested for a review of the current EduSat utilization in the State, including assess gaps/issues in current education technology deployment and recommend actions required for enhancing educational outcomes in the State using educational technology. In order to prepare an action plan and to bring out a comprehensive and actionable report, KJA constituted TG on ETEUR to address the above requests of HED and ultimately propose a scheme-oriented planning output to GoK. He also shared that the TG convened its first consultation workshop on ‘Technology in Higher Education’ in Mysuru and it was indeed a great success. He also said that the TG is seeing how present education technologies is best adapted/assimilated to effectively improve and modernize the most suitable, effective and efficient technologies that can mesh with the existing educational system in the state. He requested the invitees/attendees to give their opinions/views on improving education quality and outreach through usage of advanced education
technologies and how present education technologies are seamlessly integrated to effectively improve and modernize the education system in the State especially Higher Education sector.

9. Sri. S. V. Ranganath brought out salient features of international studies on ‘Challenges of Education’ where Dr. Janques Delor, Former Chancellor of European Union says Knowledge is fundamental driving force. He also emphasized that the neglected community of the society should be given important in the access to quality education. Gross Enrolment Ration of Higher Education is 17-18% which needs to be increased and is also a worry that a lot of dropouts happen. With regard to deployment of technology in education, he mentioned that Massive Online Open courses are technology intensive, imparting best quality education through universities, minimizing the presence of teachers, improving enrolment ratio, enhancing focus on innovation, reducing the role of teacher where human intervention is not required, promoting self learning, peer group learning and experiential learning. Use of technology in pedagogy by teachers/school enhances Quality and Effectiveness of teaching and governance in education system.

10. Dr. P. Balakrishna Shetty was requested to give his closing remarks for inaugural session. In his remarks, he solicited inputs from the participants on each panel discussion which in turn is very useful for the TG to take it to the KJA to implement them.

4.2. TECHNICAL SESSIONS

SESSION I:

A. Technologies for Content Generation & Management

Speaker 1: Sri. Ramesh Srinivasaraghavan, Adobe

11. The speaker gave an overview of Adobe Captivate and Adobe Presenter. Adobe Captivate 8 software reimagines the way interactive eLearning is created for a multi-device world. Develop any-screen mobile learning without programming
using all-new responsive authoring. Now use an intuitive UI to transform PowerPoint presentations into engaging eLearning using actors, voices, interactions, and quizzes. Leverage best-in-class HTML5 publishing to deliver any content to mobile devices, the web, desktops, and leading LMSs. The software help to create rich, interactive distributed learning experiences.

12. With the help of Adobe Connect 8, one can easily create and deliver compelling self-paced courses, conduct highly interactive virtual classes, and efficiently manage training programs using Adobe Connect software.

13. Adobe Presenter 10 software lets you create HD video lectures for classroom teaching, distance learning, flipped learning and MOOC sessions. Simultaneously capture your screen content along with your webcam video or turn your PowerPoint slides into interactive eLearning with out-of-the-box assets and eye-catching quizzes. Leverage HTML5 publishing to deliver courses to tablets. Track content consumption and learner performance with the built-in analytics dashboard or through integration with leading LMSs. Adobe presenter helps you to create studio quality video lectures by capturing your screen content along with your audio or video, right from your desktop. Use a simple 3-button interface to easily edit and publish your videos, convert your PowerPoint slides to engaging eLearning content. Add quizzes and out-of-the-box assets, and publish as HTML5 for access using desktop and mobile browsers. Track learner performance using leading LMSs and it will use built-in analytics to track content consumption and identify learners who need course correction. Track learner performance, and report key performance metrics without having to invest in an LMS.

Speaker 2: Mr. Uday Kranti, NIIT

14. Speaker talked about common issues and solutions of technologies for content generation and management. The content lifecycle covers four macro stages: the strategic analysis, the content collection, management of the content, and publishing, which includes publication and post-publication activities. The lifecycle is in effect whether the content is controlled within a management system or not, whether it gets translated or not, whether it gets deleted at the
end of its life or revised and re-used. The analysis quadrant comprises the content strategy. The other three quadrants are more tactical in nature, focusing on the implementation of the content strategy. Assigning the activities and decisions throughout the lifecycle would create an iterative process.

15. The speaker said that the NIIT is providing education solutions to academic institutions, utilizing appropriate technology as the backbone and encompasses all the possible components which are required to render service to the present and future learning needs of schools. The solutions consists of Interactive Classrooms, the Continuous and Comprehensive Evaluation Training Program for teachers, Math Lab, Mobile Science Lab, IT Wizard, Learning Lab for Students and Quick School, an Education Resource Planning solution. He talked about common issues and solutions for technologies for content generation and management. He mentioned that the content management system is a set of automated processes – Create, Maintain, Reuse and Retire that support some of the features such as definition of workflow tasks, import and creation of documents and multimedia material, ability to track and manage multiple versions of a single instance of content etc. He shared 4 case studies such as Centralized Content Generation must augment and present/pass through locally to fulfill the needs of the target groups; Flipped classroom draws active learning, student engagement, hybrid course design and course podcasting. The value of the flipped class is in the repurposing of class time into a workshop where students can inquire about lecture content, test their skills in applying knowledge and interactive with one another in hands-on activities. During class sessions, instructors function as coaches or advisors, encouraging students in individual inquiry and collaborative effort; MOOCs and maintenance of the contents.

SESSION II:

B. Educational Content Delivery Technologies

Speaker 3: Dr. Vikram Desai, DECU, ISRO

16. The speaker presented the Tele-Education Networks in India – 26 states and 3 UTs covered under EduSat Utilisation Project. ‘EDUSAT’, India’s first thematic
satellite dedicated exclusively for educational services, was used extensively to
cater to a wide range of interactive educational delivery modes like one-way TV
broadcast, video conferencing, computer conferencing, web-based instructions,
etc. EDUSAT had manifold objectives - to supplement the curriculum-based
teaching, imparting effective teacher training, providing access to quality
resource persons and new technologies, thus finally resulting in taking education
to every nook and corner of India. EDUSAT provided connectivity to schools,
colleges and higher levels of education and also supported non-formal education
including development communication. EDUSAT Programme was implemented in
three phases: pilot, semi-operational and operational phases. Pilot projects were
conducted during 2004 in Karnataka, Maharashtra and Madhya Pradesh with 300
terminals. The experiences of pilot projects were adopted in semi-operational
and operational phases. During semi-operational phase, almost all the states and
major national agencies were covered under EDUSAT programme. The networks
were expanded under operational phase with funding by respective state
governments/user agencies.

17. The networks implemented under EDUSAT programme comprise two types of
terminals, namely, Satellite Interactive Terminals (SITs) and Receive Only
Terminals (ROTs). A total of 83 networks have been implemented connecting to
about 60,051 schools and colleges (4,790 Interactive classrooms and 55,261
ROTs) covering 26 States and 3 Union Territories of the country. About 15 million
students are getting benefited through EDUSAT programme every year.

18. As a part of implementation of Tele-Education network, a TV Studio/Teaching
end in each state is deployed for live telecast of programmes and creating
content as per their need/curriculum. DECU is providing training on Content
Generation to resource person for making programmes to be telecast on
respective tele-education network and also organized script writing workshop
and teachers’ orientation. DECU also generated few demo programmes for Std
10th and 12th of CBSE and distributed to few states for broadcast. In case
studio/teaching end is not physically located at Hub site, it is connected to hub
using 2 Mbps back haul link. He also shared the challenges and issues in tele-
education.
19. Mr. Desai said that the ISRO has proposed the new concept of tele-education which is having the configuration of 6-Ku-band independent Broadcast hubs, minimum 1 channel, 11 M hub. The interactivity is through GSM and backhaul link between teaching end & hub. It consists of additional features like recording, storage and playback classroom. The new concept is consisting commercially available, reduces dependency on single vendor, low capital and maintenance cost, user friendly and requires minimum licensing requirements. He also shared the comparative analysis of present network, internet based technology and new concept/GSM based technology.

Speaker 4: Sri. R. Subramanium, Hughes

20. The speaker said that the Hughes Global Education, is a premier interactive onsite learning through satellite based education and training service initiative by Hughes, for corporate and working professionals/Students. It has live, interactive, real-time, two way video, voice and data classes, and spread across 155 classrooms in 75 cities. Hughes Global Education platform has redefined the next generation of education i.e. real-time Interactive Onsite Learning. The platform offers interactivity similar to a live classroom session, where a student sitting in any part of the country, at any given point in time, can interact freely with the professor, raise questions, queries, etc. making the interaction as spontaneous and natural as in a regular classroom. There is extensive use of two video, voice and data. The pedagogy is highly interactive. It consists of a judicious blend of lectures, real life case studies, quizzes, assignments, etc.

21. He also shared the activities of Educational Content Delivery Infrastructure of the Hughes. He shared that the core of the work is the Studio which is fully equipped with all required audio, video and computer systems that allow the instructor to teach and interact with students who could be spread across the country. The platform is very advanced that combines the critical aspects of verbal and visual communication – two-way video and audio synchronized with rich content, collaboration, discussion groups, application sharing and live interaction. The communications platform reaches large numbers of people in real-time. With this platform, live sessions become highly intuitive and effective, as video and rich interactive content are delivered directly to the desktop of the student. This
demonstrates that this platform meets the most stringent performance criteria when delivered over the Hughes system. Very small aperture terminal (VSAT) is a communications technology that enables reliable two-way transmission of data via satellite using comparatively small antennas. The platform is a scalable application that combines quality video with two-way audio and data transfer to enable live delivery. It offers live collaboration tools such as application sharing, whiteboard annotations, discussion groups, chats and guided browsing. The platform shares a common user interface for live interaction, which incorporates the foundations of dialogue – high quality video for face-to-face interaction, clear audio, and rich supporting visuals and virtual collaboration. This interface includes integrated multiple video windows, application and data sharing, chat, questions, whiteboard and recording capabilities, all of which are designed to enable a feeling of virtual classroom even as students are geographically dispersed.

**Speaker 5: Sri. Sagar Betageri, McGraw Hill**

22. The Speaker talked about one of the initiative of McGraw Hill – Connect. McGraw-Hill Connect is a digital teaching and learning environment that saves students and instructors time while improving performance over a variety of critical outcomes. Connect is a highly interactive learning solution which helps professors in devoting more time towards teaching & less for managing the class and students in studying more effectively. Connect is a web-based assignment & assessment platform that helps Professors connect with their students anywhere, anytime. The paradigm shift from manual to digital helps the Professors in creating assignments faster & better and assessing the students more efficiently and effectively. With Connect one can –

22.1. Create assignments from a vast repertoire of content – in built and your own
22.2. Select the questions on basis of learning objectives or topics or difficulty level
22.3. Streamline lesson planning, student progress reporting & assignment grading
22.4. Create/conduct Homework, Practice test, Quiz or Exam
22.5. Assign practice materials to students as & when needed
22.6. Improves student learning & retention through engaging media & study resources
22.7. Get auto graded scores and feedback
22.8. Access Connect anywhere, anytime
22.9. Go paperless and contribute to the environment

23. The speaker said that McGraw-Hill Education conduct in-depth research to create a new learning experience that meets the needs of students and instructors today. The result is a reinvented learning experience rich in information, visually engaging, and easily accessible to both instructors and students. Connect offers a number of powerful tools and features to make managing assignments easier, so that one can spend more time teaching. With Connect, students can engage with their coursework anytime and anywhere, making the learning process more accessible and efficient. The Connect Instructor Library is course creation hub, which provides all the critical resources. It also assigns eBook reading and draws from a rich collection of textbook-specific assignments and access to ready-made PowerPoint presentations. It also helps to create and deliver assignments easily with selectable end-of-chapter questions and test bank material to assign online. It also assists to streamline lesson planning, student progress reporting and assignment grading to make classroom management more efficient than ever. Connect also helps students learn more efficiently by providing feedback and practice material when they need it, where they need it. It automatically score assignments, giving students immediate feedback on their work and side-by-side comparisons with correct answers, access and review each response, manually change grades or leave comments for students to review and also reinforce classroom concepts with practice tests and instant quizzes.

24. Students learn better when they're actively engaged with the material. Lecture Capture of Connect offers new ways for students to focus on their coursework, both in and out of class. It actually records and distributes class lecture with a click of button, records and indexes PowerPoint presentations and anything shown on your computer so it is easily searchable, frame by frame, offers access to lectures anytime and anyplace by computer, iPod or mobile device and also
allow students to focus less on note-taking and more on class discussion, so they can listen more intently and participate.

**Speaker 6: Sri. Bhushan Sharma, Pearson**

25. Representative of Pearson shared the learning platforms of Pearson – Open Class, Equella and learning Studio. Open Class is designed for educators, institutions, students and content creators. Open Class is cloud based wherein one can easily create and edit courses, access to course materials and check assignments anywhere, anytime. It allow one to import existing materials like curriculum, content, and student information from other Learning Management Systems like Blackboard, Angel, and Moodle and it is easy to collaborate with fellow teachers, students, open to world-class content from publishers and individuals and it is easy to rate content and read and write reviews in the idea exchange completely cloud-based.

26. Equella is pearson's premier digital content repository, provides a central solution to meet an institution's learning, research, media and library needs. Faculty, instructional designers and academic technologists can easily search in one location for all of their learning content – video, custom eBooks, presentations, lecture captures and more – all tagged by metadata such as learning outcomes, grade level and relevant keywords. Equella is currently in use in a wide range of schools, districts, universities, community colleges, state systems and departments of education, government agencies, and corporations worldwide.

27. Pearson Learning Studio is built on a fully-hosted platform that is optimized to scale effortlessly as your program grows. And as more students access the platform, you can be assured that they will stay connected via Learning Studio's mission-critical services.

**Speaker 7: Sri. Punya Mishra, Professor, Michigan University**

28. The speaker talked about TPACK – Technological Pedagogical Content Knowledge. TPACK attempts to capture some of the essential qualities of
knowledge required by teachers for technology integration in their teaching, while addressing the complex, multifaceted and situated nature of teacher knowledge. At the heart of the TPACK framework, is the complex interplay of three primary forms of knowledge: Content (CK), Pedagogy (PK), and Technology (TK). TPACK is a conceptual framework for educational technology by building on Shulman’s formulation of “pedagogical content knowledge” and extend it to the phenomenon of teachers integrating technology into their pedagogy. This framework is the result of 5 years of work on a program of research focused on teacher professional development and faculty development in higher education. It attempts to capture some of the essential qualities of teacher knowledge required for technology integration in teaching, while addressing the complex, multifaceted, and situated nature of this knowledge. Thoughtful pedagogical uses of technology require the development of a complex, situated form of knowledge. In doing so, one posit the complex roles of, and interplay among, three main components of learning environments: content, pedagogy, and technology. It offers to discussions of technology integration at multiple levels: theoretical, pedagogical, and methodological. Effective technology integration for pedagogy around specific subject matter requires developing sensitivity to the dynamic, transactional relationship between all three components. A teacher capable of negotiating these relationships represents a form of expertise different from, and greater than, the knowledge of a disciplinary expert (a mathematician or a historian), a technology expert (a computer scientist) and a pedagogical expert (an experienced educator). The speaker also putforth some of the key points – MOOCs misses creativity and insight; content must be in a disciplined manner; technology usage is about three main key challenge – Technology change adoption, how to teach , what to teach and finally technology makes ‘Good Teacher better or a Bad Teacher Worse’.

HIGH LEVEL PANEL DISCUSSION

29. Sri. S. V. Ranganath opined that there should be high level of encouragement for use of technology in education sector as the present Century is Information and Communication Technology driven. He mentioned that as Education sector would be prime mover of technology and innovation, incentivizing users of technology is very vital to build India’s future generation. In the use of technology there is need
to pay attention to responsibility allocation as technology can be disruptive; the main aim of adopting technology should be to improve delivery and quality of education. This workshop should deliberate and provide road map to the state on utilisation of technology in improving education system.

30. Dr. B N Suresh in his brief remarks said that the important factor under consideration in the workshop is technology for teaching. It is to be noted that upgrading technology frequently is costly and is very important factor for adoption of technology, therefore financing becomes very vital and requires highest consideration. There is also need for changes in the mindset of Government and stakeholders for giving great impetus to Technology in Education Sector. The Online courses and distance education courses imparted using technology by Open Universities / Distance Education Institutions are to be recognized Degrees on par with regular degrees issued by regular universities as this move thrusts on adoption/acceptability among Employers/Students/Teachers/Stakeholders.

31. Dr. Mukund Rao said technology has made in-roads into all spheres of life, in one way or the other. In education, technology has a significant role to play as quality, access and affordability can be ensured by adoption and deployment of suitable, simple & scalable technology interventions at appropriate levels. Also, Institutions should be allowed to choose the technologies as per their needs. While we discuss on the technology, it is very important to note that the societal changes where one could witness transition period in the technology adoption/intrusion – people born pre80’s are grappling with technological advancements and are struggling to cope with the present technological scenario, whereas people born after 1980’s have no problem to adopt and absorb technology as part of their life. It is very important to note that Education is Teacher dependant and there is urgent need to enable teachers to adopt technology in their teaching and assessment activities. It is very vital to ensure flexibility & independence to teachers to choose technology as part of their teaching methodology. The technology can be great tool to reduce and eliminate rural-urban divide in access to quality education.
32. Prof. Punya Mishra said that technology based learning brings a feeling of Mastery and sense of autonomy in students. But it brings no sense of autonomy among teachers while they learn to adopt to technology in their teaching and evaluation methodology. This is the reason for reluctance and slowness in teachers for employing technology. Therefore, it is very important to incentivize teachers for bettering their talent/skill using technology, rather than imposing technology on them. It is important to give them freedom to choose technology and adopt them.

33. Prof. Sridhar said different segments of education community like Institutions, Teachers and Students have different types of approach to learn and adopt technology in their spheres of life. Therefore, policy of funding the technology inclusion determines degree of adoption of technology. The Government should devise the policy on decision of using funds for adoption of technology to Universities / Institutions. There should not be a policy decision to apply same technology on everyone. There is a need to identify a road map on rolling out technology through needs and ways to implement them.

34. Sri S V Ranganath responding to Prof. Sridhar’s point on issue of funding said that the challenge lies in arriving at right amount to reach to reach last mile in the education delivery mechanism. Adopting technology is necessary to reach the last mile as there is no other solution available to meet this challenge. In general, technology is a cost effective solution but challenge lies in determining cost-benefit ratio. There is a need to make teacher’s most effective by leveraging technology; there can be no headway in adopting technology until it is made acceptable and teachers who adopt to technology should get encouragement for their efforts. In the current setup innovation is not promoted, therefore there is need to challenge people to innovate. One size fits all is not the solution. High quality mind should gravitate from the young age. Technology shall aid this.

35. Dr. Prabhakar said that the technology adoption should be driven by the interest of the learner (child/student).
SESSION III:

C. Technology for Examinations and Administration

Speaker 8: Dr. Ningegowda, Registrar (Evaluation), Bangalore University

36. While sharing the genesis of Bangalore University, the speaker mentioned that the Bangalore University established in the year of 1964. Today, it is one of the largest Universities in the country and in Asia with about 714 affiliated colleges. Currently, the University is offering 37 degrees – Under graduate 16 and Post-graduate 27. He also shared the IT initiatives which BU is following – 1985 Bachelor of Engineering course was computerized using Cobol on Unix Operating System and phased manner computerization of all the courses was implemented in the University. As of now, Examination Branch conducts two examinations in an academic year – with the help of technology 2,55,961 students registered themselves for the examinations for the year of November 2014, 15,44,856 answer scripts evaluated and 3,59,010 results were successfully announced.

37. The University is extensively utilizing technology for all the administration process. For pre-examination process, University obtains online student enrollment data from colleges along with photo, student admission fee generation, collection of consolidated fees from the college, submission of student documents to the university approval, generation of Unique Register Number, online student registration for examination and download of admission ticket of the students by the colleges. For post-examination process, central college campus is the evaluation centre for all UG courses. The campus is under camera surveillance. Coding of Answer scripts is done by scanning – 18 answer scripts packet and generation of OMR with unique code number for the script and printing of the corresponding code on answer script. The evaluator will mark the marks awarded on the OMR, which is scanned and register number decoded after evaluation all the scripts. The data after valuation of all answer scripts of the course/semester will be uploaded. Results will be processed and results of the students will be declared online. Result sheets college-wise will be generated in PDF format, where in the colleges can download the result sheets. Finally he mentioned that the University results of final semester of all courses were
announced within a fortnight. University is spearheading to make the valuation digital and even to digitalize marks card. Further e-verification is one the cards and will be implemented very soon. Over Bangalore University is pioneer University in adopting the latest information technology to examination section to make it more students friendly.

**Speaker 9: Sri. Om Deshmukh, Xerox Research Centre India**

38. The speaker talked about Tutorspace - Multimodal Analytics of Xerox Research Center India. Quality education is one of the pressing needs of the emerging markets, particularly India. technology-enabled Massive Open Online Courses (MOOCs) and Open Education Resources (OERs) can be utilized to provide personalized educational experience based on students’ background, their learning behaviour and performance. Xerox Research Centre India (XRCI) is working towards building personalized recommendation systems that automatically create such customized video and/or text-based content. He introduce Tutor space a product of XEROX provides Formal and informal learning programs and software and services. It provide textbook – like navigation capabilities in video and one can search, clip, annotate and share video content and can also hyperlink with the video for efficient consumption and navigation. Tutorspace would lead to following driven actionable insights – Descriptive, Predictive and Prescriptive. Descriptive would drive to an aggregate and pre-learner content-usage and content-interaction pattern – predictive would predict learner performance, engagement and topic relevance and prescriptive prescribe remedial interventions it could be group and/or learner-specific. He also expressed the XRCI would like to join hands to pilot the system in college/university, improve student graduation rate, performance and employability and improve teacher efficiency.

**Speaker 10: Sri. B. S. Lokesh, Canon**

39. Speaker shared one of the initiatives of Canon which is being used to enhance education process – Managed Document Services. Canon Managed Document Services is a unified offering for organisations’s total output and document solutions management. It actually control print costs, enhance productivity and
efficiency and innovate and optimize work flow processes. It provided end to end services to achieve goals for cost reduction, improve serviceability and value driven solutions for continuous education process improvements to ensure that the objectives are being met. He presented three case studies – one is on, In house printing for question paper, marks sheet printing and certificates; second is Charge Back Model – Making printouts for lecture and project work are daily necessities for all students at the institutions and third is students’ record management which helps in organizing document management system results in faster retrieval records, its digital storage offers expandable capacity without impacting office space.

Speaker 11: Sri. B. V. Deepak, JIL Information Technology Limited

40. Speaker talked about Digital Onscreen Evaluation system which is developed by JILIT. While thinking of technologies, evaluation is also becomes important to grade a student with quick response in declaring the results. The physical copies to be handed over to evaluators, there may be risk of lost in transit ad there is every change of malpractices in evaluation. The manual copies are to be verified again for tabulation of result, which challenges in terms of accuracy. The solution has been developed/implemented with background of these concerns and with the interest of minimizing the time and effort.

41. He also shared some of the features of DOES such as secrecy will be maintained in coding the copies of answer books, randomly allot of answer books based on the specialization of the evaluators specialization, can be viewed question paper related to the Answer book, summary of scores will be displayed before submitting and generation of PDF files of evaluated copies. Activities of the DOES involves of scanning, digitization of answer books and each page is converted to image, preparation of master information like list of evaluators, list of paper codes and list of courses and branches, training to all the evaluators, automatic and random allocation by system to evaluators, evaluation of evaluators, enter marks, tabulate result and generate into PDF files.
Speaker 12: Sri. B. V. Deepak, JIL Information Technology Limited

42. Speaker also shared some of the solutions developed such as Q-genie, OLT, Campus Lynx, DOES and Online Examination Record Verification.

43. Q-genie is a web enabled question paper generator solution for Teachers, Tutors, Parents, Students, Schools and Coaching Institutes across classes and subjects. The software allows generating a question paper based on parameters like learning objectives, types of questions, competency level and difficulty level. In Qgenie, emphasis has been given to tag each question with its learning objectives. The repository of questions allows teachers to select a variety of questions from the bank. The teachers have the flexibility to generate class tests, terminal tests, and final tests. Setting a balanced question paper is a complex and demanding process. Generally most of the teachers set learning objectives while making lesson plans but they give less importance to transform these learning objectives into assessment objectives while setting question papers. This peculiar feature of linking each question with its learning objective allows teachers to focus on the testing of desired outcomes of the learners. Qgenie enable users to generate the question paper within a few minutes. It is therefore a very user friendly software solution. Question Paper can be downloaded 24x7 and the user has the option to print / store in a Word/PDF format at any time during the year. Qgenie can help enable students to get conceptual clarity, rational thinking ability and analytical skills through scientifically designed questions.

44. On-line Test is a unique software solution aimed at eliminating paper based exams and marking costs. This web application is a fully automated, secure online test tool with centralized controlling. All the features of On-line Test are customizable as per individual needs which can be accessed anywhere and anytime. Administrators load the questions into the database and the test is generated automatically. The question can be edited, deleted and re-used (question bank) anytime for a quick and rich online test. Online test can be given through any browser. Online Test is internet/intranet enabled website which makes test process easy, interactive, accurate and secured within a defined schedule. It is a robust and generalized product which can be used by any institute, college, coaching institutes, business firms/organizations,
placement/recruitment agencies etc for test or practice. It generated question paper as per specified question paper pattern. Administrator has having a choice of define parameters/patterns for the same and result of test can be instantly viewed.

45. Campus Lynx is a highly modular and scalable IRP (an Institutional Resource Planning) solution specifically developed in line with the operational requirements of the present day Universities and Colleges integrated with state of the art smart card technology. Campus Lynx has been implemented and is running successfully in many reputed institutions, since real time data has flown into the system, undergone rigorous testing, has proved its success and functionality in various types of colleges and university spread throughout the country. It can be implemented within a short timeframe and any additional requirements specific to a university can be incorporated as the solution has a modular framework. This allows the university to benefit from implementing a solution such as this in the shortest possible time, compared to a solution that is created from scratch. Campus Lynx has integrated most of the complex processes adopted by professionally managed educational institute right from the stage of inviting admission applications till the passing out of the student to maintaining his history. Campus Lynx performance, unparalleled ease of use, flexibility, integration, comprehensiveness, speed, reliability and low cost make it a powerful tool, which empowers the growth of an institute and its students.

SESSION IV:

D. Interactive Learning Environments (Virtual Labs/Classrooms)

Speaker 13: Sri. Sundar Suman, Elucido Media Networks

46. Speaker introduced Elucido CONNECT is a software product for enabling enhanced multiparty collaboration using Tablets, Smartphones and Laptops. CONNECT offers HD video and full duplex audio along with simultaneous whiteboard writing and document capabilities for all participants. Main features below:

39.1. Simultaneous writing and annotation on documents & Images
39.2. Upload and manage personal documents, presentations, spreadsheets and images (all participants) for use during collaboration sessions

39.3. Download whiteboard writing and document annotation done during the collaboration session as one PDF document at the end of the session

39.4. Supports multi-environment collaboration (between groups in conference rooms and individuals using mobile devices & laptops)

**Speaker 14: Sri. Sudhi Subramanian, Televital**

40. Speaker mentioned that the Televital solution offers syllabus based electronic educational content along with innovative and user-friendly ways to access e-content with bidirectional features to greatly enhance the quality of education. Based on decade of long experience in providing services in remotest parts in India and in Africa, Televital developed a state-of-the-art digital solution known as “Virtual Classroom” for the students to access syllabus based e-content in schools with limited Internet connection or no Internet connection and also with frequent power failures. This solution consists of a highly reliable local server with power backup providing e-content streaming on a local Wi-Fi network to Android or Windows laptops and/or desktops. These end terminal laptops/desktops don’t have any hard disks thereby enhancing the reliability and reducing the downtime significantly. Fully charged laptops can sustain up to 8 hrs. The students can not only stream the content recommended by their teachers on touchpad laptops and desktops, but can also answer the e-questions that the teachers have entered which pop up at predefined times during the streaming. This unique solution is one of the most innovative, reliable and economical solution helping the students to access the digital content in these virtual classrooms.

41. The education system is changing rapidly. Use of technology for making learning interesting and fun for students is increasing. Imagine a science teacher explaining how a DNA replicates, a history teacher teaching a class about the Mourya Empire, or a geography teacher teaching how Block Mountains are formed. The best of teachers take pains to explain the concepts largely
depending on their own abilities. The students listen to the teachers, try to decipher the figures drawn on the blackboard and read from their text books, take notes and try hard to visualize how it happens and remember. At the end of the class, the teacher asks a few random questions to assess how the class fared. Invariably a few hands (mostly of the same set of brightest students in class), go up, the answers are given and the class ends.

42. Virtual Classroom brings about a complete transformation in classrooms. The Science teacher while explaining how a DNA replicates is able to show the class a 3D animation of the DNA replication process on a large screen. Teacher can explain the fine points of the process, zoom in to show the relevant visuals, pause and explain when and where she needs to emphasize. Similarly the History teacher shows the class a virtual walk through of the Harappan Civilization. Uncovering the relevant parts step by step as a part of her lesson plan, while the Geography teacher shows a virtual Block Mountain being formed, all with engaging animations, colors, music, sounds and voice. The teachers gain complete attention and interest of every child in the class. Every child gets a visual input on how it happens and the concepts are well understood and internalized.

Speaker 12: Dr. S. G. Sreekanteswara Swamy, Executive Secretary, KSCST

43. The speaker said that the KSCST is an autonomous science and Technology organization under Department of Science & Technology Government of Karnataka. Under the Special Development Programme of GoK, DST-GoK, KSCST has implemented Virtual Laboratories at 10 high schools in the backward talus of Karnataka for use by the students for self learning, complementing classroom teaching. The objective of this initiative is to improve the quality and effectiveness of education by interactive self learning process and compliment/supplement classroom teaching through IT gadgets; to pool academic resources thereby improving access to teachers and students; to increase and improve the accessibility of educational resources and to enable students to independently view specific topics and breakout sessions allow teachers to divide the students into groups to discuss a specific topics or to work on a group assignment. So far, KSCST has set up Virtual Laboratories in 10 districts of Karnataka. Local server with syllabus based e-content and general
content for high schools in both English and many Indian languages. Content streaming will be done from the server to Android laptops/desktops with HDMI touch screens and also to a large HDMI television on a wi-fi network. UPS power backup for the server is also extended and fully charged laptops can run for 6+ hours. Along with this, teachers can also add their own requirements and additional pictures and information to the existing e-content and teachers can also create/add additional content to improve student’s general knowledge. Answers from students and statistics on the usage are archived in the database in the local server to measure the progress and also to measure the quality of education. With optional internet/satellite connection, local server will be periodically upgraded and also statistics from the local server will be uploaded to the server in the cloud. Centralized dashboard on this cloud provides feedback on the total usage as well as parameters to measure the overall quality.

4.3. OPEN DISCUSSION OF THE SESSIONS

44. It was suggested to digitize the lecture notes as most professors and teachers write their lecture material with a word processor, it is commonly distributed as regular handouts. This can be troublesome if any miss a lecture, and there will be limited number of handouts.

45. It was also discussed on video creation tools for lectures. Open Educational Resources are freely accessible, open documents which is useful for teaching, learning and accessing for different purposed which could also be used to develop and promote the educational content.

46. Many of the faculties suggested that the content should be local specific, user friendly and quality of material.

47. The content must also ensure to increase the Gross Enrolment Ratio of the State as well as the focus must also be on rural education.

48. It was also felt that the Patent considerations are particularly important to online educational resources.

49. Great strides have been made in infusing technology into schools and into the instructional process. Although schools have made progress in bringing
computers and the Internet to students and staff, greater access is still needed in order for technology to become a reliable tool for teaching and learning.

50. Teachers are role models creating trust and inspiring students in an environment where learning occurs – technology alone cannot offer these skills.

51. Teachers do not simply impart information and knowledge; teaching is not merely about systems, facts, figures and certainly does not exist to promote insularity and lack of social interaction. Education is much more complex than that. It is about the trust and bond between a teacher and students that creates the environment where learning can occur and grow. Virtual learning simply cannot do that.

52. State Universities must also have its own Digital repositories to help the target groups.

4.4. WRAP-UP SESSION

53. The wrap-up session was presented by Prof. B.C. Prabhakar, Director, IQAC, BUB; Dr. B. N. Suresh, Co-chair, Task group; Dr. P. Balakrishna shetty, Co-chair, Task group, KJA and Dr. B. Thimme Gowda, Vice Chancellor, Bangalore University. The session sought major inputs for the workshop from the invitees.
MAJOR INPUTS OBTAINED FROM THE DISCUSSIONS

- The workshop consists of a legion of valuable information and useful tools. Recommended to convene similar kind of workshops in near future.

- Academic Institutions/Authorities must list out the requirements before going to software vendors. In fact, the software vendors must customize the product according to the need and never go with the product what they have built already, since it may not blend with the existing system.

- Develop the requisite conceptual, critical, and philosophical skills necessary to take a leading role in guiding social and cultural discussions of the radical and transformative possibilities that are, and increasingly will be, afforded by technological intervention in the physical bases of human life.

- Actively encourage and train faculty in the use of educational technology in teaching and learning and use technology to assist overall student productivity and in particular, to help support a student’s own individual learning activities and plan curriculum activities to accomplish with the technology.

- Academic institutions must not view technology as a one-time investment but must budget for maintenance, upgrading and replacement costs. Available technology must b suited to the educational goals for which it is intended. Investments should not be made in technology for its own sake, but because it facilitates or extends instruction. This requires that a well-defined instructional vision should precede the technological one; teacher involvement in defining this vision is essential.

- The emergence of new technologies - computer related, multimedia, telecommunications - are presenting new challenges and opportunities to teacher education. Although some integration of computer applications within methodology and curriculum courses occurs in mainstream teacher education, each wave of new technologies, such as multimedia and telecommunications introduces a new wave of 'experts' from outside traditional teacher education backgrounds and training. How to work with these 'competing' teacher educators, from both institutional and conceptual perspectives, is an on-going challenge for teacher education professionals.
To sensitize teachers about new concepts of teaching and assessment methods, develop knowledge and skills required for performing the role of competent and effective teacher and to update knowledge, faculty development programmes must be convened in order to enable faculty members to avail modern education technology for teaching.

Technology vendors must come out with a package including software maintenance and care must be taken so that the technology vendors shall not dictate terms after technology implemented in the system.

Pilot basis implementation of technology must be done in cluster of Institution which comprises of both rural and urban colleges together to understand how the implementation is working in the system.

Institutions must make Educational Technology Training mandatory which also enable teachers to obtain credit hours.
5. ANALYSIS OF FEEDBACK

TG has developed a simple questionnaire/feedback format - Appendix B which was circulated to the participants to fill. The filled response from the participants was analysed. Appendix C summarizes basic statistical information from the feedback forms. In this section, we highlight the important points made by participants, which will be taken on board by the TG.

5.1. Comments regarding the need for content creation tools:

54. A number of faculty members expressed a willingness to create customized lecture materials if given easy-to-use tools. This enthusiasm was not just restricted to videos, but suggestions for enhancing existing content (and creating new content) included pictures, graphics, concept maps, etc. Existing tools such as PowerPoint or OpenOffice support most of this functionality, but it was promising to see interest among faculty members to stamp their own distinctive style to course materials and content.

55. Furthermore, faculty members opined that sharing high-quality notes would be helpful, especially since faculty are often under severe stress to “cover the syllabus”. A counter-argument to this, however, was that make notes available easily to students may create a problem of absenteeism. Of course, any teacher who can be replaced by his/her notes is unlikely to be a high-quality teacher in the first place.

5.2. Comments regarding content delivery methods:

56. Teachers strongly endorsed the need for two-way communication in class. Several respondents indicated that they had tried showing “one way” videos (including EduSat or NPTEL content) in class, but students quickly became disengaged. Hence, the need for a live faculty member would always remain.

57. One of the ideas demonstrated – providing content on smartphones – was viewed by several faculty as especially promising. To exploit this optimally, some faculty members opined that campuses should provide students and faculty members with WiFi access, at least for such content.
5.3. Comments regarding automating the examination processes:

58. Students identified this as the key session, since “in our education life, Examination part is most important”. As mentioned during the discussions, the issue of security and privacy were concerns when dealing with online examination systems.

5.4. Comments regarding interactive environments (virtual labs/classrooms):

59. Some faculty, including a few at Arts Colleges, stated that they had successfully been using smart boards for some time (with one institution making “full use” of them since 2010). However, many respondents felt that smart boards often seem like a good idea, but "unless good training and maintaining is provided, it will not work".

60. One extremely promising suggestion was given by principals of teachers’ colleges, who stated that they would be willing to work with government/industry partners to create content for virtual labs and classrooms.

5.5. Other comments:

61. The two primary concerns which were voiced repeatedly by almost all respondents concerned (1) infrastructure, namely power supply, backup and high-speed internet connectivity, and (2) cost for acquiring and maintaining the technology solutions suggested. Two interesting points were raised in this regard. First, vendors who provide online tools should also make the technology “somewhat workable” in offline mode, so that core system features can be used even if the network connection fails (as it sometimes does). Second, the government should actively encourage creation of open-source tools, and some faculty stated their interest in developing such tools.

62. Finally, one extremely interesting comment pointed out that none of the technologies demonstrated exploited teachers who actively use social media. The respondent pointed out that such social media tools could be extremely useful in helping faculty peer-learn and inculcate best practices involving the use of educational technologies.
6. RECOMMENDATIONS

6.1. Need of educational technologies that simplify the process of creating good-quality digital notes, lecture videos, adding additional content to existing videos, creating standard digital content of particular topic and allowing for local customization which benefits to students, instructors and institutions by availing digital lecture notes

6.2. Emphasis on sustainable solutions and provision of dedicated infrastructure to access digital content, including internet (either terrestrial or satellite-based), power (e.g. solar), projector, sound-system, smartboard (or smart projector)

6.3. Access to two-way (interactive) functionality to Receive-Only-Terminals (RoTs) for instructors

6.4. Promote classroom interaction greatly by interspersing lectures with problem-solving technologies i.e. clickers which are suitable for MCQs and database of solved and unsolved questions from previous years exams

6.5. Suitable software technology for automatically create exams from existing question banks and also based on digital content and customize software to perform exam scheduling/conducting/issuing grade to avoid fake grades

6.6. Create and broadcast educational content more targeted to the needs of local specific communities and as a result have a greater flexibility to employ local languages

6.7. State Universities to have their own digital repositories of scholarly works, teaching tools and other literature produced by the University community. Contents include articles, conference presentations, working papers, online journals, newsletters and syllabi to access to the student and other community

6.8. During technology planning, purchase decisions, and deployment, consider the accessibility needs of students. Weaving accessibility into the overall technology plan rather than adding accessibility as an afterthought could reduce overall technology costs.
LIST OF SPEAKERS

Members present:

1. Sri. R. V. Deshpande, Hon’ble Minister for Higher Education, Government of Karnataka
2. Sri. S. V. Ranganath, Vice-Chairman, KSHEC
3. Dr. Mukund Rao, Member-Secretary, KJA and Member, TG ET-EUR
4. Dr. B. N. Suresh, Co-Chair, TG ET-EUR
5. Dr. P. Balakrishna Shetty, Co-Chair, TG ET-EUR and Member, KJA
6. Dr. Vikram Desai, Member, TG ET-EUR
7. Dr. Viraj Kumar, Member Secretary, TG ET-EUR
8. Prof. Thimme Gowda, Vice-Chancellor, Bangalore University, Bangalore
9. Dr. Prahalak, Director, IQAC, Bangalore University, Bangalore

Speakers:

10. Sri. Ramesh Srinivasaraghavan, Adobe
11. Sri. Uday Kranti, NIIT
12. Dr. Vikram Desai, DECU, ISRO
13. Sri R. Subramaniam, Hughes
15. Sri. Bhushan Sharma, Pearson
16. Prof. Punya Mishra, Michigan University
17. Dr. Ningegowda, Registrar (Evaluation), Bangalore University
18. Sri. Om Deshmukh, Xerox Research Centre India
19. Sri. B. S. Lokesh, Canon
20. Sri. B. V. Deepak, JIL Information Technology Limited
21. Sri. Sundar Suman, Elucido Media Networks
22. Sri. Sudhi Subramanian, Televital
23. Dr. S. G. Sreekanteswara Swamy, Karnataka State Council for Science and Technology

KJA Secretariat:

24. Mr. Deepak, Co-Conver, TG ET-EUR
25. Ms. Jayashri M., Convenor, TG ET-EUR

Around 307 participants were actively participated in the workshop which consists of faculty, principals, associate professors, assistant professors, student community, representation from different industries etc.
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EDUCATION

Product Demo
Application Simulation
Soft Skill Training
Compliance Training

Online Courseware
Video Lectures
Remedial Learning
Student Assessments
Adobe Captivate 8 – Product Demo

- http://cp8.demo.knowhows3.website-us-east-1.amazonaws.com/

Presenter 10 – Key tool for Trainers

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Simple PowerPoint plugin to covert convert PPTs to eLearning
The simplest tool to create video presentations.

For EDUCATORS, TRAINERS, BUSINESS USERS, KNOWLEDGE WORKERS

To Create Video Lectures & Interactive eLearning from PPTX

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CODIE Award Winner for "Best Video Tool" - 2013 & 2014
What is Adobe Presenter 10?

- Create video lectures in 3 easy steps
- Transform slides into interactive eLearning
- Use analytics for learner intervention

Studio quality video lectures for distance learning, flipped classrooms and MOOC sessions
Convert your PowerPoint presentations to engaging eLearning content with out-of-the-box assets
Use built-in analytics to track content consumption and identify learners early who need course correction.

New in Adobe Presenter 10

- Available on MAC (Presenter Video Express)
- HTML5 Publishing
- Gesture Support
- New Edit UI
- Hardware Independent HD videos
- .SRT (Subtitles) file generation
Resources

Trial Download for E-learning Authoring tools

Other Resources:
- Tutorials on Adobe Captivate and Adobe Presenter: https://www.adobeknowhow.com/?search=Presenter
- Adobe Education Exchange: http://edex.adobe.com/

For more details contact

Ramesh Srinivasaraghavan
Senior Engineering Manager
Adobe Systems India Private Limited
Bangalore

Email: rameshs@adobe.com
Phone: +91-80-41939849
Task Group for Educational Technology for Higher Education in Karnataka and EduSat Utilisation Review (ET-EUR)

“Assessing Technologies for Higher Education”
June 16-17, 2015; Central College Campus, Bangalore University

TECHNOLOGIES FOR CONTENT GENERATION & MANAGEMENT
COMMON ISSUES AND SOLUTIONS
CONTENT LIFE CYCLE – 4 CASE STUDIES

Create

Retire

Maintain
- Curate
- Extend

Reuse
- Repurpose

CREATE : ET

CAUTION!

Don’t Throw the Professor With the Bathwater...
ET – To Extend and Amplify
What an Educator Would Want to Do

CASE STUDY 1: CREATE
Create Centrally,
Augment and Present Locally
CASE STUDY 2

ET – To Flip the Classroom

CASE STUDY 3

MOOC

Go Social, or Curated?
CASE STUDY 4

Operating System Changes
PC Technology Tablet
Plugin Mobile
Browser
Maintain-Retire Dilemma

NIIT

Uday.Kranti@NIIT.com,
+919810504321

Thank You!

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Annexure IV

Presentation on

Content delivery through SATCOM

Vikram Desai
Director, DECU
ISRO, Ahmedabad

16th June 2015

Tele-Education Networks in India

26 STATES & 3 UTs COVERED UNDER EDUSAT UTILISATION PROJECT

INTEGRATION
- 83
INTERACTIVE CLASSROOMS
- 4790
RECEIVE ONLY CLASSROOMS
- 55261
HUBs
- 37

NETWORKS OPERATIONAL
Jammu & Kashmir, Punjab, Haryana, Delhi, Rajasthan, Gujarat, Maharashtra, Madhya Pradesh, Chhattisgarh, Karnataka, Andhra Pradesh, Tamil Nadu, Pondicherry, Kerala, Lakshadweep, Andaman & Nicobar, West Bengal, Orissa, Tripura, Nagaland, Meghalaya, Arunachal Pradesh, Mizoram, Dadra & Nagar Haveli, Uttarakhhand, Assam, Bihar, Jharkhand & Sikkim

IMPLEMENTATION INITIATED
Himachal Pradesh & Uttar Pradesh

IMPLEMENTATION TO BE TAKEN UP
Manipur
Tele-Education Network Configuration

Existing Network Technology

- Minimum 1 Hub/state.
- Each Hub can handle maximum 8 networks.
- Forward Data rate 1.2 Mbps and return channel Data rate 512 Kbps
- Each network can have 500 SITs (max.).
- Unlimited numbers of ROTs with Data rate of 2.2 Mbps and solar powered option.
- Network Topology (STAR)
- Access scheme (TDM / MF-TDMA)
Tele-Education network Configurations

There are basically two different network configurations available for implementation in three different operating frequency bands

Network Configuration:
- Satellite Interactive Terminal (SIT)
- Receive Only Terminal (ROT)

Frequency Band:
- Ku-Band / Ext. C – Band /C-Band

Present Scenario

- 83 Tele-Education Networks established across the country
  - Ku-Band : 64
  - Ext. C-Band : 18
  - C-Band : 01
- Two types of Networks : (1) Interactive & (2) Non-Interactive
  - Interactive : 62
  - Non-Interactive : 21
- Interactive network procured from three OEMs.
  - M/s. Viasat, USA (through M/s BEL)
  - M/s. Hughes, USA
  - M/s. Advantech, CANADA (through M/s Infinium)
- Non-interactive network procured from
  - M/s BEL
  - M/s MCBS
Present Scenario

- **Number of Hubs : 37**
  - Ku-Band (3.8M) : 28
    - M/s ViaSat : 14
    - M/s Hughes : 11
    - M/s Advantech : 03
  - Ext. C-band (4.6 M) : 08
    - M/s ViaSat : 05
    - M/s Hughes : 02
    - ISRO TDCC, Karnataka : 01
  - C-Band : 01
    - M/s Hughes

- **Beneficiaries**: Primary Education, Secondary Education, Technical Education, Teacher’s Training, Panchayatraj Functionaries, Open University, Vocational Training, Competitive Exam Coaching, Health Dept. etc.

- **Bandwidth (Total : 165.5 MHz)**
  - Ku-Band : 113 MHz on INSAT-4CR & GSAT-8
  - Ext. C-Band : 42 MHz on INSAT-3A, 3C & GSAT-12
  - C-Band : 10.5 MHz on INSAT-4A

Content Generation Strategy

- As a part of implementation of Tele-Education network, a TV Studio/Teaching end in each state is deployed for live telecast of programmes and creating content as per their need/curriculum.

- DECU is providing training on Content Generation to resource person for making programmes to be telecast on respective Tele-Education network and also organised Script Writing Workshop & Teachers Orientation.

- DECU also generated few demo programmes for Std. - 10th & 12th of CBSE and distributed to few states for broadcast.

- In case studio/Teaching end is not physically located at Hub site, it is connected to Hub using 2 Mbps Back Haul Link.
Challenges & Issues in Tele-Education

- Lack of ownership by Users (due to low priority)
- Lack of coordinated efforts by National & State agencies
- Tele-Education programmes are not part of curriculum
- Unavailability of trained & dedicated manpower for network operations
- Longer down-times due to erratic power supply
- Longer down-times due to untimely execution of CAMC contracts by users
- In order to continue the CAMC, requirement of up-gradation of technology by Vendors
- Poor maintenance support by Service Providers due to existing, unrealistic CAMC contract rates & inefficient handling of 3rd party maintenance calls
- Lack of centralized repository for content
- High dependency on ISRO for continuous technical support/consultancy as well as for frequent content generation & trainings
- Need for ensuring safety & security (Fire, Equipment thefts, etc.)
- Lack of Central Govt. sponsored schemes or earmarked funds for Tele-Education
- Requirement of Regulatory Clearances

New proposed concept of Tele-Education

**Configuration**

- 6 Ku-band Independent Broadcast Hubs
- Minimum 1 Channel/state
- 11M Hub, DVB-S2, MPEG-2 transmission
- ROTs at remote sites
- Interactivity through GSM (Limited)
- Backhaul link between Teaching End & Hub
- Additional Features like Recording, Storage & Playback at classroom to be explored

**Advantages**

- Commercially available system/component
- Reduces dependency on single vendor
- Low capital & maintenance cost
- User Friendly (No need for highly skilled staff)
- Technology future proof for at least 5 years
- Minimum licensing requirements
- Proof of concept realised & demonstrated
ISRO developed SATCOM based technology for Tele-Education

A effort is being made by ISRO to develop in house technology (Make in India) for Tele-Education

- Vendor independent solution
- User friendly application (Learning management) software
- Less cost (compare to existing VSAT based network) solution
- To support services like –
  - Lecture broadcasting, Audio/Video conferencing, file transfer, PPT slide show, short message, voice mail, Question registration, report/feedback form submission, Roll call etc.
- Access scheme: DAMA-SCPC with Aloha
- Forward channel: DVB broadcast @1 MSPS
- Return channel:
  - DAMA-SCPC channel @512 kbps for Audio/Video/Data communication
  - Request channel @9.6/19.2 kbps for short messages from class room
- Network Support: Approximately 500 SITs (Classrooms) and any number of ROTs
- May take around one year for realisation
<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Present Network</th>
<th>Internet based Technology</th>
<th>New Concept (GSM based Technology)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Forward and return channel Tx/Rx through satellite. Two way Video, Audio &amp; Data transmission and reception.</td>
<td>Forward channel for transmission of content from Teaching End/Studio and return channel for interaction is over internet.</td>
<td>Forward channel transmission is over satellite and return channel is using GSM based technology.</td>
</tr>
<tr>
<td>2</td>
<td>It provides dedicated Satellite Bandwidth in forward as well as return channel for interaction.</td>
<td>With increase in number of student ends, there is no guarantee of providing same Bandwidth to each class room/node. (Bandwidth shared)</td>
<td>It provides dedicated satellite Bandwidth and simultaneously broadcast content to a virtually unlimited number of end user location.</td>
</tr>
<tr>
<td>3</td>
<td>Two way Video, Audio &amp; data connectivity.</td>
<td>Two way Video, Audio &amp; data connectivity.</td>
<td>One way Video &amp; two way Audio, SMS. Return video is restricted to still picture transmission only.</td>
</tr>
<tr>
<td>4</td>
<td>Regulatory Clearances are required from WPC, NOCC &amp; SACFA</td>
<td>Not required</td>
<td>Minimum required (only for uplink)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Present Network</th>
<th>Internet based Technology</th>
<th>New Concept (GSM based Technology)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>The connectivity is based on Satellite and reach to unreached locations, independent of any other Information &amp; Communication Technology (ICT).</td>
<td>Availability of internet connectivity is mandatory. However, for our targeted reach (Rural and Tribal areas) availability of internet connectivity is a question.</td>
<td>The connectivity is based on satellite and GSM technology which covers most of the targeted reach.</td>
</tr>
<tr>
<td>6</td>
<td>The present network utilised commercial available VSAT technology which is proprietary in nature and hence it is single Vendor dependent.</td>
<td>It uses technology available from commercial internet service providers.</td>
<td>Multiple Vendors are being developed and hence single Vendor dependency is not there.</td>
</tr>
<tr>
<td>7</td>
<td>Initial cost is high and also operation &amp; maintenance cost is high comparable with other technologies.</td>
<td>Initial cost is low. Operation &amp; Maintenance cost is also low.</td>
<td>Initial cost is moderate. Operation &amp; Maintenance cost is low.</td>
</tr>
</tbody>
</table>
## Tele-Education Networks – Karnataka

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the User Agency/Network</th>
<th>Network Size</th>
<th>Migration status</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIT ROT</td>
<td>SIT ROT</td>
<td>SIT ROT</td>
<td>SIT ROT</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Tele-Education Networks (7 MHz Bandwidth on INSAT-4CR, 6.3 M Ku-Band Hub at DSERT is under CAMC, 2 Interactive &amp; 2 ROT channels)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1</td>
<td>Primary Schools (1 ROT Channel)</td>
<td>-</td>
<td>2615</td>
<td>-</td>
</tr>
<tr>
<td>1.2</td>
<td>Collegiate education (2nd ROT Channel – Time-shared with technical)</td>
<td>-</td>
<td>375</td>
<td>-</td>
</tr>
<tr>
<td>1.3</td>
<td>Technical education (2nd ROT Channel – Time-shared with Collegiate)</td>
<td>-</td>
<td>200</td>
<td>-</td>
</tr>
<tr>
<td>1.4</td>
<td>VTU Interactive (1 Interactive Channel)</td>
<td>193</td>
<td>-</td>
<td>193</td>
</tr>
<tr>
<td>1.5</td>
<td>SSA Interactive (DSERT) (2nd Interactive Channel, At present used by IP-ROT network)</td>
<td>27</td>
<td>175</td>
<td>-</td>
</tr>
<tr>
<td>1.6</td>
<td>VTU broadcast</td>
<td>-</td>
<td>120</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>220</td>
<td>3485</td>
<td>193</td>
<td>3343</td>
</tr>
</tbody>
</table>

……Continued

## Tele-Education Networks – Karnataka

……Continued

<table>
<thead>
<tr>
<th>Sl. No.</th>
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<th>Network Size</th>
<th>Migration status</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIT ROT</td>
<td>SIT ROT</td>
<td>SIT ROT</td>
<td>SIT ROT</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>TDCC Network (4.5 MHz Bandwidth on INSAT-3A, 7.5M Ext-C Band Hub at ANSSIRD, Mysore)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1</td>
<td>ANSSIRD, Mysore</td>
<td>-</td>
<td>175</td>
<td>-</td>
</tr>
<tr>
<td>3.</td>
<td>IP-ROT Network (M/s Gumbi Software-based Hub at DSERT, 2nd Interactive Channel of SSA at present used by IP-ROT network)</td>
<td>-</td>
<td>1000</td>
<td>-</td>
</tr>
</tbody>
</table>

[57]
Training Methodologies by its merit

- One to One Training
- Classroom Training
- E-Learning
- Distance Learning
**E-Learning**

- Face to Face across various geographical locations
- The best Faculty / tutor training all trainees
- No hassle of logistics in bringing all trainees to the same location
- Frequent trainings can be conducted
- The platform can be used for many other activities like
  - Review
  - Online Counseling
  - Surveillance / Data Collection
  - Training the Trainor

**E-Learning Infra**

**Interactive**
- Interactive Remote Terminal with AV capabilities
- Suitable for Higher Education
- Students will have more attention

  Case Study
  - Edusat
  - IIM Karnataka School project

**Non-Interactive**
- Only receiving content – like TV / DTH
- Not Suitable for Serious Learning
- Students lose interest

  Case Study
  - DCE
  - DTE
Suitable Media for e-Learning

- **Internet based eLearning (Unicast Based e-Learning)**
  - The video is sent separately to each of the remote location from the central studio / teaching side
  - If 100 remotes are connecting to the studio, 100 copy of videos are sent to each of the remote location
  - Examples:
    - Web based e-Learning
    - Video Conferencing based e-Learning

- **Satellite based eLearning (Multicast based e-Learning)**
  - One Video is sent by central studio and received by all remotes (like broadcast)
  - Video can be received only by the designated remotes (unlike broadcast)
  - Highly efficient and promoted by organizations like ISRO
  - Examples:
    - VSAT (Satellite) based e-Learning

Active E-Learning Users

1. **Medical Education**
   1. Dr. Bhatia Medical Institute
   2. Delhi Academy of Medical Sciences (DAMS)

2. **Technical Skill Training**
   1. Maruti Ltd – Training Network
   2. Institute of Grooming Professionalism
   3. Edutel Ltd
   4. Valuable Infotainment

3. **Tutorials**
   1. Pearson Group (formerly Educomp)
   2. GAAP Bright
   3. JK Shah Classes
   4. Sinhal Classes
   5. Vidyalankar Classes
   6. TutorPod

4. **Government E-Learning Networks**
   1. Edusat (14 Networks, 3000 SITs)
   2. Brihan Mumbai Corporation
Interactive Infra Models

- Satellite Interactive Terminals
  - Two way Audio Video through Satellite

- GSM - MPEG ROT
  - One way Video through Satellite
  - Return only Audio through GSM

- Hybrid – IP ROT
  - Forward through Satellite IP and return is flexible to use the best available media

MPEG ROT (Receive Only Terminal)

- Non Interactive, DTH
- MPEG 2 encoding – High Bandwidth Usage
- Open to Air, No user authentication
- Suitable for Primary and Middle School Education

Not Suitable for High School and above where students need to interact with Faculty
Satellite Interactive Terminals

- Feasible Everywhere
- Audio Video Interaction
- Chat for questions
- Supports Multicast
- MPEG 4
- Integrated Computer with satellite modem with AV, HDMI (Hermes*)
- Software capable of HD, 3D, Animation & Mosaic Application

*Hermes is Made in India - specifically developed for E-Learning and Banking

GSM - MPEG ROT

- Normal ROT with Audio return through GSM
- No Return Video
GSM - MPEG ROT

- Normal ROT with Audio return through GSM
- No Return Video

Contact:
Ebinson: ebinson.sam@hughes.in 99169 01926
R. Subramanian, r.subramanian@hughes.in
A new promise, a growing portfolio of products and services to meet your needs and the needs of your students.

COURSE CONTENT     STUDENT RESOURCES
INSTRUCTOR RESOURCES
McGraw-Hill Connect is a digital teaching and learning environment that saves students and instructors time while improving performance over a variety of critical outcomes.

Get Connected.
Get Results.
What is Connect? Contd...

Connect is a highly interactive learning solution which helps professors in devoting more time towards teaching & less for managing the class and students in studying more effectively. Connect is a web-based assignment & assessment platform that helps Professors connect with their students anywhere, anytime. The paradigm shift from manual to digital helps the Professors in creating assignments faster & better and assessing the students more efficiently and effectively.

With Connect you can:

- Create assignments from a vast repertoire of content – in built and your own
- Select the questions on basis of learning objectives or topics or difficulty level
- Streamline lesson planning, student progress reporting & assignment grading
- Create/conduct Homework, Practice test, Quiz or Exam
- Assign practice materials to students as & when needed
- Improves student learning & retention through engaging media & study resources
- Get auto graded scores and feedback
- Access Connect anywhere, anytime
- Go paperless and contribute to the environment

Get on the same page, Even when there are no pages

How does it work?

Learning Objective (LO) based content organization ➔ Control with Professor – to pick & choose questions as per LOs and assign to the students

↑

Reports are generated & the process gets repeated ➔ Student accesses & submits the assignment

↓
Snapshots of the process...

**Select the source of question for your assignment.**

<table>
<thead>
<tr>
<th>Source of Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 1: The Investment Environment</td>
<td>A. General Environment  B. Investment Instruments  C. Investment Decisions and Strategies</td>
</tr>
<tr>
<td>Chapter 2: Financial Markets and Other Investment Instruments</td>
<td></td>
</tr>
<tr>
<td>Chapter 3: Investments and Financial Instruments</td>
<td></td>
</tr>
<tr>
<td>Chapter 4: Financial Market and Other Investment Instruments</td>
<td></td>
</tr>
<tr>
<td>Chapter 5: Introduction to Risk, Return and the Capital Market</td>
<td></td>
</tr>
</tbody>
</table>

**Filter the questions by type, topic, difficulty etc.**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Difficulty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stocks</td>
<td>Easy</td>
</tr>
<tr>
<td>Bonds</td>
<td>Medium</td>
</tr>
<tr>
<td>Futures</td>
<td>Hard</td>
</tr>
</tbody>
</table>

**Preview the question & solution and add to your assignment.**

Connect’s assignments are auto-graded, saving you time and allowing your students to instantly see how they performed. The reports then allow you to easily review student and section performance. And for those of you who use LMS, the grades from Connect will seamlessly appear in your LMS grade book.
Benefits of Connect

FOR INSTITUTES
- Rich/quality content
- Readily available reports at all levels
- Simple LMS integration
- Course & Assignment sharing
- Activity Focused Classroom
- Learning is collaborative
- No Logistics required
- Go paperless, save environment

FOR PROFESSORS
- Readily available content
- Learning outcomes by tagged content
- Effortless/Auto grading
- Powerful reporting
- Focus more on concept application & learning
- At a glance insights into class performance
- Customize – add own questions
- Intuitive design
- Full training and support
- Product tutorials

FOR STUDENTS
- Engaging & easy to use
- Unlimited practice
- Immediate feedback
- Visual progress indicators & reports
- Improved performance
- Proven effective
- Game like interface
- Go green, go paperless

Improved Performance with Connect

Students who use Connect globally are:
more successful in the course and receive higher grades than their peers not using Connect.

Pass rates go from 72.9% to 83.7%
Retention rates go up from 71.1% to 87.5%

Average Course Grades

C+ → B+
How does Connect reporting highlight areas of concern?

<table>
<thead>
<tr>
<th>Assessment of:</th>
<th>Learning Objectives</th>
<th>Specific Topics</th>
<th>ID of Struggling Students</th>
<th>Instruction Efficacy</th>
<th>Students’ Performance</th>
<th>Students’ Engagement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class Snapshot</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At-Risk Student Report</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Assignment Results</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assignment Statistics</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Category (topic wise) Analysis</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item (question wise) Analysis</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Endorsements

3-5 assignments are rolled out on each topic for all students. Highest score of each student in the assignments for a topic is taken. I am glad to note that as the students practice the same topic more by way of multiple assignments their scores improve with each assignment. Thus, concept learning takes place, students get motivated to learn through practice.

EXCELLENT LEARNING ENHANCEMENT TOOL which I am using now for two years and will CONTINUE to use.

Prof. Arpita Ghosh, IIM Calcutta

‘EXCELLENT TOOL TO EngAGE WITH THE STUDENTS EVEN WHEN I AM AWAY FROM THE CAMPUS’, ‘GREAT WAY TO INVOLVE THE STUDENTS’ – A Pain point otherwise which ‘Connect’ has resolved.

Prof. Sudhir Jaiswall, IIM Calcutta & Ranchi
The experience of using McGraw Hill Connect for the Genetics course I taught this past semester was positive. I used it primarily to set up quizzes and assignments for students. Although introduced fairly late into the semester, the class gave an encouraging response. In particular, the students liked the video-based questions that gave them clearer understanding of the concepts.

For me as an instructor, the facility of selecting questions on any particular topic was the best feature in Connect.

Prof. Manoj Kannan, BITS Pilani

I will take up the Corporate Finance course only when Connect platform is available.

Prof. Suneel Maheshwari, School of Inspired Learning (SOIL), Gurgaon

sagar.betageri@mheducation.com

Contact : 9916895101
Opportunity is knocking at your door!

Get Connected. 📲

Get Results.

This is your moment in time

https://www.youtube.com/watch?v=qx8x96mvAGs  Connect
https://www.youtube.com/watch?v=i_ZEyiYx3A  Smartbook
Introducing Pearson
Our Global Reach

Pearson has offices in 70 countries with 36,000 employees and educates 130+ million people worldwide.

Pearson links the steps to a complete solutions, ensuring effective personalized learning.

- High quality instructional content
- Teacher and leadership development
- Comprehensive assessment and reporting applications
- Technology enabled solutions and enterprise scalability

Custom Solutions
Digital Educational Products / Services

<table>
<thead>
<tr>
<th>Platforms</th>
<th>eBooks Solutions</th>
<th>ICT Solutions</th>
<th>eLearning Solutions</th>
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<tbody>
<tr>
<td><img src="image1" alt="ThinkTank Library" /></td>
<td><img src="image2" alt="DigiClass Pro" /></td>
<td><img src="image3" alt="MyLab South Asia" /></td>
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<tr>
<td><img src="image4" alt="ThinkTank Touch" /></td>
<td><img src="image5" alt="BlueBook Lecture Capture" /></td>
<td><img src="image6" alt="Pearson Instructor Education" /></td>
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<td><img src="image7" alt="thinktankplus" /></td>
<td></td>
<td><img src="image8" alt="Pearson Workforce Education" /></td>
<td></td>
</tr>
</tbody>
</table>

Platforms

**EQUELLA**: Digital Repository

**Pearson LearningStudio**: Comprehensive, flexible learning management system
EQUELLA

A powerful Digital Repository that is revolutionising the way institutions search, manage and create content online

Integrate

EQUELLA integrates with popular Learning Management systems to enable users to discover, contribute and import content into courses.
LearningStudio Solution
1 eBooks Solutions

Digital Library - ThinkTank

India's largest collection of academic and technical eBook

• Includes renowned International Titles
• Pearson and the Imprints

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ThinkTank Touch

- Offline Access with ease to access anytime anywhere
- Rich Repository of Media Assets with Interactive content
- Cloud based synchronization
- Faculties can give Assessment
- Gradebook available
- Fidelity to the original textbook layout
- Personalized notes, highlights, bookmarks

ThinkTank Plus

- EBooks enriched with Media Assets like Slides, images, videos and Animations etc.
- All the content is delivered through DRM protected SD cards
A complete Classroom Solution
Transforms Chalk-and-Talk classrooms into Interactive Learning Centres

An in-Class, Teacher-led, Interactive Teaching & Learning tool for Engineering
Preloaded with thousands of Learning Elements Such as:

Animations, diagrams, Simulations, Videos, Interactive 3D Animations, Worksheets, Audio/Video Lesson Plans, teaching guidelines and Q&A

Deliverables

- Digital Learning Framework and Multimedia Content Repository
  - Digital Ally
  - 3900+ 2D Animations
  - 15000+ 2D/3D Images
  - 11000+ PowerPoint Presentation
  - 500+ Simulations
  - 50+ 3D Models / Animations
  - NPTEL Videos - Full repository

- Faculty Training Program
  - Usage of Interactive Software
  - Content Management
  - Lecture planning
  - Classroom Management
  - Professional Development

- Hardware Components
  - PCs and UPSes
  - Interactive WB
  - Projectors
  - Content Server
Lecture Capture Solution

“Bringing Videos into Mainstream Learning”

The Concept

- Lecture Capture
- On Demand & Live Streaming
- Content Management
- Collaboration
- Evaluation
The features

- **Completely Automated System**
  Right from Recording to Distribution

- **Multi-view Recording**
  Teacher/Podium View & Blackboard Close-up View

- **Anytime-Anywhere Access**
  Content on the mobile devices: Laptops, Tablets, etc.

- **Interactive Features**
  Bookmarking
  Notes Taking
  Sharing & Discussion
  Hand Raiser

- **Content Security**
  User specific, Industry Specific Encryption

---

3 eLearning Solutions

MyLab South Asia

Pearson Instructor Education

Pearson Workforce Education
MyLabs MyLab South Asia

WHAT IS IT?
• Prebuilt Courses
• Provides homework, tutorial and assessment
• Discipline-specific learning tools.
• Individualized assessment and feedback.
Multimedia Learning aid to support multiple learning styles
• An early warning system that highlights struggling students
• MyLabs are used in traditional, blended and fully online courses

HOW DOES IT WORK?
Pearson MyLabs adapt to students’ abilities and preparedness, promoting accountability and self-learning, and giving instructors and administrators valuable insight into student performance and progress.

Pearson MyLabs

[83]
College Preparedness
MyFoundationsLab

- Online mastery-based resource for assessing and remediating college- and career-readiness skills in reading, writing and mathematics
- Diagnostic test to produce personalized set of content modules
- Pre-built learning activities, each designed to help students gain confidence and proficiency in specific skills
- Ideal for learners of various levels and ages, including continuing education or workforce readiness programs

MyEmployabilityLab

Skills

- Learning skills
- Time management
- Personal development
- Dealing with stress
- Analyzing and evaluating information
- Studying independently
- Versioning
- Organizing in lectures
- Co-operative learning
- Thinking critically
- Effective academic reading
- Non-native from texts
- Non-curricular skills
- Taking and writing assignments
- Academic writing skills
- Assessing sources
- Purpose writing
- Managerial writing
- Oral presentations

Employability

- Interpersonal
- Communications
- Numeracy
- IT literacy
- Literacy

Extra Curricular

Life skills

- Self-management
- Resilience
- Business strategies
- Interests
- Philosophy
- Goal setting
- Risk management
- Career planning

Non-curricular

- Drop out rates
- Improve degree results
- Student satisfaction
- Employability

PEARSON
Pearson Instructor Education

- Online courses for faculty training and development.
- Suitable for new or experienced teachers.
- 40+ courses in 6 major areas
  - Classroom Management
  - Emotional Intelligence
  - Learning Theory
  - Planning for Effective Teaching
  - Assessment Strategies and
  - Technology.

Pearson Instructor Education is an interactive, online faculty development course that builds solid instructional skills.
Pearson Workforce Education

- Soft Skill courses for Students to make them Job Ready
- Ready-to-deliver courses for every stage of one’s career
- Courses to prepare for Certification Programs like CompTIA, LEED, PMP, Six Sigma, etc
- No upfront costs for adopting courses - the College doesn’t purchase anything until students have registered.

LEARNING
THIS TIME IT’S PERSONAL

For further details/demo:
Bhushan.Sharma@Pearson.com
Mobile: +91 9971183311
Annexure VIII

BANGALORE UNIVERSITY INITIATIVES TOWARDS IT TECHNOLOGY AND AUTOMATION

-Dr.K.N.Ninge Gowda
Registrar (Evaluation)
Bangalore University
Bangalore

BANGALORE UNIVERSITY

- BUB established : July 1964
- Colleges Affiliated to BUB : 712
- Districts under BU : Bangalore, Kolar, Ramanagara, Chickkaballapura
- Faculties under BU : Arts, Communication, Commerce, Education, Engineering, Law & Science
- Degree Offered : 37
  - Under graduate : 16
  - Post graduate : 27
BANGALORE UNIVERSITY
EXAMINATION BRANCH

○ Degrees

Arts : B.A, B.S.W, MA, MFA, MSW

Communication : Master of Science (Communication)

Commerce : B.Com, BBM, BHM, M.Com, M.B.A, M.F.A

M.T.A, M.I.B, M.B.S

Education : B.Ed, B.P.Ed, M.Ed, M.P.Ed

Engineering : B.E, B.Arch

Law : LL.B (5 YEARS), LL.M

Science : B.Sc, B.C.A,M.C.A,M.Lib.Sc

BANGALORE UNIVERSITY
EXAMINATION BRANCH
BANGALORE UNIVERSITY
EXAMINATION BRANCH

Categories

GM 33%
SC/ST 21%
OTH 46%

BANGALORE UNIVERSITY
EXAMINATION BRANCH

Pre-Examination
• Student admission
• Approval
• Register Number generation
• Exam Registration
• Exam fees collection
• Hall Ticket generation
• Examination centre declaration
• Question paper preparation

Examination
• Vigilance squad for Centres
• Custodian appointment
• Student Absence online entry
• Receiving of answer scripts

Post Examination
• Coding of Answer scripts
• Evaluation of Answer scripts
• Decoding of Answer Scripts
• Result processing
• Result declaration through internet
• Application for Photocopy/Revaluation
• Marks card dispatch
• Degree Eligibility preparation

Examination process
ADVANTAGES OF AUTOMATION - IT

- TRANSPERENCY – FAIR – UNBAISED EVALUATION OF STUDENTS
- TIME MANAGEMENT – EVEN CALENDER OF EVENTS – ONTIME RESULTS
- COST EFFECTIVE
- PAPER LESS DOCUMENTATION – PRESERVATION AND MAINTAINANCE
- STATISTICAL REPORTS – INFORMATION AT FINGER TIPS
- FINANCIAL STABILITY – TRANSPERENCY AND ACCOUNTIBILITY OF FEE COLLECTION

UNIVERSITY EDUCATION ....FLOW CHART

- Online student Admission
- Online student Master data update
- Pre Examination
- Post Examination
- Marks Card Process
- Award of Degree
ADMISSION MODULE

Students Registration at BU
Affiliated Colleges

Online upload of student registration by the colleges with photo

Approved Students
Document verification by University and approval

Master data creation

Final list of students - college wise - course wise generation

Approved Students data updation

Master data creation

Final list of students - college wise - course wise generation

Online upload of student registration by the colleges with photo

Approved Students
Document verification by University and approval

BANGALORE UNIVERSITY EXAMINATION BRANCH

Student

Online Admissions

University

Online Exams Registration

Online Hall Ticket Generation

Exam

Advanced CMS Processing & Summation

Evaluation

Exam Results Processing

Analytics & Infographics
JOURNEY TOWARDS IT INITIATIVES

- 1985 BACHELOR OF ENGINEERING COURSE WAS COMPUTERIZED USING COBOL ON UNIX OPERATING SYSTEM

- 1996 SOFTWARE WAS DEVELOPED BY TATA INFOTECH USING INTEGRA4 RDBMS ON UNIX PLATFORM

- PHASED MANNER COMPUTERIZATION OF ALL THE COURSES WAS IMPLEMENTED
CONDUCT OF EXAMS

- Examination branch conducts two examinations in a academic year (odd/even semesters)
- 2,55,961 students registered for Nov/2014 examinations
- 15,44,856 answer scripts evaluated
- 3,59,010 results were announced
WEB BASED SOLUTIONS

- 2002 WEB BASED SOFTWARE WAS DEVELOPED BY WIPRO USING ORACLE 9IAS ON SUN SOLORIS TWO TIER ARCHITECTURE.
- MANUAL DATA ENTRY OF MARKS, PRACTICALS & IA
- FROM 2009 MARKS CAPTURING FROM OMR AFTER EVALUATION OF SCRIPTS WAS IMPLEMENTED.

PRE-EXAMINATION PROCESS

- Online student's enrollment data from colleges along with photo.
- Student Admission fees generation based on the course by the software
- Collection of consolidated fees from the college
- Submission of student documents to the University for approval
- Students admission approval based on the document produced
- Generation of Unique Register Number of approved students by the system, downloading of allotted register number by college.
- Online student registration for the examination, Generation of fees to be paid by the student by the software
- Collection of Examination fees from the colleges as per the report generated by the system.
- The downloading of admission ticket of the students by the colleges.
PRE - EXAMINATIONS PREPARATIONS FROM 2009 ONWARDS

- ONLINE ENTRY OF STUDENTS ADMISSION INFORMATION DETAILS, UPLOADING OF PHOTOS BY THE COLLEGES
- STUDENTS ADMISSION APPROVAL BY ACADEMIC SECTION
- GENERATION OF UNIQUE STUDENT REGISTER NUMBER
- ONLINE STUDENT EXAM REGISTRATION FOR THE EXAM BY THE COLLEGES, FEE TO PAID BY THE STUDENT IS GENERATED.

PRE EXAMS PREPARATIONS CONTINUED......

- CONSOLIDATED COLLEGE-WISE COLLECTION OF EXAMINATION FEES THROUGH DD
- DOWNLOADING OF ADMISSION TICKET BY THE COLLEGES
- GENERATION OF OMR’S FOR PRACTICAL/VIVA-VOCE AND ISSUED TO COLLEGES FOR CONDUCT OF PRACTICALS
- ONLINE CAPTURING OF STUDENT ABSENCE ON THE DAY OF EXAMINATION FROM THE COLLEGES
POST EXAMINATIONS INITIATIVES

- Central college campus is the valuation centre for all U.G courses. The campus is under camera surveillance.

- Coding of answer scripts is done by scanning 18 answer scripts per packet and generation of OMR with unique code number for the script and printing of the corresponding code on answer script.

- The evaluator will mark the marks awarded on the OMR’s, which is scanned and register number decoded after valuation all the scripts.

POST EXAMINATION INITIATIVES CONTINUED.

- The data after valuation of all answer scripts of the course/semester are uploaded.

- Results are processed and results of the students are declared online.

- Result sheets college-wise is generated in PDF format. College can download the result sheets.

- The data is sent to Bangalore-one centre after the results are announced for students to apply for photocopy/revaluation of answer scripts.
POST EXAMINATIONS INITIATIVES CONTINUED…..

THE OMR’S IS GENERATED FOR STUDENTS WHO HAVE APPLIED FOR REVALUATION EVALUATION.

- MARKS CARD WITH PHOTO OF THE STUDENT IS PRINTED WITHIN 1 WEEK AFTER ANNOUNCEMENT OF THE RESULT.

- STUDENTS GREVIANCES CELL IS OPEN AT TWO campuses namely
  1. PRAKESHA BHAVAN, J HANABHARTHI CAMPUS
  2. CENTRAL COLLEGE CAMPUS.

THE UNIVERSITY CONDUCTS TWO CONVOCATION IN A YEAR.

- THE STUDENT DEGREE ELIGIBILITY LIST IS PREPARED. THE FEES FOR THE CONVOCATION IS COLLECTED FROM THE STUDENT IN HIS FINAL YEAR, AVOIDING THE STUDENT TO APPLY SEPERATELY FOR CONVOCATION AFTER COMPLETING THE DEGREE.

- 60,000 DEGREE CERTIFICATES WITH STUDENT PHOTO IS PRINTED IN A ACADEMIC YEAR.
BUB EXAMINATION IT INITIATIVES IN A NUT SHELL

CONCLUSION
- Results of final semester of all courses were announced within a fortnight
- University is spearheading to make the valuation digital and even to digitalize marks card- a move towards green Initiative.
- Further e verification is on the cards and will be implemented very soon
- Over Bangalore University is pioneer university in adopting the latest information technology to examination section to make it more student friendly
TutorSpace – Multimodal Analytics Towards Personalized Learning

Cmt D. Deshmukh, Ph.D., Area Manager
Senior Research Scientist, Xerox Research Center India
cmt.deshmukh@xerox.com

Dual Challenges in Education: Scale & Personalization

- Multisource content composition and recommendation for personalized learning pathways
- Content analysis for wider engagement and consumption
Video analytics for improved engagement and consumption

1. Provide textbook-like navigation capabilities in videos
   - Table of Content Generation
     - Spoken and written content analysis to identify change of topic
   - Text-book Index-Page Generation
     - Keyword analysis for topic specificity, occurrence frequency, speaking style

2. Search, clip, annotate and share video content
   - Clip regions of interest in a video
   - Provide annotations and bookmarks on a video
   - Share with other users

Hyperlinking with the video for efficient consumption and navigation
Dynamic In-video Assessment & Recommendation

- Automatic analysis of user’s interactivity with the instructional video and with the computing device
- Auto-identification of topics discussed in various time segments of the video
- Dynamic assessment generation, delivery and evaluation
- Performance-based dynamic recommendation

Leads to ‘classroom-like’ personalization

TutorSpace: Data Analytics Driven Actionable Insights

Prescriptive

Predictive

Descriptive

Prep script remedial interventions: group- and/or learner-specific

Aggregate and per-learner content-usage and content-interaction pattern

Predict learner performance, engagement and topic relevance
Demo

How do we collaborate?

Join hands to:

- Pilot the system in your college/university
- Improve student graduation rate, performance and employability
- Improve teacher efficiency (more insights less workload)

- Contact: om.deshmukh@xerox.com ; kuldeep.r@xerox.com
Managed Document Services enhance education process

By
Lokesh BS
Regional Business Manager- Karnataka
Canon India Pvt Ltd
Canon MDS: the winning edge

- **CONTROL** your print costs
- **ENHANCE** productivity and efficiency
- **INNOVATE** and optimise work flow processes

### Case Study 1

**In house Printing**

- **Question Paper Printing**
  - Security
  - Confidential
  - 1 Hour before the examination
- **Marks Sheet Printing**
  - Secured watermark
  - Printing on Tivac media (nontearable)
- **Certificates**
  - Rewards and Recognition
  - Customised certificate with Student name printed along with photograph
Case Study 2 - Charge Back - Model

Overview
- Making printouts for lecture notes and project work are daily necessities for all students at the institution.
- MFPs were positioned at the computer laboratory and the library.
- Queue at separate counters for staff to count the quantity
- Hassle in equipment maintenance
- Potential breach of confidentiality and security
  - Printouts were often found left lying around and uncollected
  - Students risked theft of their project ideas and exposure of their academic details.
  - The lack of control also meant that anyone could print anything.

Canon MDS Solution
- Today: Smooth operation in one simple step
  - The school/college saves on additional manpower required to regulate printing.
- Today: Automated audit and full expense control
  - Credits are automatically deducted from the cards.
- Today: One point of contact, enhanced productivity
  - In the event of any printer breakdown, uniFLOW’s intelligent system allows print jobs to be re-routed to the next available printer
- ID card authentication for secure printing

Case Study 3

Students’ records management
- Challenges
  - How can you improve the storage and retrieval of students’ records? Massive volume of student records requires a large storage space.
  - Storage of hardcopy documents increases cost and poses safety risks and security issues.
  - Inefficient retrieval methods lead to slow student response.
- Canon’s solutions
  - Organised document management system results in faster retrieval of records
  - Digital storage offers expandable capacity without impacting office space
  - Quicker access and retrieval of documents
- Results
  - Faster response to student enquiries and internal department communications
  - Efficient administrative process
Case Study 3

It’s part of Canon’s end-to-end solution

Input ➔ Manage & Process ➔ Store & Search ➔ Output

Contact us

Please contact us for a Free health check-up of your organisation’s ‘Print Infrastructure’

Lokesh BS
Regional Business Manager
Email: lokesh.bs@canon.co.in

Thank you
The Background

- While we think technologies, Evaluation is also becomes important, to grade a student with quick response in declaring the results.
- The physical copies to be handed over to evaluators there may be risk of lost in transit and there is every chance of mal practices in evaluation.
- Erroneous Marking in like award more marks than maximum allowed.
- Chances of tabulating the optional questions Marks in TRs.
- The Manual copies are to be verified again for tabulation of Result, which challenges in terms of accuracy in transferring to TR.

The Solution has been developed / implemented with background of these concerns and with the interest of minimizing the time and effort.
Features of DOES

- Absolute secrecy maintained in coding the copies of Answer books.
- Random Allotment of Answer books based on the specialization of the Evaluators Specialization.
- View of Question Paper related to the Answer book.
- On Screen Marking, Scratch Pens, Ticks & Crosses, Comments etc
- Verification and Validation of Attempted, Questions and Not Attempted Questions.
- Summary of Scores displayed before submitting.
- Generation of PDF Files of Evaluated Copies

Other Features of DOES

- Complete Secrecy of codification, Answer Books digitized and loaded with Bar-coded Numbers,
- Load Question papers for evaluators reference.
- Login / Password protected for evaluators.
- Key board Interactive for Moving forward and Backward in Answer books. Or Move to Specific page of Answer Books.
- Break the evaluation in between and evaluator can Continue from where he left.
- Preserving of Original Scanned Images of AB and Evaluated copies (for Re allocation and Re Evaluation)
**Key Activities of the DOES**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>Digitization</strong></td>
<td>- Answer Books are scanned and digitized, each page is converted to image</td>
</tr>
<tr>
<td><strong>Master Infos</strong></td>
<td>- Preparation of Master Information like List of Evaluators, List of Paper Codes, List of Course and Branches</td>
</tr>
<tr>
<td><strong>Training</strong></td>
<td>- Training to all the Evaluators</td>
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<tr>
<td><strong>Allocation</strong></td>
<td>- Automatic and Random Allocation by system to Evaluators</td>
</tr>
<tr>
<td><strong>Evaluation</strong></td>
<td>- Evaluation by Evaluators, Enter Marks, Annotate (Ticks &amp; Crosses, Scratch Pens, Comments)</td>
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<tr>
<td><strong>Reports</strong></td>
<td>- Tabulated Result, PDF Generation</td>
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</tbody>
</table>
**Deployment Architecture**

- Browser based Application, Can be Deployed on Cloud, VPN
- Multiple Evaluation Centers can be mapped

**Process Followed**

[Diagram showing process flow]
Highlights

1. Random allocation based on Evaluator Specialization
2. Individual Login for each Evaluators (No limits in Number of Evaluators)
3. View of Question Paper
4. System based checks on Maximum Marks
5. Verification of Attempted, Optional and Not attempted
6. Navigation in AB by Keyboard, Mouse, move to specific page
7. Reassign to another evaluator
8. Break and Continue the Evaluation of an Answer Book
9. Generate PDF files to publish for Student withdrawal
10. Detailed Scores of Each Section wise/Question wise

Benefits

1. Secrecy by Codification
2. Faster and easier Evaluation
4. Easy Tabulation of Result.
5. Monitoring the progress of Evaluation
6. Transparency and easy answer RTI Queries
7. Preservation of Original Images and Evaluated Images separately
8. System based verification of Optional Questions & Answer Marks
9. Best possible Marks Validation when attempted Optional questions.
10. Generation PDF Files to Host in Website for withdrawal by students

[111]
Solution Screen Shots

Barcode Codification

Codification entered in system
System based Verification of Attempted, Optional, Not Attempted

Colours used to Indicate Attempted, Optional, Not Attempted

View of Summary of Entered Marks
## Agenda – Examination Management

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<tr>
<td></td>
<td>Q-genie – Question Paper Generator</td>
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<tr>
<td></td>
<td>OLT – Online Test</td>
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<tr>
<td></td>
<td>Campus Lynx – It Works – A complete Integrated Solution for University</td>
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<tr>
<td></td>
<td><strong>DOES</strong> - Digital Online Evaluation System</td>
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<td></td>
<td>eRVS – Online Examination Record Verification</td>
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</tbody>
</table>
QGenie

• QP Generated based on: Learning Objective (LO), Type, Competency level, Difficulty level
• This product emphasizes more on tagging each question with its learning objectives.
• The repository of questions allows teachers to select a variety of questions from the bank.
• The teachers have the flexibility to generate class tests, terminal tests, and final tests.
• Helps to get conceptual clarity, rational thinking ability and analytical skills through scientifically designed questions.
• It facilitates the user to reprint from its earlier download.
• The user can add/edit/delete questions to their own accounts.

QGenie

• QGenie empowers to generate Question Papers in a very short span of time thus saving a lot of their precious time.
• Teachers / Tutors can plan better for setting the Question Papers with following permutations and combinations kept in mind while downloading:
  – Class, Subject, Chapter, Topic
  – Learning Objectives
  – Competency Skill (Knowledge, Application, Comprehension)
  – Marks
  – Toughness Level (Easy, Medium, Hard)
  – Question Type (Objective / Subjective)
• Different set of questions would appear for the members under this category.
On Line Test - OLT

- Online Test (OLT) application - A unique software solution aimed at eliminating paper based exams and marking costs.
- This web application is a fully automated, secure online test tool with centralized controlling.
- All the features are customizable as per individual needs.
- It can be accessed anywhere and anytime.
- Administrators load the questions into the database and the test is generated automatically. The questions can be edited, deleted, and re-used (question bank) anytime for a quick, rich online test.
- Online Test (OLT) can be given through any browser. OLT is internet / intranet enabled website which makes test process easy, interactive, accurate and secured within a defined schedule.

Features

- Instant Result of Test. Test Duration – Duration of online Exam
- No Of Attempts - No. of attempts allowed for a particular test
- Question Bank- Question entry as per pattern design
- Question Composition
  - Flexible option to compose the questions like True/False or Multiple choices
  - Question toughness level
  - Questions are grouped in the form of Section/Division
- Different Question Selection Methods -
  - Random Question & Random Section,
  - Random Section & Fixed Question,
  - Fixed Section Random Question etc.)
- Question Pattern- No. of questions in particular section, Type and difficulty level to be accepted in question paper entry for a particular test.
OLT - Benefits

- It is a robust and generalized product which can be used by any institute, College, Coaching Institutes, Business Firm/Organization, placement / recruitment agencies, etc. for test or practice.
- Generate question paper as per Specified Question paper pattern - either New Pattern or from the existing Question bank.
- Administrator has to define parameters/pattern for the same and result of test can by instantly viewed.
- Interactive, Impressive and User-friendly, Robust, User Friendly and Avoid wastage of Paper.

CampusLynx
An Institutional Resource Planning Software
Process Flow of Examination Management

Modules Overview

- Counseling & Student Master Data Creation
- Student Information System
- Student Reaction Survey
- Examination Management
- Web-Kiosk (Student & Staff)
- Student Fee Management
- Training & Placement
- Human Resource Management System
- Purchase / Receiving / Inventory
- Fixed Asset Management System
- Financial Accounting System
- Transport Module
- Alumni
Examination Management

- Date-sheet generation
- Seating plan
- Invigilation duty with faculty load distribution/no duty request/time preference
- Exam Attendance/absentee list generation
- Event based dual marks entry system – secured online entry of marks by faculty members with HOD approval
- Result processing
  - Final marks - percentile calculation
  - Grade calculation - CGPA/SGPA calculation
- Tabulation of grade list
- Printing of Character Certificate and Migration Certificate
- Printing of Grade/Mark sheet, Transcript
- Publishing of result on web after approval

Process Flow of Examination Management

- Attendance
- Examination Date-sheet
- Seating plans
- Examination duties of teachers for various mid semester and end semester examinations
- Result (Marks & Grade) Processing including:
  - Submission of marks of various examinations by teachers within specified time, their compilation towards the end (after the end semester examination).
  - Preparation of grades as per normal distribution.
  - Compilation and preparation of results, calculation of SGPA, CGPA etc.
  - Printing of results in desired formats.
  - Analysis of results, comparison with previous years, histograms, trends etc.
ESTABLISHMENT OF VIRTUAL CLASS ROOM (E-LEARNING CENTRE) TO IMPROVE THE QUALITY OF EDUCATION IN THE BACKWARD TALUKS OF KARNATAKA

Dr. S. G. Sreekantesswara Swamy
Executive Secretary, KSCST
KARNATAKA STATE COUNCIL FOR SCIENCE AND TECHNOLOGY
Indian Institute of Science, Bangalore- 560012

INTRODUCTION

- KSCST is an autonomous S & T organization under Department of Science & Technology, Government of Karnataka.

- Karnataka State Council for Science and Technology (KSCST) was established in the year 1975. It is one of the first State S & T Councils to be setup in the country.

- Under the Special Development Programme (SDP) of Government of Karnataka, Department of Science and Technology, Government of Karnataka (DST-GOK), KSCST has implemented Virtual Laboratories at 10 high schools in the backward taluks of Karnataka for use by the students for self learning, complementing classroom teaching.
CHALLENGES IN RURAL EDUCATION

- Shortage of quality teachers and quality educational materials
- Frequent power failures
- Unpredictable Internet connection and poor bandwidth
- Lack of trained IT personnel to support and maintain the computers, digital learning devices.
- Lack of feedback mechanism to measure the quality of education

Virtual Education

- Virtual Laboratory is a system that creates an environment designed to facilitate teacher's management of educational courses for their students, especially a system using computer hardware and software, which involves distance learning.

- The environment can be web-based and accessed through a portal or software-based and require a downloadable executable file.
OBJECTIVES

- The objective of this initiative is to improve the quality and effectiveness of education by interactive self learning process and compliment/supplement classroom teaching through IT gadgets.

- To pool academic resources thereby improving access to teachers and students.

OBJECTIVES

- To increase and improve the accessibility of educational resources.

- To enable students to independently view specific topics and breakout sessions allow teachers to divide the students into groups to discuss a specific topics or to work on a group assignment.
HIGHLIGHTS OF THE SOLUTION:

- Local server with syllabus based e-content and general content for high schools in both English and many Indian languages
- Content streaming from the server to Android laptops/desktops with HDMI touch screens and also to a large HDMI Television on a Wi-Fi network
- UPS power backup for the server, fully charged laptops can run for 6+ hours
- Teachers can add their own questionnaires and additional pictures & information to the existing e-content
- Teachers can also create/add additional content to improve students' general knowledge

HIGHLIGHTS OF THE SOLUTION:

- Answers from students and statistics on the usage is archived in the database in the local server to measure the progress and also to measure the quality of education

- With optional Internet/Satellite connection, local server can be periodically upgraded and also statistics from the local server can be uploaded to the server in the cloud

- Centralized dashboard on this cloud provides feedback on the total usage as well as parameters to measure the overall quality
# PROGRAM SCHEDULE OF THE WORKSHOP

**KARNATAKA JNANA AAYOGA**  
Government of Karnataka  

**BANGALORE UNIVERSITY**  
Bangalore  

Task Group for Educational Technology for Higher Education in Karnataka and EduSat Utilisation Review (ET-EUR) invites you to the Workshop on  
**“Assessing Technologies for Higher Education”**  
June 16-17, 2015; Central College Campus, Bangalore University

## Agenda for the Workshop

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.00-10.00</td>
<td>Registration &amp; Tea/Coffee</td>
<td></td>
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</tbody>
</table>
| 10.00-11.00   | **Inaugural Session & Introduction to Conference Themes**            | • Welcome: Dr. B. Thimme Gowda, VC, BUB  
• Program Address: Dr. B.N. Suresh, Co-Chair, Task Group  
• Inaugural Address: Sri. R. V. Deshpande, Hon’ble Minister for Higher Education and Tourism  
• Presidential Address: Dr. K. Kasturirangan, Chairman, KJA  
• Address: Sri. S. V. Ranganath, Vice-Chairman, KSHEC  
• Vote of Thanks: Dr. P. Balakrishna Shetty, Co-Chair, Task Group |
| 11.00-11.30   | Tea/Coffee                                                           |                                                                         |
| 11.30-12.30   | **Session 1: Technologies for Content Generation & Management**     | Key Note Address: Sri. Bharat Lal Meena  
Session Chair: Prof. S. Bisalakal, Former VC, UAS  
Speakers:  
• Sri. Ramesh Srinivasaraghavan, Adobe  
• Sri. Umesh Kranti, NIIT  
Open Discussion |
| 12.30-13.00   | Lunch                                                                |                                                                         |
| 14.00-15.00   | **Session 2: Educational Content Delivery Technologies**             | Session Chair: Prof. M. K. Sridhar, Director, CBSMS, BUB  
Co-Chair: Sri. B. S. Sherigara, Member, KJA and Former Vice-Chancellor, Kuvempu University  
Speakers:  
• Sri. Vikram Desai, Director, DECU, ISRO  
• Sri. R Subramanian, Hughes |

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<tr>
<th>Time</th>
<th>Session/Panel</th>
<th>Chair/Representatives</th>
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<tr>
<td>9.30-10.30</td>
<td><strong>Session 3: Technology for Examinations &amp; Administration</strong></td>
<td><strong>Session Chair: Prof. V. G. Talawar, Vice-Chancellor, REWA University</strong>&lt;br&gt;- Dr. Ningegowda, Registrar (Evaluation/Examination), BUB&lt;br&gt;- Dr. Om Deshmukh, Xerox&lt;br&gt;- Sri. B. S. Lokesh, Canon&lt;br&gt;- Sri. B. V. Deepak, JILIT</td>
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<td>10.30-11.00</td>
<td>Open Discussion</td>
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<td>11.00-11.30</td>
<td>Tea/Coffee</td>
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<td>11.30-12.00</td>
<td>Industry Interaction</td>
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<td>12.00-13.00</td>
<td><strong>Session 4: Interactive Learning Environments (Virtual Labs/Classrooms)</strong></td>
<td><strong>Session Chair: Prof. K. Eresi, Rtd. Professor of Commerce, BUB</strong>&lt;br&gt;- Prof. S. Ravi Chandra Reddy, Former Acting Director, NAAC&lt;br&gt;- Sri. B. V. Deepak, JILIT&lt;br&gt;- Pavinayan Sharma, WizIQ&lt;br&gt;- Mahesh Shetty, TeleVital</td>
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<td>13.00-13.30</td>
<td>Open Discussion</td>
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<td>13.30-14.30</td>
<td>Lunch</td>
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<td>14.30-15.30</td>
<td><strong>Wrap-up Session</strong></td>
<td><strong>Dr. B. Thimme Gowda</strong>&lt;br&gt;- Dr. B. N. Suresh, Co-Chair, TG ET-EUR&lt;br&gt;- Dr. P. Balakrishna Shetty&lt;br&gt;- Prof. K. K. Seethamma, Registrar, BUB&lt;br&gt;- Dr. Mukund K. Rao, Member-Secretary, KJA</td>
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<td>15.30-16.00</td>
<td>Tea/Coffee</td>
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WORKSHOP FEEDBACK FORMAT

Workshop on Technologies in Higher Education
Feedback Form

Your Name:_____________________________________________________________________

Designation (Principal/HOD/Professor/etc.) _________________________________________

Institution & Address
(for sending certificate)

Feedback: For each session below, please identify the technologies that you believe (a) will work well in your institution, and (b) will NOT work well in your institution.

Session 1: Technologies for Content Generation & Management

These technologies will work well in our institution:

These technologies will NOT work well in our institution:

Session 2: Educational Content Delivery Technologies

These technologies will work well in our institution:
These technologies will NOT work well in our institution:

Session 3: Technology for Examinations & Administration

These technologies will work well in our institution:

These technologies will NOT work well in our institution:

Session 4: Interactive Learning Environments (Virtual Labs/Classrooms)

These technologies will work well in our institution:

These technologies will NOT work well in our institution:

ADDITIONAL COMMENTS: Please tell us what you LIKED/found USEFUL about this workshop, and what you did NOT like/did NOT find useful.
There were a total of 182 respondents to the Feedback survey (out of ~307 participants). As can be seen from the graph below, 90% of the attendees were either Principals (30%), Heads of Departments (20%) or Faculty (40%).

Analysis of the Feedback Forms showed that more than 50% of the respondents had seriously considered their answers. This group had a similar breakdown to the original set: