INDIA'S LEADING IT MAGAZINE WWW.EXPRESSCOMPUTER.IN @ExpComputer.

AN INDIAN EXPRESS GROUP PUBLICATION VOLUME NO. 30, NO. 3, PAGES 12, MARCH, 2019, ₹75

EXPRESS COMPUTER

IT in Education

A special focus on how the Indian education sector is witnessing a remarkable transformation with increased implementation of new age digital technologies

EXPRESS COMPUTER

27th
MARCH 2019
CROWNE PLAZA
MAYUR VIHAR
DELHI

The Next Indian
(R)EVOLUTION

EDUCATION TECHNOLOGY SUMMIT

27TH MARCH 2019 | DELHI

WHO WILL ATTEND

- Academicians, Principals, Administrative & HR Heads from leading Public and Private Educational Institutes
- Key Education Ministry Bureaucrats and Association Representatives
- Directors and Chairpersons of Leading Private Institutes and Universities
- Consultants, Trainers, and renowned Educational Thought Leaders
- Vice Chancellors, Dean, Directors, Trustees of Higher Education/ B School/ Technical College
- Head of Departments
- IT Head/ CIO's/CTO's of Higher Education/ B School/ Technical College
- CEO's/MD's of Policy making Bodies
- Key Officials from Ministry of Skill Development

KEY TOPICS THAT WILL BE DISCUSSED INCLUDE

- Evolving role of technology in improving quality of education
- Future of education - digitized classrooms, student developed apps, online communities and gamification
- Case studies of institutions who are using technology innovatively
- Technology presentations on some of the most innovative technologies and applications

WHY PARTNER

ENGAGE with 100+ Educational decision makers and be a key driver in the new opportunities and spending on ICT solutions, software and technologies in this sector

ESTABLISH your position as Thought Leader with leading Public and Private Institutes as they discuss technology and the changing face of education.

LEVERAGE the power of a well co-ordinated marketing plan that reaches this august audience through editorial, print, online, eNewsletters and post event coverage.

NETWORK in relaxed, congenial settings with the crème-de-la-crème of Indian Educators.

GAIN insight into Educators and Institute plans, helping you to identify and define future business opportunities

ENJOY complete peace of mind knowing the event is brought to you by Express Computer and the Indian Express Pvt. Ltd.

SPONSORSHIP OPPORTUNITIES

- Presenting Sponsor
- Platinum Sponsor
- Gold Sponsor
- Digital Sponsor
- Speaking Opportunities
- Exhibition Booth
- Technology Showcase
- Digital Sponsor
- Lanyard Partner
- Technology Focused Roundtables
- Entertainment Sponsorship
- Networking Lunch/Dinners and much more.

http://education.expresscomputer.in

CONTACT US

Prabhas Jha (Sales) – +91 9899707440, prabhas.jha@expressindia.com | Srikanth RP (Editorial) – +91 9819687097, srikanth.rp@expressinidia.com

FOR SPONSORSHIP & EXHIBITION BOOTH

New Delhi: Prabhas Jha – +91 9899707440, prabhas.jha@expressindia.com
Mumbai: Ravindranath Nair – +91 9820955602, ravindranath.nair@expressindia.com, Ranabir Das – +91 9820097606, ranabir.das@expressindia.com
Bangalore / Chennai / Hyderabad: Durgaprasad Talithaya – +91 9900566513, durga.prasad@expressindia.com,
Praveen Kumar Soman – +91 9895429991 praveenkumar.soman@expressindia.com
Kolkata: Debnarayan Dutta – +91 9051150480, debnarayan.dutta@expressindia.com | Ajanta Sengupta – +91 9831182580, ajanta.sengupta@expressindia.com

FOR DELEGATE REGISTRATIONS

Vinita Hassija: +91 9820590053, vinita.hassija@expressindia.com

EXPRESS COMPUTER

Vol 30. No. 3. March, 2019

Chairman of the Board
Viveck Goenka

Sr. Vice President - BPD
Neil Viegas

Asst. Vice President - BPD
Harit Mohanty

Editor
Srikanth RP*

Sr. Associate Editor
Sudipta Dev

Assistant Editor
Nivedan Prakash

Delhi
Mohd Ujaley, Sandhya Michu

Mumbai
Abhishek Raval, Mohit Rathod, Salvi Mittal

Bengaluru
Rachana Jha

DESIGN

Asst. Art Director
Pravin Temble

Chief Designer
Prasad Tate

Senior Graphic Designer
Rekha Bisht

Graphic Designer
Gauri Deorukhkar

Layout
Vinayak Mestry

Photo Editor
Sandeep Patil

DIGITAL TEAM
Head of Internet
Viraj Mehta

MARKETING

Prabhas Jha
Durgaprasad Talithaya
Debnarayan Dutta
Ravindranath Nair
Ajanta Sengupta
Aparna Tawade

Circulation
Mohan Varadkar

Scheduling
Arvind Mane

PRODUCTION

General Manager
B R Tipnis

Manager
Bhadresh Valia

Express Computer®
Regd.No.REGD.NO.MCS/066/
2018-20. RNI Regn.No.49926/90.

Printed and Published by Vaidehi Thakar on behalf of The Indian Express (P) Limited and Printed at Indigo Press (India) Pvt.Ltd., Plot No.1C/716, Off. Dadoji Konddeo Cross Road, Byculla (East), Mumbai 400027 and Published at 1st floor, Express Towers, Nariman Point, Mumbai 400021.
Editor: Srikanth RP *
* Responsible for selection of news under the PRB Act. (Editorial & Administrative Offices: Express Towers, 1st floor, Nariman Point, Mumbai 400021)

Srikanth RP, Editor
srikanth.rp@expressindia.com

Education sector at the cusp of a huge transformation enabled by technology

Technology is evolving at such a rapid pace that students today are more comfortable with smartphones and tablets than textbooks. In the face of increasing digitization, the education sector is undergoing a dramatic transformation – with tablets, virtual classrooms and online courses becoming the norm rather than the exception.

This can also be seen from the rapid adoption of Massive Open Online Courses (MOOCs). India is only second to the US in terms of growth in enrolments. Internally, higher education institutes are automating all their core business processes by using ERP. For example, in some institutions, key processes such as admissions, fee payments, course planning and scheduling, faculty and other teaching resource management, learning material distribution and student information tracking have been automated using technology.

The increased adoption of technology has enabled different institutions to create innovative use cases. For example, at IIM Bangalore, a lecture capture facility allows students to review lectures outside the classroom hours while electives are chosen using an online bidding system. The institution uses digital learning tools to enable anytime, anywhere learning in a global classroom. The impact -- the learner base has grown to about 10,00,000 learners from over 190 counties.

The ISBR Group of Institutions has a facility to live stream lectures. This enables students to have access to a particular lecture video at any given point. While students can view videos of a particular subject by a particular faculty at their convenience, the faculty can also use this platform effectively by sharing lecture notes, assignments, and PPTs with the students.

The Manipal Academy of Higher Education has a Virtual Class Room solution that enables the institution in Manipal to connect with its offshore campus at Dubai and Manipal Group Universities at Jaipur and Sikkim and enable the face to face interaction of students and faculty in real time through online live classes between these campuses. The institution also uses ePad (electronic writing pad) for its examinations. Fingerprint scanner and camera allows student identification and monitoring during the exam, while automated secure upload of encrypted digital answer booklets to a cloud is done after completion of exams. Online evaluation of answer scripts, by faculty, on their PCs takes place on the cloud with automated totaling and tabulation of scores

The National Skill Development Corporation (NSDC) has a counselling initiative, Skill Saathi, that aims to enable youth to make informed career choices. The progress of this initiative is monitored through an app, which captures data which is time- and geo-stamped, and links this with a centralised registration database.

The potential for technology-enabled transformation is bright. According to a report '40 Million by 2020: Preparing for a New paradigm in Indian Higher Education' released by Ernst & Young, the higher education sector in India is expected to witness a growth of 18.0 per cent CAGR till 2020. India's education sector will also see increased use of technologies such as cloud computing to virtual reality, as the sector shapes up to meet the demands of a digital era.

> India's education sector will also see increased use of technologies such as cloud computing to virtual reality, as the sector shapes up to meet the demands of a digital era

MORE INSIDE

MUMBAI
Ravi Nair/Aparna Tawade
The Indian Express (P) Ltd.
Business Publication Division
1st Floor, Express Tower,
Nariman Point, Mumbai- 400 021
Board line: 022- 67440000 Ext. 527

Aparna Tawade
Mobile: +919870853253
Email: aparna.tawade@expressindia.com

Ravi Nair
Mobile No. +91 9820955602,
Email: ravindranath.nair@expressindia.com

Branch Offices
NEW DELHI
Prabhas Jha
The Indian Express (P) Ltd.
Business Publication Division,
Express Buliding,
B-1/B Sector 10, Noida 201 301,
Dist. Gautam Budh Nagar (U.P.) India.
Board No : 0120 6651 500, Ext:270
Direct No : 0120 665 1270
Fax No : 0120 4367 933

Prabhas Jha
Mobile : +91 9899707440
Email id: prabhas.jha@expressindia.com

CHENNAI
Durgaprasad Talithaya
The Indian Express (P) Ltd.
Business Publication Division,
8th Floor, East Wing,
Sreyas Chamiers Towers
New No.37/26 (Old No.23 & 24/26)
Chamiers Road,
Teynampet, Chennai - 600 018

Durgaprasad Talithaya
Mobile: +91 9900566513
Email: durga.prasad@expressindia.com

BENGALURU
Durgaprasad Talithaya
The Indian Express (P) Ltd.
Business Publication Division
502, 5th Floor, Devatha Plaza,
Residency road, Bengaluru- 560025

Durgaprasad Talithaya
Mobile: +91 9900566513
Email: durga.prasad@expressindia.com

HYDERABAD
Durgaprasad Talithaya
The Indian Express (P) Ltd.
Business Publication Division
6-3-885/7/B, Ground Floor,
VV Mansion, Somaji Guda,
Hyderabad – 500 082

Durgaprasad Talithaya
Mobile: +91 9900566513
Email: durga.prasad@expressindia.com

KOLKATA
Debnarayan Dutta,
Ajanta Sengupta
The Indian Express (P) Ltd.
Business Publication Division,
JL No. 29 & 30, NH-6,
Mouza- Prasastha & Ankurhati,
Vill & PO- Ankurhati, P.S.- Domjur
(Nr. Ankurhati Check Bus Stop),
Dist. Howrah- 711 409

Debnarayan Dutta
Mobile No. +91 9051150480,
Email: debnarayan.dutta@expressindia.com

Ajanta Sengupta
Mobile: +91 9831182580
Email : ajanta.sengupta@expressindia.com

AHMEDABAD
Nirav Mistry
The Indian Express (P) Ltd.
3rd Floor,
Sambhav House,
Near Judges Bunglows,
Bodakdev,
Ahmedabad - 380 015,
Mobile No. +91 8866874517
Email: nirav.mistry@expressindia.com

IT in Education

A special focus on how the Indian education sector is witnessing a remarkable transformation with increased implementation of new age digital technologies

How technology is driving NSDC's skill development mission

NATIONAL SKILL DEVELOPMENT CORPORATION (NSDC) aims to promote skill development by catalysing the creation of large scale, quality and for-profit vocational institutions. **Dr Manish Kumar**, Managing Director and Chief Executive Officer, NSDC highlights the diverse technology interventions enabling them to reach the objective of skilling up the people in India

Sudipta Dev
sudipta.dev@expressindia.com

National Skill Development Corporation (NSDC) was set up as part of a national skill development mission to fulfil the growing need in India for skilled manpower across sectors and narrow the existing gap between the demand and supply of skills. Since its inception, NSDC has created significant capacity for vocational training in the country. "We have facilitated skills training for 1.9 crore individuals across grant-based (including the government's flagship scheme the Pradhan Mantri Kaushal Vikas Yojna (PMKVY) and fee-based training programs. Given the vast scale of the programs, we extensively utilise technology to achieve greater efficiencies and effectiveness, streamline operations and strengthen co-ordination amongst various stakeholders," says Dr Manish Kumar, Managing Director & CEO, NSDC. The key initiatives include Skill Development Management System (SDMS) and Skill Management & Accreditation of Training Centre (SMART), while technology interventions play a key role in initiatives like PMKVY, fee-based programs, promoting overseas mobility of skilled manpower, and others.

Skill Development Management System

The SDMS is a centralised database that tracks end-to-end life cycle of trainees across NSDC's various programs. Starting from mobilisation and enrolment, the platform captures data uploaded by NSDC Training Partners (TPs) on various aspects related to training, assessment, certification and placement. "The existing SDMS is being replaced by a newer, more advanced version – NextGen SDMS – which will have an even more comprehensive reporting capability. Various other platforms being used at NSDC are in the process of being integrated with this," states Dr Kumar, adding that the NextGen SDMS will have an interface with other front-end systems, including those in the states, to provide a better picture of the skill development efforts across the country.

Skill Management & Accreditation of Training Centre

Before being onboarded on to the NSDC ecosystem, training providers apply on an online platform known as SMART, which is a one-stop, web-based portal for training centre 'accreditation, affiliation and continuous monitoring'. "Each centre undergoes a rigorous process of verification before it can start operations, including self-reporting and physical inspection by a third-party independent agency. Till date, 7,500 centres have been accredited through SMART," says Dr Kumar, informing further that there is also a framework for grading centres based on quality parameters that have been set by NSDC and Sector Skill Councils (SSCs). As the number of TCs is large, physical visits to monitor operations are not always feasible. Therefore, the SMART NSDC Training Center App is used to push notifications to TCs, asking them to submit pictures of training infrastructure within an hour of receiving the notification.

Technology implementations: PMKVY

Given the scale of the Pradhan Mantri Kaushal Vikas Yojana (PMKVY) scheme, streamlining operations and processes through technology has been critical for ensuring that implementation meets expected standards. Dr Kumar points out that PMKVY is the first scheme across ministries to implement the Aadhaar Enabled Biometric Attendance System (AEBAS), which is mandatory for accreditation and affiliation of TCs (except for centres in the North East and Jammu & Kashmir). AEBAS captures attendance of students in real time and the records are available on a dashboard and mapped against the SDMS. Currently, 8,000-plus organisations and over 16 lakh candidates are registered on this. "Other financial disbursements under PMKVY Short Term Training (STT) are done online directly to the bank accounts of various stakeholders such as TPs, SSCs, and candidates (the latter is in the form of a Direct Benefit Transfer). The entire process is automated and linked to the SDMS, and robust systems with checks and balances have been put in place," mentions Dr Kumar.

Also, under the Kaushal Bima scheme, NSDC has collaborated with New India Assurance (NIA) to provide an insurance facility to PMKVY certified candidates. This is being operationalised through a technical integration of the SDMS and NIA portal. Over 10 lakh insurance certificates have been generated as per the SDMS records since April 2018.

"Among the various initiatives for creating more interactive and effective learning for students, we are currently piloting an English, Employability & Entrepreneurship Module (EEE). This would replace the existing 40 hours of the mandatory EEE Module with a 155 hours module. Instructor-led training will be imparted on blended EEE modules through a Learning Management System (LMS)," affirms Dr Kumar, adding that the salient features of the LMS include e-content for trainers and candidates, online formative and summative assessments, dashboard views for batch and candidate-wise training progress.

Dr Manish Kumar
Managing Director & Chief Executive Officer, NSDC

Assessment and certification: Assessments are an essential part of competency-based skill training. To make the process seamless and efficient, NSDC has set in place platforms to enable Aadhaar-based validation of assessors, and online tracking of assessment schedules, scores and pending assessments. "As per the SDMS data, the assessment turnaround time (TAT) has improved from 21 days in FY 17-18 to 16 days in FY 18-19. In addition, we have started undertaking technology based assessments – online assessments are currently being done for 157 job roles across 24 sectors. We also offer a 'Digilocker' facility, wherein candidates, who pass assessments, can access their certificates online – so far, 19,000-plus certificates have been accessed through this," remarks Dr Kumar.

Fee-based program

Technology intervention plays a key role in the fee-based program, under which NSDC supports private sector training initiatives through operational, technical and financial assistance. "For instance, we maintain an online directory and portfolio of NSDC's TPs known as the 'TP Hub'. There is a self-reporting platform for TPs on which they describe their consolidated skilling portfolio and their profile is published on the NSDC website," says Dr Kumar, indicating that the fee-based team uses the JIRA incident management tool, an automated solution for effective tracking, prioritisation and timely closure of issues and requests raised by TPs. Also, an app known as 'TCVerify' is used for center verification and validation.

Overseas mobility of skilled manpower

India International Skill Centre (IISC) is envisaged as a network of organisations that are involved in the operational value chain of placing skilled candidates overseas, anchored at the national level by MSDE through NSDC. Dr Kumar highlights that this initiative is also seeing various technology interventions, "For instance, potential migrants can register for Pre-departure Orientation Training (PDOT) on a dedicated online portal. Further, as part of their PDOT, they can undertake basic language skill training through online videos. Assessments conducted under the IISC pilot were done on tablets, making reporting and result generation faster and more accurate."

Enabling and support systems

The Training of Trainers / Assessors (ToT/ToA) program runs a portal known as Takshashila, which captures life cycle data of trainers and assessors and is a location- and job role-wise database of certified trainers and assessors and of ToT/ToA centres.

"The need to continually create new standards for training and regularly update existing ones to stay in step with evolving technologies, new ways of working and the future of jobs is an important element of our efforts," says Dr Kumar, elaborating further that the skill training courses are aligned to the National Skill Qualification Framework (NSQF), which is a descriptive framework that organises qualifications according to a series of levels of knowledge, skills and aptitude. National Occupational Standards (NOSs) are derived from these and define what an individual performing a task should know and do. A combination of NOSs forms the Qualification Pack (QP) for a given job role.

Standards are translated into training content and curricula by NSDC's learning content team. "Among its key technology initiatives is the online provision of learning resources. The team has rolled out Kaushal Mart, a classifieds marketplace for resources such as books for trainers and trainees, technical reference material and other items that are used in training," states Dr Kumar. Then there is the Kaushal ePustakalaya, an eBookReader app that allows PMKVY students to access eBooks while on the move and to enhance access to content in vernacular languages. Over 200 eBooks have been released through this app.

"Further, we are promoting eLearning courses, and an eLearning aggregator portal is expected to be rolled-out soon as a platform to engage with various eLearning knowledge partners. We recently launched the Knowledge Initiation & Trainee Support (KITS) portal for TPs, an online repository of information about induction kits and trainee handbooks," shares Dr Kumar.

NSDC has a counselling initiative, Skill Saathi, that aims to enable youth to make informed career choices. "Progress of this initiative is monitored through an app, which captures data which is time- and geo-stamped, and by linking this with our centralised registration database, we ensure that there is no duplication. The app maintains records of the lifecycle of those who were counselled under Skill Saathi," he explains.

The Market Analytics team undertakes application-oriented research and analytics to generate evidence-based insights into the skills ecosystem. For this, the team uses various statistical and econometric tools and techniques. To increase outreach to potential candidates, the media and communications team runs a 'call to action' number that acts as a missed call helpline service. On average, within 2 minutes of receiving a missed call on a working day, the NSDC call center returns the call and the team assists the caller as required – for example, to locate nearby training centers or provide information about different schemes.

Ajeenkya DY Patil University bets big on Competency Based Transcript System

IN THE WAKE of increasing implementation of IT solutions in the education sector, **Ajeenkya DY Patil** University has set a benchmark in India's education space with its unique Competency-based Transcript System. The university is also studying the blockchain technology for future implementation

Mohit Rathod
mohit.rathod@indianexpress.com

Technology has ensured democratisation of knowledge. As one of the largest universities in the country, the Ajeenkya DY Patil University (ADYPU) is increasingly focusing on technology-intensive, innovative education. The university is embracing the twin engines of globalisation – technology and innovation. Technology is its key for enabling infrastructure besides the buildings and facilities. Annually, ADYPU spends approximately ₹ 5 crore on IT, including the subscriptions, software licenses and hardware addition. Year-on-year the university increases the allocation.

Role of IT

ADYPU's academics, through its standards based curriculum and student centred pedagogy, is managed by its own ERP system, which integrates and automates all the academic and non-academic services/resources of the university in one single interface. It is a vital link between the university, students and parents, wherein students are able to access data connected to their performance in real time.

Academic services include credit registration for all programs, students' records, all academic session plans and students' academic performance. Students are not limited to a set of courses within their own specialisation. They have the freedom to choose courses across the nine schools of study. Students here receive credits in multiple ways. They attend semesters at partner institutions and they learn through MOOCs guided and evaluated by ADYPU's faculty. This way, their world of learning is not limited to what's provided from the ADYPU platform or what is ordained for them. They discern, they choose, and they learn what appeals to them in accordance with their career goals. All of these can be tracked and managed by the ERP, making it a blend of both management of academics as well as academic performance.

Speaking on what's perhaps the most unique IT initiatives by the university, Ajeenkya Patil, Chairman, Ajeenkya DY Patil Group (ADYPG), shares, "We are ushering in the most important shift concerning student credentials. The practice everywhere is to issue a transcript at the end of a semester and then a degree at the end of the program. The transcript is a basic form of communicating the achievement of students reflected in terms of courses studied and grades obtained. The present day transcript does not clearly reflect the knowledge and skills acquired by a student during the course of study. What is truly needed by a student is a document that signifies the learnings of the subject matter, the evidences of the work done through the years and the competencies achieved across courses. I'm happy to share that ADYPU has pioneered a unique competency-based transcript combined with an electronic portfolio which documents the journey of a student right from the first year to graduation."

Besides the traditional transcript with a listing of courses attended by a student along with the grades, the university will issue a competency transcript for each semester, which will document the skills attained by a student. This will be supported by a link to an electronic portfolio of a student which would contain the evidences of the work done by the student and the faculty assessment remarks on the same. This link is shared with companies before the recruitment drives, to help them make informed hiring decisions. This also gives the student an informed perspective, guiding them to make sound career decisions.

"ADYPU is one of the pioneers in India to have adopted the Scale-Up Classroom, which stands for 'Student-Centered Active Learning Environment with Upside-down Pedagogies'. It is a structural and pedagogical approach to deliver technology driven learning, currently being used by over 250 universities across the US and Europe. The approach has been instrumental in increasing student participation and engagement," informs Patil.

ADYPU also manages its online or blended learning programmes through video conferencing and collaboration tools wherein students can attend classes online with any device in real-time through weblinks provided by the

Ajeenkya DY Patil
Chairman,
Ajeenkya DY Patil Group
(ADYPG)

faculty, or they can access their stored audio/ video data whenever they want, using any device and from any place in the world – provided they have basic connectivity. They can be in multiple locations, and yet be together in a virtual classroom, interacting and engaging with each other, where all the features of a traditional classroom are not just replicated, but also enhanced and magnified. The same setup enables the university to organise lectures by global experts.

"Having realised a need for a seamless tool that amalgamates all media and different platforms, we searched for an effective team communication and collaboration tool. We also wished to reduce the heavy reliance on WhatsApp kind of tools for messaging and reduce the email workloads of the modern workplace. Having diligently looked through diverse options, we selected the tool Flock to ensure real-time communication and monitoring of activities, apart from helping to create channels to organise all resources of a project within one workspace," he says.

With collaborative features like one-to-one and group chats, file sharing, audio and video calling, and third-party productivity apps integration, Flock has made tracking the progress of activities easier and communication between teams and team members effective. This cloud based platform helps the academic and non-academic staff, along with the management and other key stakeholders communicate seamlessly for collaborative activities apart from assisting in tracking progress and productivity of tasks and ensuring seamless communication without its typical barriers.

Patil is particularly proud of the Competency Based Transcript System and the e-portfolio. He comments, "To me, this is our academic innovation which has a few parallels globally. In our competency based transcript, we have built in the knowledge, skills and attitudes required for a particular domain. We hope this will give all stakeholders a measure of the effort that has gone into developing talent. It will benefit all key stakeholders – the student, the industry and the university. For the student, he is able to see where he is vis-à-vis what is required in the industry; for the university, it is a measure of its academic rigour resulting in employability; and for companies, it is the best talent matched with their job description."

While, the academic transcript showcases the knowledge aspect, the ePortfolio showcases or displays visually, the skills aspect, and the PRI captures the behavioural/attitudinal aspect, together making it a tool that will eventually revolutionalise how companies hire talent from campuses. The e-portfolio is a compilation of the evidence of what the student has done through the years of the course of study and provides a vital insight into the student's abilities which a traditional transcript is unable to demonstrate.

This combination of competency based matrix and e-portfolio of student work, Patil feels, is one of ADYPU's most ambitious projects which is expected to have a profound impact in years to come

Tech of the future

Analytics pertaining to learning and academics, according to Patil, is the next big thing to happen in the education domain. It will significantly impact how education is imparted and received. It will help personalise the delivery of education and make it more meaningful. Analytics will help improve student advising and recommendations and improve adaptive learning. While presently some of it is being used in delivery of online learning, it is starting to make its presence felt in classroom learning as well.

Commenting on what ADYPU has planned for the future in terms of technology implementation, Patil adds, "We are betting heavily on our university's unique competency based matrix and digital portfolio. We are driving significant financial investment and manual effort to make it happen. The effort is on to use artificial intelligence to connect employer job description with the student capabilities, thus reducing the gap between expectations and delivery. It is a new area of exploration and there are many variables, which we are trying to address one at a time. Success in this endeavour will not only benefit students within ADYPU, it might also become a benchmark. Furthermore, we are currently in the evaluation phase for blockchain; we expect to expect to implement blockchain within the next two years."

Digital technology enhancing educational experiences at MAHE

MANIPAL ACADEMY OF HIGHER EDUCATION (MAHE) has been at the forefront of digital enablement in the education sector. **Dr H Vinod Bhat**, Vice Chancellor, MAHE speaks about how their digital initiatives are keeping pace with changing technologies, thereby providing the students the best of educational experiences

Sudipta Dev
sudipta.dev@expressindia.com

Manipal Academy of Higher Education (MAHE) has been the forerunner in implementing digital solutions in various facets of education and healthcare services.

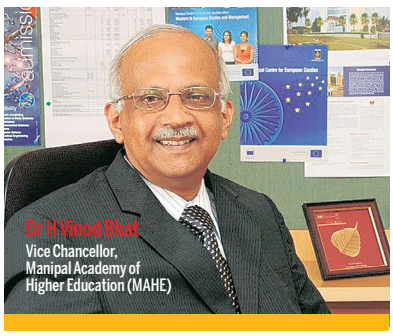
Dr H Vinod Bhat, Vice Chancellor, Manipal Academy of Higher Education (MAHE) acknowledges with regards to IT, MAHE has been quick in realising the potential benefits of digital technology as a big enabler in the effective delivery of higher education. According to Dr Bhat, MAHE has innovatively used digital technology with the following objectives:

- Facilitate the discovery, preservation and sharing of knowledge through digitalisation;
- Extend the reach and effectiveness of scholarly communications;
- Enhance teaching and research through effective use of digital technologies and data;
- Empower staff and students through the provision of digital skills training;
- Develop outreach, online learning, educational resources and student support;
- Sharing and implementation of best practice through the creation of a university-wide dialogue on digital innovation.

Digitalisation in the following processes have been implemented based on the above objectives:

Academic management

- **Lecture Capture Solution:** This is a comprehensive e-learning solution that brings about a paradigm shift in the education delivery mechanism. The core feature of the solution is automatic recording and distribution of classroom lectures. "The access to recorded lectures and other study material through Lecture Capture Solution provides students the ability to virtually re-live their classroom experience on anytime-anywhere basis. It also assists the teacher in self-improvement. Lecture Capture Solution has a range of useful tools and applications which make the learning experience more engaging and interactive for students," says Dr Bhat, adding that the solution also includes the new-age Learning Management System (LMS) and supports all the major platforms and devices. It is available in offline mode (through campus intranet) as well as online mode (cloud based) and has robust live streaming functionalities. It has many benefits for both students and the faculty and equips the university with an effective and multi-purpose technology platform.
- **Virtual Class Room (VCR) solution:** This connects MAHE Manipal with its offshore campus at Dubai and Manipal Group Universities at Jaipur and Sikkim and enables face-to-face interaction of students and faculty in realtime through online live classes between these campuses. Also, these live classes are archived in a repository for future use by the students and faculty anytime on demand.
- **Robotics Lab:** The robotics lab in the Department of Mechatronics Engineering is equipped with 6-axis ABBl robot along with advanced add-on like conveyor tracking, image processing, automatic tool exchanger, and Robot studio software for simulating the entire robot cell
- **e-Learning:** Online education is an integral part of MAHE's unique learning experience. "Students can learn at their own pace, in a manner that suits their style of learning. The courses provide one with lively and interactive, multi-sensory learning, combining the simplicity of classroom teaching with a powerful visual medium that captures one's imagination. This is a whole new realm of educational experience. The content for e-learning is provided by the faculty of MAHE . Hence the experience is like learning in a virtual classroom," states Dr Bhat. e-Learning is a web application that the students can access across the campus.
- **ePad examination:** Use of ePad (electronic writing pad) in examination was



Dr H Vinod Bhat
Vice Chancellor,
Manipal Academy of
Higher Education (MAHE)

introduced in MAHE in 2015. Fingerprint scanner and camera allows student identification and monitoring during the exam, while automated secure upload of encrypted digital answer booklets to "epCloud" is done after completion of exams. Online evaluation of answer scripts, by faculty, on their PCs takes place on the "epCloud", with automated totaling and tabulation of scores.

Some of the other key implementations include Online Screen Marking (introduced in 2014); online attendance/student feedback; Student Information System(SIS); student computing; faculty computing; MOOCs in association with Coursera; Student Life Cycle Management System (SlcM); Library Management System; digital based Medical Simulation Center (learning closest to realistic clinical experience). "The Medical Simulation Centre is unique in that it provides learning by close to realistic clinical experience. As theoretical knowledge is immediately supplemented by practice, the learning experience is more likely to be complete. Management of simulated real life scenarios will also improve the confidence level of the students when they are called upon to manage real patients later in their career," says Dr Bhat, informing that students of all constituent colleges under the university including Medical, Dental, Nursing and Allied Health colleges are trained at the Centre. The Medical Simulation Centre is the first of its kind in a private Indian university.

Research Management System

Research Data Management System is an in-house database software developed to deposit faculty publications and grant details using their Manipal Official IDs. Dr Bhat explains that faculty can upload their publications and applied grant details in the Research Data Management System. Option to search researcher details (for writing research grants and internal collaboration) using different options is available. The university has procured research software applications such as Sci Val (offering quick, easy access to research performance of more than 11,000 research institutions from 230 nations); Pure (a Research Intelligence Solution).

"The Manipal - Schrödinger Centre for Molecular Simulations is the first-of-its-kind pact where Schrodinger will provide guidance and training to the scientists of MAHE towards becoming a pioneer in the field of molecular simulations. MAHE has subscribed Schrodinger package in total, being unique amongst the universities in the country," he comments.

State-of-the-art data centre

MAHE has setup a state-of-the-art physical infrastructure for the data centre that meets the requirements of industry standard. "This Tier II (N+1) DC, spread over 3000 sq ft, houses the server park and also the Network Operation Center (NOC), hosting enterprise applications, e-learning portal, websites and host of other services," comments Dr Bhat, also reminding that Manipal has established a very strong and reliable VPN infrastructure connecting all Manipal Group of institutions in India and abroad with high-performance MPLS (Multi Protocol Label Switching) backbone - committed step to move towards "Digital University".

The other important implementations include Online Degree Certificate Verification System (ODVC); Finance Management System; Event Management System; Wireless Campus; Quality Initiative Documentation and online audit software; Alumni Centre Portal and managing placements.

MAHE Admissions Office has been using the latest technology to the fullest extent possible ways in all the stages of its process. Online Entrance Test; Online Test Booking System; Admissions & Student Information System Software; Online Counselling System; and Customer Relation Management Software; are some of the key highlights.

Sharda University: Tech enabled campus for academic excellence

LOCATED IN GREATER Noida, Delhi NCR, Sharda University has a multi-discipline campus spread over 63 acres and equipped with world class facilities. **Prashant Gupta**, Executive Director, Sharda University highlights the various ways technology is playing a significant role in ensuring academic excellence at the prestigious institution

Sudipta Dev
sudipta.dev@expressindia.com

A leading UGC approved university in Delhi-NCR, Sharda University is a technology based, global university, which attracts students from more than 80 countries. "The high technology pursuit to achieve academic excellence in teaching, learning and research has attracted footprints of different cultures and countries at Sharda University," affirms Prashant Gupta, Executive Director, Sharda University.

The university provides technology enabled campus with all-round latest interactive interfaces. "Sharda promotes a paperless ecofriendly environment among students, faculty and staff in the growth of academic, research and university activities. Students at Sharda are connected via digital devices and utilise their devices for various academic, administrative and other activities," states Gupta.

At Sharda University classrooms are integrated with technology to enhance better learning and teaching. The high-end classrooms are enabled with wireless and wired connectivity, projector, smart lecturing systems which supports interactive mode where faculty provided hands-on lectures for programming-based subjects. "Students are provided with customised LMS where each and every student is connected with their subject related material, details, documents, assignments, quizzes and faculty interface," mentions Gupta, adding that at Sharda, students are trained for their placements through LMS based test series, which students have to attempt in the time slot provided.

The university is focused on providing its students outcome-based learning. Gupta explains that students do hands on practices on their subjects, it is more like working on live projects. Students need to develop projects for every subject to showcase their understanding and skills for respective subjects. Furthermore, they are involved with various industries for solving problems specified by the industries.

"Through,Technical Skill and Enhancement Program (TSEP) test series which are developed by institute/department, students are exposed to real technical problem practice as per industry requirements which helps them during internships and final placements," he mentions.

Apart from their curriculum, students are focused on participating in MOOC courses for their better understanding and skill enhancements in respective subjects. "These courses are mapped with their internal assessments so that they may earn their credits while they learn. At Sharda we follow strong mentor-mentee system through the portal, which is proved as a distinct strength in the holistic development of the students," states Gupta, informing that another unique strength of Sharda University is the utilisation of university intranet through which each and every student is approachable and accessible. Using this easy and effective analysis of student progress related to his presence, grades or sending updates to their parents, easy sharing of resources and semester-wise growth of the students can be monitored and mentored.

Sharda University offers project-based learning and training to the students where projects on latest technologies like IoT, cloud, AI are offered as a part of regular as well as industry offered projects. Gupta points out that students are involved in real-time industry projects where they are participating in various development modules at various industries. They also participating in consultancy projects and other industry based professional activities.

Lab facilities are provided 24x7 to all the students. Importantly, their entrepreneur zeal is

supported with Sharda Incubation Center which is one of the renowned and most-established incubation centres in NCR. "Students are supported to nurture their budding ideas in new possibilities of business prospects. A team of experts is available for the students to enable them to capitalise the resources," informs Gupta.

Gupta believes that the following emerging technologies will not only make a significant difference in how institutions are imparting education rather will impact culture, the marketplace and society the most over the next decade:

- Artificial intelligence / machine learning / deep learning
- Internet of Things, sensors and wearables
- Blockchain - cryptocurrencies, Distributed Ledger Systems, DAOs, DApps
- Big data - apps, infrastructure and predictive analytics
- Robots including drones and autonomous vehicles - consumer / commercial / industrial robots and robotics
- Cybersecurity including adaptive security - security, intelligence detection, remediation and adaptation
- Voice assistants - interfaces, chatbots and Natural Language Processing
- Human-computer interaction - facial/gesture recognition, biometrics, gaze tracking.

The university is committed to continues development of IT infrastructure as per the latest requirements. Most of the IT infrastructure is according to industry standards, with regular inclusion of market-based analysis for development and expansion.

WeSchool: Bridging the distance gap with Hybrid MBA

PRIN LN WELINGKAR INSTITUTE of Management Development and Research (WeSchool) , is a leading private B school with campuses in Mumbai and Bengaluru. **Prof Dr Uday Salunkhe**, Group Director, WeSchool on how technology is helping in their efforts to develop future business leaders

Sudipta Dev
sudipta.dev@expressindia.com

WeSchool is among the top B-Schools as per the National Institutional Ranking Framework (NIRF) conducted by Ministry of Human Resource Development, Government of India. Technology implementation has leveraged marketing communication and campus operations in Mumbai and Bangalore, to a whole new level. The role of technology on WeSchool campus has evolved over the years internally through operations, academics, infrastructure and externally through website and social media communication.

"On the operations front, we are a digital campus and all our payments on campus are transacted digitally. This is applicable for Mumbai and Bengaluru campuses as well. We have a dedicated online portal that acts an information and feedback channels for students, faculty and staff. For example, schedule of lectures, student feedback, placement interview status, takes place on elearn," says Prof Dr Uday Salunkhe, Group Director, WeSchool.

"From an academic point of view, the Hybrid MBA reflects how the role of technology has made higher education accessible to students who have time and distance challenges," states Dr Salunkhe.

The infrastructure enables students to connect to internet through Wi-Fi on campus and computer lab too. There is a digital library that is equipped with e- books and mutli-media content. According to Dr Salunkhe, the WeSchool Library is a modified library and has undergone a huge digital transformation in the past five years.

"The library collection has grown to more than 95,000 books and more than 150 print periodicals (Indian and foreign). The library collection is developed according to syllabus as well as current industry trends so that students are industry ready," he informs. The institute provides diverse e-resources which are academic as well as research oriented. All the e-resources can be accessed on-campus as well as off-campus. There is access to over 25,000 e-books and e-journals.

Speaking about the official website, Dr Salunkhe says, "The basic interface which is our official website is not only informative but also interactive especially for the technologically adept student crowd. On our website, our core faculty videos affirm the key features of our programs effectively than just text. WeSchool alumni testimonials showcase our former students narrating their campus experience and key take ways."

WeSchool team catering to prospective students is highly

> "The institute provides diverse e-resources, both academic as well as research oriented. There is access to over 25,000 e-books and e-journals

responsive on Facebook which attracts high number of queries and comments prior admission. "This year we have introduced a chat bot to answer queries at a preliminary level. We are also organising webinars for our prospective students on Facebook," mentions Dr Salunkhe.

In order to make the learning effective, the teaching in the classroom is powered with internet access, LCD and OHP for teacher and student presentations. "We inspire our students to use technology for community development through WeSchool RedX Innovation Lab," adds Dr Salunkhe.

As a step towards improving the learning experience on campus, there is an online feedback system specially designed for students. Here, the students write online feedback about faculty anonymously. He informs that the system is mandatory and is carried in regular cycles throughout the academic year. Such processes help faculty understand what interests the students and the response of the class. E.g. a student may suggest more case studies to understand key lessons or respond well to gamification for understanding finance related concepts. "An online feedback is vital especially for new teaching faculty with corporate experience. Students are notified about the companies visiting campus. Post campus interviews, students are notified about their interview status on the e-learn portal. The same portal also facilitates for internal Admin HR processes for faculty and staff.

An innovative implementation is for Hybrid MBA students queries, an online student helpdesk facility "We-Care" has been introduced in student login. This facility enables the student to get all their queries resolved mostly within 24 hrs.

WeSchool has a strong focus on distance education. Due to geographical barriers and the high cost factor, students from smaller towns often find it difficult to attend a conventional MBA program. "Hybrid program from WeSchool overcomes the boundaries of distance and cost and helps students fulfill their academics ambitions. We continue to deliver quality education, while providing distance learners with the flexibility they need. WeSchool's Post Graduate Diploma in Management (PGDM) can be availed in the Hybrid Learning mode, which operates on a unique hybrid structure combining effective online and offline study formats to help people learn conveniently," explains Dr Salunkhe, pointing out that women with restricted movements due to family commitments can acquire invaluable professional learning through WeSchool's Hybrid Programs.

These programs vary in formats from classroom based, virtual, hybrid (blend of classroom and virtual learning), open programs, and customised programs best suited for private organisations for their employees. On weekends, experiential workshops are conducted on managerial skills development as well as learning takes place through a number of innovative modes like, business simulation games, movie learning sessions, industry visits, etc..

Dr Salunkhe avers that contemporary technologies like Python, Tableau could enable learning in Business Analytics and Research related topics. "Blended learning, which is a combination of online, classroom and experiential learning is becoming popular in executive education segment. Most of the working professionals are looking at adding skills and often run out of time. Customised education certificate courses and short-term programs are convenient and add value to experienced professionals."

WeSchool is constantly exploring new technologies that would add experience and knowledge for students through e-learning platform. In addition to the Hybrid MBA programs, the institute has recently added programs in two years full time PGDM in Research and Business Analytics and eBiz, is grooming young professionals to work in an environment of ML and IoT across job roles and industries.

STATEMENT ABOUT OWNERSHIP AND OTHER PARTICULARS OF EXPRESS COMPUTER, MUMBAI, AS REQUIRED UNDER RULE 8 OF THE REGISTRATION OF NEWSPAPERS (CENTRAL) RULES, 1956

FORM - IV
(SEE RULE 8)

1. Place of Publication	:	Express Towers, 1st Floor Nariman Point, Mumbai-400 021
2. Periodicity of its publication	:	Monthly
3. Printer's Name	:	Ms. Vaidehi Thakar
Whether citizen of India	:	Yes
Address	:	Express Towers, 1st Floor Nariman Point, Mumbai-400 021
4. Publisher's Name	:	Ms. Vaidehi Thakar
Whether citizen of India	:	Yes
Address	:	Express Towers, 1st Floor Nariman Point, Mumbai-400 021
5. Editor's name	:	Srikanth RP
Whether citizen of India	:	Yes
Address	:	Express Towers, 1st Floor Nariman Point, Mumbai-400 021
6. Name and address of individuals who own the newspaper	:	The Indian Express (P) Ltd Express Towers, 1st Floor Nariman Point, Mumbai 400021
AND		
Shareholders holding more than One per cent of the total capital	:	Indian Express Holdings & Entp Private Limited, Express Towers, 1st Floor Nariman Point, Mumbai-400021
	:	Mr. Viveck Goenka & Mr. Anant Goenka Express Towers, 1st Floor Nariman Point, Mumbai-400021
	:	Mr. Shekhar Gupta & Mrs. Neelam Jolly C-6/53, Safdarjung Development Area New Delhi 110 016

I, Vaidehi Thakar, hereby declare that the particulars given above are true and to the best of my knowledge and belief.

Date : 1/3/2019

sd/-
Vaidehi Thakar
Publisher

'Use of AI in education will be a massive success'

AS ONE OF the renowned universities in India, Lovely Professional University has taken multiple initiatives in implementing IT. **Aman Mittal**, Associate Director, Lovely Professional University, elaborates more

Mohit Rathod
mohit.rathod@indianexpress.com

Lovely Professional University (LPU) is well-known for its advanced teaching structure. LPU is exalted for its infrastructure, teaching facilities, experienced faculties and a place that yields industry-ready knowledgeable students. Technological advancement is happening expeditiously and with this developing techno-industry environment, the expectations of contemporary skills within the current era juvenescence, is growing at a massive pace. The world today requires candidates equipped with new and on-growing technical skills.

Aman Mittal, Associate Director, LPU, shares, "LPU believes in progressing with time while adapting to new methods and technologies, unlike many traditional universities. Meticulous and regular refurbishment of the syllabus, according to the global standards, help students to not only be competent within the nation, but to be able to compete globally. The teaching executed in LPU is done through the most modern pedagogies. LPU's University Management System (UMS) is a great leap forward in the era of technologically advanced education sector. From guards stationed at the entrance of the university to transport personnel, from faculties responsible to impart and enlighten students with knowledge to wardens who take care of them, everyone has the access to this technology which brings any and every information about the university, at the click of a button."

Tech play

Audio and visual media is used to support lectures and make it more appealing and interesting for students. Details of the lectures, syllabus, assignments, results, attendance – everything is uploaded on the UMS, which enhances transparency in functioning of the university, while helping students eliminate the clutter and chaos further, to help them sanction more focus onto studies. LPU's library is accessible from any part of the world and is on complete RFID system. The library module provides students the flexibility to check the availability of books online.

Elaborating further on the role of technology at LPU, Mittal informs, "Safety and security of students who are far away from their homes, goes hand-in-hand with education. At LPU, all the communication (save class-lectures) with the students is carried out by means of IT tools only. There are nearly more than 25,000 students in the university, and every student is provided with unique digital ID card and a separate registration number, through which the student logs into the university's intranet and gain access to hostel facilities. Without the card, no one can enter the university or any hostel. Even faculty members can't enter the hostel premises if their University ID card is not authorised to enter."

Driving innovation

The use of AI within the field of education and training is definitely going to be a massive success, feels Mittal. He says, "With rigorous use of smartphone technologies and implementation of miraculous solutions to umpteen problems, education can be facilitated with construction of applications and software to curb the unwanted and not needed chaos. IT has been helpful in addressing several challenges that universities face during their formative years. With IT enabled processes, things may become more transparent and efficient. The process of searching the recorded history of students and processing the request can be engulfed into seconds, which, in today's world, takes hours to process."

Infusion of IT has done wonders in all the sectors, where it has been tried – be it banking, railways, aviation, development sector, public services – everywhere. Naturally, the education sector cannot be allowed to remain bereft of the benefits of the technology that pledges increased efficiencies and augmented productivity.

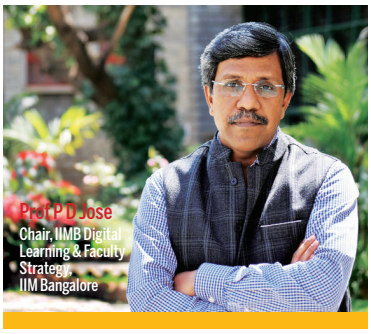
"LPU is proud to be perhaps the only university in the nation that takes less than five minutes to process such requests due to its UMS. The best part is student can do most of the processes himself/herself, thus ensuring swift information flow as well saving a lot on the manpower cost. To be perhaps the first university of India who made all its processes 100 per cent paperless, LPU is redefining the strong amalgamation of education and technology. Moreover, IT promises to extend the cover of education to a large section of society which has remained bereft of the gains of education, in a cost-effective manner. So, it won't be a hyperbole, if it's said that powered by IT, we can compete with the world's best – if not today, certainly in three-five years times. India, beyond doubt, has one of the most potent student-masses in the whole world - a fact that has been corroborated by leading academicians worldwide. The need is to harness the possibilities that this mass throws, and I believe that this is where IT has a role to play," he adds.

IIMB: Creating a cohesive digital ecosystem

PROFESSOR P D JOSE, CHAIR, IIMB Digital Learning, and Faculty in the Strategy area at IIM Bangalore highlights the focus on online learning and how the use of technology has improved program delivery as well as reach and scale

Sudipta Dev
sudipta.dev@expressindia.com

IIM Bangalore's smart campus is probably among the most technology enabled campuses in India, both in terms of IT infrastructure as well as academic infrastructure. "The vision is to create a cohesive digital ecosystem to manage both the administrative academic infrastructure across the student life cycle in a seamless manner," says Prof P D Jose, Chair, IIMB Digital Learning & Faculty Strategy, IIM Bangalore, adding that the campus is fully Wi-Fi enabled, an ERP system has been implemented to cover both administrative as well as academic activities, including library access as well as conducting exams with virtual proctoring.



Administratively, the implementations have made it easier for the students to most effectively utilise their time on the campus – from the lecture capture facility that allows them to review lectures outside the classroom hours to electives chosen using an online bidding system. "Students can bring in their digital devices to the campus and or less seamlessly connect to the institute's IT systems," adds Prof Jose.

In recent times, IIMB has been looking at the use of technology to improve program delivery as well as reach and scale. Prof Jose remarks that a good example of this is the lead that IIMB has in offering Massive open Online Courses (MOOCs). The institute has built recording studios as well as virtual classrooms to facilitate this process.

Online learning

At IIMB, the online learning design includes hands-on exercises for both students and teachers to get involved, and an actively maintained discussion forum for students to feel something like a classroom connect. "The institute also has adopted a blended approach to learning, where the classroom experience is integrated with online modules – giving students a great deal of flexibility, and time for holistic discussions in class," mentions Prof Jose, pointing out that an interesting variation of this is the Flipped Classroom, where theoretical material or case studies are studied by students outside the classroom using online resources, and the physical classroom is a place for discussion and de-brief. Another interesting initiative is the case class recording lab, which again uses the concept of blended learning to allow students to have a hands-on experience.

Highlighting IIMB's digital initiatives program, Prof Jose remarks that IIMBx is founded on the philosophy that everyone – irrespective of financial or locational constraints – should have access to quality education. "Led by IIMB faculty, IIMBx uses digital learning tools to enable anytime, anywhere learning in a global classroom. What started as an idea to go digital has now grown into one of the country's most significant hubs for online learning," states Prof Jose, informing that the first course was offered on edX in 2015. In 2016, IIMB was appointed as a National Coordinator for management courses on SWAYAM, the national learning portal launched by the Ministry of Human Resources Development. Simultaneously, IIMB also started offering courses on the IIMBx Open edX platform. Since then the learner base has grown to about 10,00,000 learners from over 190 counties.

Prof Bose believes the following technologies will play a significant role in the education sector:

- **Artificial intelligence:** From supporting students to giving insights to learner engagement to teachers, AI will transform the learning process
- **Augmented reality:** Providing visual simulation which gives the students' experiences of objects, places and theories in a whole new way
- **Learning technologies to help disabled learners:** Audio books, Amazon Echo and Google play interacts with students and facilitates learning
- **App-based learning:** Learners want their learning needs on the go which works offline as well and mobile app is the answer

A few of the technologies IIMB is looking at in the near future: End-to-end programme management via a robust platform; artificial intelligence; app based learning and more effectively migrating on to the cloud.

Cutting-edge tech for media training

K G SURESH, DIRECTOR GENERAL, Indian Institute of Mass Communication (IIMC) shares how his institution is setting global standards for media education, research and training, using technology, with focus on verification and fact-checking

Sudipta Dev
sudipta.dev@expressindia.com

Indian Institute of Mass Communication (IIMC) has been one of the country's premier media education institutions since last five decades. Headquartered in New Delhi, IIMC has five regional centres - at Aizawl (Mizoram), Amravati (Maharashtra), Dhenkanal (Odisha), Jammu (J&K) and Kottayam (Kerala). The institution has a Wi-Fi enabled campus and state-of-the-art technology for its computer labs, radio and TV department and digital media lab. "In addition to this, we have our own community radio station - Apna Radio which is in the process of being upgraded into a state-of-the-art model community radio station," says KG Suresh, Director General, IIMC. To streamline all the administrative work, an e-office is in the pipeline.

IIMC is in the process of having its own online teaching platform where niche programs will be offered. "We are planning to convert all classrooms into smart classrooms. We are in process of setting up a New Media Lab which will house latest technologies which are being used in the field of communication," states Suresh, adding that the institution is in the process of setting up a state-of-the-art National Centre for Excellence in Animation, Visual Effects, Gaming & Comics in Mumbai. "The idea is to produce specialists to cater to the growing demands of the industry," mentions Suresh, adding that technology which will make a significant impact in the education industry will creating an immersive learning environment, educational games, Massive Open Online Courses and the digital tools that make teaching-learning process more engaging and interactive.

The tech implementations at IIMC enable students to work on online projects which are collaborative in nature. "Students are introduced to Learning Management Systems like Moodle and edmodo. Online classrooms are also created to ensure continuous interaction amongst students and faculty. Student blogs, social media handles, lab journals using latest software, mobile journalism, data analytics are in place. We also organise special sessions on drone journalism, robotic processes, artificial intelligence and mobile journalism for the benefit of our students," states Suresh. This apart, the community radio station provides platform to the students to create and disseminate socially relevant messages. IIMC also conducts sessions on robotics which are based on augmented reality and virtual reality.

Suresh is particularly proud of the Digital Literacy and Fact-checking and Verification Project initiated by the Department of New Media. He shares the reason why, "Apart from the focus on training media students, we are planning to reach out to the community to create awareness on fake news. We recently conducted a workshop on digital media for the differently-abled in collaboration with Facebook to enable them to harness the power of social media to highlight their aspirations and grievances. Many of our faculty members are Google trained." IIMC is among the first institutions in the country to be a part of the Google News Lab project.

"Our students will be the truth warriors and they will be conducting training for the various groups. We will also be utilising services of our community radio station to create awareness on the same," asserts Suresh.

The institution conducts training for Indian Information Service Officer Trainees, who will be the future Information Officers of the government. "We are also training senior officers of the armed forces as also mid-career journalists from developing countries," informs Suresh.

IIMC recently collaborated with AYUSH for a workshop to help their research scholars reach out to disseminate information pertaining to alternative medicine to a wider audience. The institution is also offering an online course on Health Communication in collaboration with UNICEF, Oxford and Thompson Reuters for journalists, which focuses on evidence based reporting.

ISBR: Tech enabled holistic management education

EMERGING TECHNOLOGIES ARE paving the way for the future of education. **Manish Kothari**, Founder & Managing Director, ISBR Group of Institutions, speaks about how technology is leading to best-in-class and contemporary management education at ISBR

Sudipta Dev
sudipta.dev@expressindia.com

ISBR is a leading business school with campuses in Bangalore and Chennai. Focused on imparting holistic educational experience to its students, the institution has state-of-the-art technology and modern pedagogy to ensure that they get the best education possible. "With advancements in technology, computer competency is a must to succeed in any sector. To keep abreast of this development, computer labs are equipped with the latest facilities including high-speed internet and multimedia. Our workstations have the latest software and hardware with broadband connectivity for 24-hour internet access," says Manish Kothari, Founder & Managing Director, ISBR Group of Institutions.

The infrastructure at ISBR (seminar halls, boardrooms, discussion rooms and classrooms) is well equipped to provide live video streaming of lectures. Regular live webinars are conducted so that students can access remotely. Kothari informs that ISBR's smart, digital classrooms bring learning into the 21st century, "Our classrooms are equipped with the latest teaching aids and audio-visual equipment to make learning at ISBR a truly interactive experience. We have also implemented an ERP platform that can be accessed by students and faculty to assign and share assignments as well as keep a track on attendance. It's not just our classrooms that are learning-ready. We have ensured that the entire campus, as well as our student hostel, is Wi-Fi enabled to provide a seamless education experience."

ISBR boasts of an extensive knowledge centre that includes a well-stocked digital library with over 10,000 titles on management and over 50 leading management journals such as Harvard Business Review, Sloan Management Review, etc.

The ERP system ensures transparency in administration - from paying fees to tracking progress, students are well informed about their education journey at ISBR. "We also conduct live webinars, inviting corporate leaders to interact with our students to discuss and impart the knowledge of current industry trends. Through our easily accessible dashboards, students can view case studies and presentations on several topics," mentions Kothari.

> An innovative technology implementation is a comprehensive ERP system that supervises and maintains the database of the entire institution

ISBR believes in providing a holistic educational experience to students. One of the many innovative technology implementations is the introduction of a comprehensive ERP system that supervises and maintains the database of the entire institution. "Through this system, we address all concerns, right from the management of finance, admission, attendance, to announcing examination results. Students can log into their accounts and get informed about the various events being held at the institute as well as get access to important communication from the faculty. Through the placement portal on the ERP system, students get notified when a company expresses interest to hire them," states Kothari, adding that the system is not only limited to students, but also extends to the faculty of the institute.

ISBR faculty use the ERP system to access the campus, from any location, on their mobile devices. This ensures that there is no lag or disconnect in communication between the faculty and students. "The ERP system ensures smooth interaction between departments such as academics, placements, alumni, accounts, examination module, attendance, student portal, SMS and mail configurations, hostels, research, PhD modules, peer evaluations, careers, and report generation," affirms Kothari.

Kothari highlights a project that has given the students adequate tools to succeed not just in academia, but also to prepare them for the corporate world. ISBR has implemented live streaming of lectures. This enables students to have access to a particular lecture video at any given point. "Students can now view videos of a particular subject by a particular faculty at their convenience. Faculty can also use this platform effectively by sharing lecture notes, assignments, and PPTs with the students. It also allows for interactive online discussion forums where students can pose queries to the faculty and management," explains Kothari.

With smartphones and the internet becoming more and more advanced, ISBR is leveraging this technology to further improve on student-faculty interactions. Kothari believes that a two-way communication enabler between the student and the institute paves the way for more interactions and transparency. "We offer an array of app-based learning and value added certification program that further enhances the learning process. The app enables effective and customised student communication. Students can also avail access to critical support resources in the palm of their hand. They can also view the various online courses that are available and apply to them," he remarks, adding that the app also fosters and encourages peer communication and engagements as well as facilitate alumni connect.

Reminding that educators today are increasingly realising the value of technology, he says, "By using smart classes, education is spreading to regions that had no access to basic learning. For instance, Google Classroom is a very popular tool that some schools in the country are using to enhance the education process. 3D printing and virtual reality technologies also are shaping the industry, thereby having a domino effect on what is taught in institutes. The internet has changed and shaped the way education is imparted and its prevalence has truly made the world a global village."

Kothari foresees technologies like cloud computing, mobile learning, virtual laboratories, artificial intelligence and blockchain, making a significant difference in how institutions are imparting education.

IIT Bombay sets a benchmark in innovative use of emerging technologies

ONE OF THE MOST sought-after engineering institutes in India, IIT Bombay has been actively implementing new and emerging technologies. Express Computer delves further into the innovative use cases at the institute

Mohit Rathod
mohit.rathod@indianexpress.com

IIT Bombay (IITB), one of the most respected technology institutes in the country, provides great emphasis on research and development to emerge as a global leader in advanced technology, as well as to reach out to the national and social needs of the country. Some of the examples of innovations and technology-enabled educational project implementations of IITB include Centre For Distance Engineering Education Programme (CDEEP), National Programme on Technology Enhanced Learning (NPTEL), Parimal and Pramod Chaudhari Centre for Learning and Teaching (PPCCLT), Spoken Tutorial, T10KT and IITBombayX.

"IITB is one of the few premier institutes in the country with a strong inter-disciplinary Programme in Educational Technology (ET), working towards improving teaching and learning practices in education. ET is a broad field, which involves the use of technology to either support existing practices in helping people learn, or discover new ways to support learning, that weren't possible without facilitation of technology," informs a spokesperson of IITB.

The research goals of the department of ET at IITB are categorised into different focal areas. One of the key focal areas, named Technology-Enhanced Learning of Thinking Skills (TELoTS), focuses on building students' thinking skills, which can be transferred across disciplines. Thinking skills, such as design skills or estimation skills, which manifest differently in various disciplines, have a common abstract nature, which is imparted through creation and implementation of interactive learning environments built for students.

"Remarkable efforts have been made by the department in training of teachers across India as a part of another focal area, named Teacher Use of Educational Technology (TUET). More than 1,77,000 teachers have been trained through workshops or MOOC initiatives on research-based teaching strategies, which have been known and established to be effective both with and without technology," the spokesperson says.

Modern technologies such as augmented reality, virtual reality, eye tracking, GSR, etc, are being employed by ET researchers at IITB to augment learning, and to understand the complex interplay of effect, cognition and motivation in the teaching-learning process. Several emerging technology applications, grounded in established learning theories, are being developed by the group to facilitate technology-enhanced learning.

Some of these projects include 'Speak Up' to improve oral presentation skills for anxious speakers using virtual reality, 'Geometry via Gestures' to enable learners to build 3D Geometric abilities, 'Stereochemistry via Augmented Reality' to enable learners to spatially visualise and interact with 3D molecular models, and 'Corrective Myo Band Badminton Trainer' to help novice badminton learners in visualising muscular effort and swing of the arm.

"The applications of these various emerging research areas in ET are gradually addressing the contemporary challenges of school and university education. In the coming years, the multi-disciplinary nature of technology-enabled learning analytics of educational data will provide richer insights into learning behaviour, and will further influence the existing and future education models. Moving forward in educational technology, one of the common visions of ET researchers is the effective integration of technology as an integral part of a strong pedagogical model," the spokesperson adds.

Collaborative learning at World University of Design

WORLD UNIVERSITY OF DESIGN empowers its students to push the boundaries and experiment. **Dr Sanjay Gupta**, Vice Chancellor, World University of Design explains how his institution is enabling a healthy collaboration between design, technology and business requirements

Sudipta Dev
sudipta.dev@expressindia.com

World University of Design (WUD) in Sonepat, Haryana, is India's first and only university dedicated to education in the creative domain of fashion, design, communication, art, architecture, media, management and humanities. The sprawling WUD campus has been designed keeping in mind the future, with technology playing a major role in teaching practices. "We have already moved to interactive learning via satellite classes which are also well equipped AV hall structures that enable teleconferencing and remote learning via international learning opportunities. We have tied up with Adobe for the Adobe Digital Technology Academy to impart new age digital creativity skills to students in order to enhance their employability prospects as per the demands of the industry today," says Dr Sanjay Gupta, Vice Chancellor, WUD .

The campus has Adobe Creative enabled labs with Macintosh and Windows machines, and libraries equipped with online resources for digital resources for various publications. The academic campus is Wi-Fi enabled, and the hostels which have good speed internet that enables students to complete their projects uninterrupted. The robust LAN system connects the campus through an ERP system. There is also a well equipped server. "We are constantly exploring upcoming technology innovations that will further enhance our rapid prototyping and testing facilities. Students have access to facilities including high-tech labs and workshops - model making workshop, Apple iMAC based CAD rooms. Our unique teaching pedagogy involves advanced interdisciplinary research and international collaborations wherein we follow a unique curriculum that encourages research, academic excellence, industry preparedness and social innovation," states Dr Gupta.

At WUD expert lectures are regularly conducted on new technologies and innovations in order to enable a healthy collaboration between design, technology and business requirements. "This makes the career path for the student's pursuing the program full of competitive research and hands on industry training," remarks Dr Gupta.

A major project is the Global Goals Jam – a global design thinking event that WUD has been hosting at its campus for past two years. Dr Gupta informs that the event is simultaneously held in over 60 locations around the world with more than 300 teams of designers and design thinkers constantly in touch with each other through various ICT, enabling innovative solution for UN's sustainable development goals.

"If there is one reality that has emerged in the relatively brief history of ICT use in education, it is not the technology, but how you use it that matters. Unless our thinking about education changes along with the continuing expansion of ICTs in the classroom, our technology investment will fail to live up to its potential," says Dr Gupta, adding that while WUD is looking at all the technology options available today and their integration into its various programs, it is also true that higher education institutions in tier II towns and cities are still struggling with supply related issues of electricity, telephony and internet, availability of technical support specialists and content developers.

Dr Gupta highlights that emerging technologies like AR and VR are making teaching and learning experiences rich and exciting, and are opening up endless possibilities. "Cloud technology will make life easier both for students and teachers, as documents and files will be stored and accessed easily. This will help the management in a big way, cutting down on infrastructure costs. IoT will create a network of varied devices that will also lead to a pooling of varied types of data. Similarly, big data will make assignments, evaluations, tests and projects more results-driven," he says, reminding that in the same way as analytics is helping fin-tech companies, student performance can be improved through big data. Teachers can make use of the data efficiently to monitor and guide students, customise programs, reduce drop-outs, target international recruiting and do career prediction. Highly engaging classrooms will lead to better results. These can transform the traditional methods of learning, breaking down the walls of classrooms and making students to think out-of-the box and pilot new innovations.

'We are working with some of the best tech partners'

WHISTLING WOODS INTERNATIONAL, the leading film, communication and creative arts institute implements the latest technologies to ensure that its graduates are ahead of the market standards, says **Chaitanya Chinchlikar**, Chief Technology Officer & Vice President, Business Development, Whistling Woods International

Sudipta Dev
sudipta.dev@expressindia.com

Mumbai based Whistling Woods International is one of Asia's premier film, communication and creative arts institute. The infrastructure at Whistling Woods has been designed and developed considering every aspect of film-making. The institute takes great pride in its technical facilities, which are at par with international standards. There are two focus areas for digital implementations at the institution:

- **Within academics**: Whistling Woods International has been a market leader for about a decade and a half to ensure that the latest in technology is being implemented for students, in order for them to execute, learn and excel so that once they graduate they are about six months to a year ahead of the industry standards, says Chaitanya Chinchlikar, Chief Technology Officer & Vice President, Business Development, Whistling Woods International. "At the moment, we are working with some of the best tech partners in the media and entertainment space such as Sony, Apple, Google, Red Cameras, Adobe and many more. We also have some of the best brands in the new age space of virtual reality, VFX, sound design, animation and many more. Our aim is to build a roadmap for our students to be able to be ahead of the curve so that when they start their careers they can take the industry forward," he adds.
- **To make the teaching methodology better:** At the institute's digital library a lot of teaching happens through audio visuals; a significant number of feature films, short films and other forms of visual content has been digitalised. "This aids our teachers to get access to the content whenever required for educational purposes," remarks Chinchlikar.

He mentions that almost the entire campus is structured to be tapeless, wireless and completely digital, "We also have an on-campus learning management system which enables students to see their assignments online, keep a track of their attendance records and it also enables them to submit their work online."

Informing how the institution is providing an interactive learning environment for students, Chinchlikar states, "Being able to cut down on classroom time wastage, audio visual content is shared online so that multiple students get access to the material shared in order for them to get feedback and ask questions. This also enhances and smoothens out classroom experience. Almost all our computers are in sync with the latest in technology in order to ensure that students don't have to compromise on their learning experience."


Chaitanya Chinchlikar
Chief Technology Officer & Vice President, Business Development, Whistling Woods International

The Learning Management System is one of the innovative implementations rolled out. Teaching, learning, assignment submission and attendance system is now completely online. "The Learning Management System also helps teachers grade and access assignments better. This system helps eliminate any offline errors and mistakes that can happen. It has been a life changer to help streamline our systems better," says Chinchlikar.

Many new technologies are being introduced into spheres of film making, animation, journalism and many other courses that the institute offers.

Sharing his thoughts about how technology is making a difference in the education sector, he says, "In academics almost every month there is something new vis a vis VFX, SFX, etc. Cameras are getting upgraded almost every day. Computing will continue to get faster. Virtual reality is taking off in a big way and there will be a lot to see in the decades that follow. There will be newer technologies that will be implemented on the backend when everything goes digital. There will be audio over IP, video over IP. All analogues will be replaced with their digital counterparts. There will be bigger transformations that one will be witnessing in the teaching methodology as well. A lot of AI will start entering academia." He also believes that one will be able to work on neural network building; feedback shared with students will be better streamlined. Also, educationists will be able to analyse student submissions better. "Facial recognition will also be implemented into education, streamlining systems such as attendance and various other things. The teacher's role is going to change significantly over the next decade thanks to a drastic evolution in IT," he avers.

As the new generation starts entering higher education, there will be a big change in the way in which these youngsters learn and this will eventually change the manner in which education is being imparted, feels Chinchlikar. "One needs to have teachers that are able to impart knowledge through newer modes of communication in order to streamline systems and spread information and knowledge through modes that are more conducive in nature with the changing times and AI is going to play a huge role in education vis a vis imparting education," he concludes.

Leveraging technology for setting high academic standards across CMR Group of Institutions

THE CMR GROUP of Institutions is a Bangalore based education conglomerate comprising a number of institutes of higher education and schools. **Dr Tristha Ramamurthy**, Vice President, CMR Group of Institutions, Founder & Managing Director, Ekya Schools highlights the intelligent and relevant use of technology to aid the process of education

Sudipta Dev
sudipta.dev@expressindia.com

The CMR Group of Institutions (CMRGI) is known for being a pioneer in the field of education. Technology is a large part of enabling and implementing quality education and making learning an enjoyable and efficient process. "The focus of technology across the group is on using technology intelligently and relevantly, thereby aiding the process of education. New technology is introduced only when there is a specific need or a compelling use case across our institutions. Technology enhances the students' learning process and makes it easier for educators to teach better and make education more enriching. We also use data and analytics to enable customisation of the student learning processes. Furthermore, technology is used to ensure that the process of instruction and assessment are also made seamless and more effective," says Dr Tristha Ramamurthy, Vice President, CMR Group of Institutions, Founder and Managing Director, Ekya Schools.

Technology complements the process of enabling academic excellence across CMRGI. "It is also used to enable our students to have access to the best of resources to enable them to excel in everything they do," remarks Dr Ramamurthy, giving detailed information about Ekya Schools, a part of the CMR Group of Institutions.

"At Ekya Schools, we have always believed in giving the best of tools and technology to our teachers and students with the sole intention of enhancing the overall learning experience. We also strongly believe that any technology intervention should complement the learning process and what the teacher teaches in a classroom. Hence, we introduce a technology solution only when there is a strong need and a compelling use-case," mentions Dr Ramamurthy.


Dr Tristha Ramamurthy
VP, CMR Group of Institutions, Founder & MD, Ekya Schools

Ekya Schools was one of the earliest schools in the country to launch Google Suites (earlier known as Google Apps for Education) to all teachers and students. All students from Grade 1 onwards have an official school email address for themselves that they use for interacting and collaborating with peers and teachers. "Over the years we have partnered with few of the most progressive technology players in different facets of education spanning administration, curriculum development, and professional development. These are truly cutting-edge solutions that have a proven track record globally," affirms Dr Ramamurthy.

At Ekya Schools, the in-house curriculum developed by the curriculum development team is based on international practices. "We use an advanced technology platform to design and manage our curriculum. It is a great platform connecting our centralised curriculum team with the teachers seamlessly, for sharing curriculum plans, and seeking feedback on curriculum from the teachers," she says. The new software facilitates a centralised instructional process for Ekya, bringing together student information system, assessment, learning and grading into a single unified platform.

> "We also use data and analytics to enable customisation of the student learning processes. Furthermore, technology is used to ensure that the process of instruction and assessment are also made seamless and more effective

Each of technology implementation complements the other and has been very effective in streamlining operations. "Google Suites products have allowed the interaction between the three main stakeholders, the school faculty, the student and the parent to be seamless. Communication and information sharing has been made easier and more effective through this platform," mentions Dr Ramamurthy, adding that another key technology resource is a teacher training platform that aids school leadership in identifying growth areas and best practices in a systematic manner. The analytics here make it easy to identify teachers' growth needs so that leaders can provide data-driven professional development and timely support.

Ekya Schools is now focusing on data driven analytics to enable customisation of the learning process for each student. "Data is paramount in today's world and Ekya Schools inherently uses this to understand each student's individual learning pattern. Understanding individual student learning curves, class learning patterns and the areas of learning using data and analytics allows for teaching methodology and lesson plans to be tailored to perfection," explains Dr Ramamurthy.

Technology is being used to understand impact and effectiveness of curriculum, instruction, assessment and learning patterns. Technology is also used to ensure that the processes of instruction and assessment are also streamlined and deliver the results that have been specified for the lesson delivery.

'Tech has transformed the traditional classroom'

RAJEEV KATYAL, Chief Operating Officer, Global Schools Foundation speaks about how at Global Indian International School, technology is enhancing learning experiences of students across its network of 20 campuses

Sudipta Dev
sudipta.dev@expressindia.com

Global Indian International School (GIIS), established under the guiding principles of the Global Schools Foundation, is an international network of award-winning schools with 20 campuses across seven countries, including Singapore, Malaysia, India and Japan. GIIS has a strong focus on using technology for enhancing the students' learning outcomes in academics and sports. "Technology has transformed the traditional classroom. The style of teaching is also being revolutionised with modern day classrooms providing high-tech teaching and learning environment. 21st century learning techniques like the use of smart boards, power point presentations, and video-based learning have enhanced the student's learning experience. Complex topics are taught with the help of graphical and visual representation that keeps students engaged and make learning easy," states Rajeev Katyal, Chief Operating Officer, Global Schools Foundation.


Rajeev Katyal
Chief Operating Officer, Global Schools Foundation

The most innovative solution that has helped GIIS in streamlining operations is the use of ZOOM class. "It is one of the most fundamentally unique products that allow an instructor to teach online to about 100 students that can be scattered around the world. It allows the instructors to share their screens and display presentations or PDF files that are to be used for reference," explains Katyal.

The students today, will be leaders of tomorrow and need to be equipped with the skill-sets that help them carve their own niche in the 21st century. GIIS has implemented specialised programs across its campuses to inculcate these skills with the help of IT, robotics and research-based learning. Teachers have been enabled to assess students' requirement, knowledge and understanding of the subjects by specialised assessment tools. Katyal gives detailed information about some of the implemented specialised programs across GIIS campuses –

- **STEM-based learning & robotics:** STEM-based learning focuses on Science, Technology, Engineering and Mathematics that helps to foster scientific and logical bent of mind in students. STEM helps to incorporate industry-defined skills, talents, and specialisations in children, so they can pursue careers which are most in demand.
- **Integrated technology in learning:** GIIS has organised 'virtual classes' between all its global campuses to give an opportunity to the students to be taught by the experts at other GIIS campuses. It also has established software labs for various subjects like Maths and English to make learning easy and interactive
- **Google classroom:** Implementation of Google Classroom in all its campuses, which helps in facilitating a seamless and paperless communication between teachers and students.
- **Social media and audio-visual tools:** GIIS' Global Knowledge Exchange program enables cross-campus teaching and learning through virtual interactions. Students from various campuses also interact over a video conferencing or a WebEx to deliver the final presentations and exchange ideas.

Augmented reality in combination with live instructors will drive real-time problem solving projects in schools, believes Katyal. "The EdTech sector has evolved over a period of time and is now growing with various innovative startups as they see enormous potential," he says, pointing out that for years now, schools have functioned with two pre-set goals in mind – to customise learning experiences for each individual based on their ability, and to personalise instructions. But to achieve this goal, schools need to have more data that can predict a student's ability/potential in a particular task. That's when big data and analytics come into play.

BFSI Tech Conclave: Pushing forward the digital agenda

THE FOURTH EDITION of Express Computer's flagship BFSI conference, BFSI Technology Conclave, brought together IT decision makers from the banking, financial services and insurance sectors. Held in Pune, on January 18 and 19, the conclave served as a platform for technology deliberations pertaining to the BFSI sector

Inauguration

Ritesh Pai, Chief Digital Officer, Yes Bank

Panel discussion : Best practices from digitisation - Lessons from the masters

Mohan Bhat, MD, Accops

Panel discussion : Competing in the digital era - Perspectives from digital thought leaders

Pete Yamasaki, Regional VP - APAC, Druva Data Solutions

Gururaj Rao, CIO, Mahindra Finance

Power discussion by CrowdStrike

Power Discussion by Qlik

Power discussion by Dell EMC

Power discussion by Netscout

Power discussion by Druva

Shiv Kumar Bhasin, CTO & COO, NSE

Nilesh Marathe, Digital Engagement Solution Sales Leader, Avaya India

Ravinder Singh, Director - Cybersecurity, Digital Healthcare & Digital Cities, Dell EMC

Ekhlaque Bari, EVP, CTO, Fullerton India

Panel discussion: How to deal proactively with emerging threats

Winners of BFSI Digital Innovation Awards

The BFSI sector is among the pioneers in adoption of latest technologies. This is driven by multiple factors; one of the primary factors being the increasing competition and the need to provide the best customer experience. The 2019 edition of Express BFSI Technology Conclave encapsulated all that's happening in the BFSI sector today, and what the future will bring for the sector. The conclave witnessed participation of renowned industry stakeholders. Spread over two days, the conclave also honoured innovative implementation of technology by BFSI organisations, with BFSI Digital Innovation Awards.

Direct from industry

In his keynote session, Ritesh Pai, Chief Digital Officer, Yes Bank, expressed that there have been many changes in the past few years and organisations need to be agile, otherwise they will be left behind in the industry. He said, "Today, 4 D's are the driving the banking sector, namely, developmental initiatives by the government, demographics, de-regulations and disruptive technologies. Today, internet banking is considered among the most basic services. This is followed by payments services and value-added services."

Emphasising on Yes Bank's efforts, Pai said the bank ensures that digital helps in customer acquisition, payments and transactions, and customer service. "At Yes Bank, we build alliances and relationships with technology," he said.

In another keynote address, Shiv Kumar Bhasin, CTO & COO, pointed that AI and blockchain have been moving beyond the nascent stage. Citing that volume of internet traffic doubles every 12-18 months, he said that NSE handles on an average, one billion trades per day. He commented, "The BFSI sector possesses vast data; however, to get insights from this data, all the necessary attributes for deep learning must be made available. We need to shift our focus from collecting data to embedding analytical functionality in existing applications."

Sharing his views, Gururaj Rao, CIO, Mahindra Finance, stressed on the necessity to embrace the concept of ecosystem and partnerships. He said, "Physical and digital; both worlds are today mixed up. RPA and blockchain are two of the most crucial technologies at present." Citing that Mahindra Finance is banking on blockchain for supply chain financing, he emphasised the need to optimise processes before deploying automation.

Speaking on 'How to attract more investment in technology', Ekhlaque Bari, EVP, CTO, Fullerton India, said, "Technology ambassadors in organisations must continue to talk about business, and divide processes into business. Innovations are about a lot of experiments, but they should be inversely proportional to the cost of the investments."

One cannot improve the business processes until the business cannot be measured. The IT leaders have to talk of business first, have data on their functions and then simplify IT. Further Bari added that, while delivering the critical projects, the business thinks of IT as an expressway and every IT employee is stretched by 2.76 times at the workplace. Tools and technologies are always required to win a battle hence companies should continue to invest in technology.

Knowledge exchange

A panel discussion titled, 'Best practices from digitisation - Lessons from the masters,' was moderated by Srikanth RP, Group Editor, Express Computer & CRN India. "We collect specific data in order to simplify customer journey and take meaningful insights. Our mantra is to simplify the products and faster claims," said Gautam Dutta, CI&TO, Bajaj Allianz General Insurance. Other panelists included Gangadhar S J, Head - Technology, Digit General Insurance and Gaurav Zutshi, CDO, Aditiya Birla Capital.

Organisations have to be agile and should encourage frictionless banking. While discussing the best digital practices, Zutshi stated, "Business models and digital strategies should be designed in unit economics, and organisations must create small use cases. Before beginning the digital journey, one has to identify the business pain-points and understand the need of the last mile."

Further to discuss about identifying the right leadership roles to complement emerging technologies, the conclave featured a panel discussion on 'Competing in the digital era: Perspectives from digital thought leaders,' moderated by Ritesh Pai. As a panelist, Prasanna Lohar, Head - Innovation & Architecture, DCB Bank, highlighted the five pillars of digital – enhancing the existing processes, adopting the latest technologies and understanding customer behaviour, adopting the changing regulations, identifying the right leadership roles, and collaborating with fintech and startup companies for agile and innovative ideas.

"Conventional banking will take an important turn in the industry and DevOps process will continue to be the critical pillar for digital," opined Biswabrata Chakravorty, CTO, IndusInd Bank. Geeta Singh, DGM - IT, Punjab and Maharashtra Co-operative Bank and Balakrishnan A, Executive Director, Geojit Financial Services were among the other panelists.

Another panel discussion titled, 'How to deal proactively with emerging threats', was moderated by Joydeep Dutta, ED and Group CTO, CDSL. As one of the panelists, Milind Mungale, Executive VP & CISO, NSDL, said, "Security should have a proactive approach. CISOs must identify the critical data, where does it resides and value of data, in order to act proactively."

CISOs and business should look at security as insurance, and information security should be kept parallel to business. "Have basic hygiene and security parameters in place, and make them absolutely non-negotiable. Also new technologies should be put in the regulator's checklists" commented Maya R Nair, CISO, Reliance Capital. Sayyad Salim, Head – IT Infrastructure & Cyber Security, Bajaj Finance; Shashank Bajpai, CISO, ACKO General Insurance and Shiju Rawther, Head - Tech Infra Operations & Security, TransUnion CIBIL were among the other panelists.

Tech talks

The conclave also witnessed numerous presentations by leading technology infrastructure and solution providers. Speaking on data management and compliance in the cloud era, Pete Yamasaki, Regional VP – APAC, Druva Data Solutions, shared an interesting insight indicating, by 2020, 50 per cent of the data will reside out the data centres in most industries. Highlighting the need to be aware of where the data travels, he said that the company sees good acceptance of cloud in India.

In his session titled, 'Accops enabling trust with zero-trust networks,' Mohan Bhat, MD of Accops, opined that every organisation needs to build a zero-trust environment. He further said, "Security is about preparedness and working as a business enabler. We need technologies that are able to alarm and notify in different situations."

Speaking on 'Going beyond digital,' Nilesh Marathe, Digital Engagement Solution Sales Leader, Avaya India, was of the view that innovation is all about staying relevant. He further added, "The digital workplace and digital marketplace needs to be focused upon, in order to ensure greater customer experience. Voice and messaging have emerged as new user interfaces," while stating that 71 per cent of consumers would like to bypass identification and verification questions by using voice biometrics. During the session, Marathe also demonstrated a voice-based use case on policy renewal.

In another session, Ravinder Pal Singh, Director – Cybersecurity, Digital Healthcare & Digital Cities, Dell EMC, stressed on Edge security, as 95 per cent of the attacks happen at the last mile. "Today, the challenge is that information is spread across multiple platforms. Another challenge is machine-human interaction. Dell looks at security as the fourth pillar of digital transformation."

Powerful discussions

A power discussion hosted by Qlik was titled, 'Paving the way of data-driven transformation' and was conducted by Nilesh Kulkarni, Pre-sales Manager India, Qlik. Kulkarni hightlighted the struggles that enterprises face while transforming the data into business results. "Business intelligence has the capability to optimise the human data when the enterprises harness the collective human intelligence," he said.

Themed 'Digital disruption 2.0 with AI,' the power discussion conducted by Dell EMC, affirmed the the services segment is the biggest beneficiary of digital disruption, but this has also brought large amounts of threats. Dell EMC team pointed out that progressing economies are embracing new models and India is at the cusp of digital transformation, with initiatives such as Startup India, Skill India, Digital India, Smart Cities and more.

In a power discussion by CrowdStrike, the company's representatives addressed the various concerns raised by the audience, which included various security solutions working in silos and the need to have one solution for the endpoint. Another participant pointed out the need to secure application with a centralised security approach.

Another power discussion titled, 'Smart data on a digital world', was led by Manish Mirajkar, Sales Engineer, Netscout, who spoke about the factors and criticalities driving the digital transformation. This was followed by a power discussion hosted by Bakshish Dutta, Country Sales Manager - India & SAARC, Druva. Dutta highlighted the risk associated with emerging technologies and ways to protect sensitive data.

Inside India's first IoT implementation in glass manufacturing industry

AFTER IMPLEMENTING THE Real Time Manufacturing Insights at Piramal Glass, the production efficiency has been enhanced by 1 per cent, which means the production lines (in five plants) are able to manufacture 1 per cent more, amounting to ₹ 20 crore in monetary terms, since the technology started working in all the plants over nine months back. EC's Abhishek Raval speaks with **Vijay Shah**, Director - Piramal Glass & Executive Director - Piramal Enterprises and **Poorav Sheth**, CDO, Piramal Glass

Piramal Glass, a global specialist in design, production, and decoration of glass packaging (flaconnage) solutions for pharmaceutical, cosmetics and perfumery, and specialty food & beverage industries, has deployed Microsoft's Azure IoT platform to digitally transform its manufacturing operations. An early adopter of the technology, Piramal Glass has currently implemented the solution, Real-Time Manufacturing Insights (RTMI), on 46 production lines across their four plants at Kosamba and Jambusar in Gujarat, India, Sri Lanka and the United States of America. The plants have an overall capacity of 1375 tons per day, with 12 furnaces and 60 production lines, all of which run on a 24/7 basis.

Piramal Glass has leveraged IoT to get real-time visibility into its line manufacturing operations and to analyse production line losses at various stages. Using Azure IoT Hub, Microsoft helped Piramal Glass acquire data from sensors on production lines to identify quality parameters at each stage and get insights on line efficiencies in real-time. This resulted in improved production efficiency and cost reduction up to 70 per cent as compared to a glass industry manufacturing execution system (MES).

The RoI from IoT has been impressive. "The production efficiency has been enhanced by 1 per cent, which means the production lines (each of the five plants) are able to manufacture 1 per cent more, which amount to '20 crore in monetary terms, since the technology started working in all the plants over nine months back. It has also resulted in 70 per cent reduction in TCO," says Vijay Shah, Director - Piramal Glass & Executive Director - Piramal Enterprises.

As one of the the world's largest supplier of glass packaging solutions, Piramal Glass is committed to continuously adding value to its customers. "We are happy to have collaborated with Microsoft on our journey towards digital transformation and business critical future readiness. Glass manufacturing is a complex process with many interactive variables. Combining digital technologies with precision high-quality glass manufacturing, has helped us fortify our accelerated growth path." says Poorav Sheth, CDO, Piramal Glass.

The Azure IoT platform enabled Piramal Glass to connect and monitor their equipment to gain real-time visibility into operational data that was previously unavailable. The technology integration was designed for fast and easy set-up to rapidly showcase the results and build on its existing sensors, equipment, systems, and data.

To facilitate this transformation, Precimetrix, a Microsoft partner, brought in its Plant Monitoring System hosted on Microsoft Azure. The sensors on high speed conveyor lines were interfaced with data acquisition devices that record the key metrics, as the bottles move along the production line. This data is aggregated on an edge gateway and then pushed to Precimetrix's Plant Monitoring System on the cloud.

A custom solution was developed on top of this platform to provide stage-wise losses, production reports, quality control workflows as well as role-specific KPIs on PCs and smartphones of plant personnel. Actionable alerts are sent through SMS, email and push notifications whenever there is an anomaly

(L - R) Poorav Sheth, CDO, Piramal Glass and Vijay Shah, Director - Piramal Glass & Executive Director - Piramal Enterprises

detected or the production efficiency drops. In summary, RTMI has democratised real-time information availability to all plant stakeholders, enabling them to take faster decisions.

The RTMI program will positively impact the plant head, production employees, which include employees manning the machines, supervisors, HoDs, Quality Control, Quality Assurance, logistics, furnace / engineering teams. About 90 per cent of the stakeholder departments will get impacted. "The overall cost for RTMI was less than 1/3rd of the MES software procured from a European company, which is used by most of the glass companies globally. However, it was implemented at just three production lines, when i joined the company," says Sheth.

RTMI results in lesser bottle rejections

Glass manufacturing has complex processes with a considerable rejection rate. It can range from 8 per cent upto 20 per cent. IoT can catch the errors in the manufacturing cycle early, using sensors. The data can be provided instantaneously to avoid further rejections due to similar reasons.

The business is highly instrumentation heavy and thus capital intensive. Real time communication of the production data generated at the glass manufacturing assembly line can impact operational efficiency. As compared to the data provided with a certain time lag. Employees on the shop floor, when powered with real time data can take corrective actions and avoid leakages, wastage. Energy cost is very high. It is over 25 per cent of the total costs incurred on manufacturing. IoT helps save energy costs by controlling temperature, air blown during manufacturing, regulating machine speeds, etc. It's not only the IoT that is influencing these benefits but it's done by integrating IoT with other operational technologies like Supervisory Control and Data Acquisition Technology (SCADA). "The way it happens is - in the ascending order - massive data collection, faster data transfer followed by overlaying AI, ML to extricate intelligence out of the data. The plan is also to make the machines read the data, understand and take decisions by itself rather than humans correcting the temperature, for example," states Shah.

Data flow

The data flows from the sensors of the machines to the intermittent devices provided by Moxa, from where it relays to the field gateway, which is based on-premise, in the manufacturing plants. It's a computing device, where the data is aggregated and cleaned up. Subsequently, quality data is pushed to the Microsoft Azure cloud. This happens in real time.

The furnace part of the manufacturing process has the most amount of sensors attached followed by the inspection machines, where the photo of every bottle is taken to check for defects. There are close to 300 bottles that pass every minute on the inspection line. Photo and camera based sensors, both work together. There are over 20 different kinds of sensors, which are temperature rated and can withstand temperatures of upto 90 degree celsius. The sensors have been bought from the German sensor manufacturer 'Sick'.

Successful PoC

The company floated an RFP for the IoT technology. A mix of companies submitted the bids, which had large companies and startups. Microsoft won the race along with their partner Precimetrix. Microsoft provides the IoT cloud platform for data processing and Precimetrix does the plant monitoring, which includes not only IT but operational technology (OT), too. It basically involves integration of the IT element with the legacy machines installed in the production line. "We have also done custom development specifically for our requirements," mentions Sheth.

Piramal Glass began a PoC on RTMI i.e IoT, in June 2017 for three manufacturing lines. Overall there are 60 manufacturing lines across four (two in India and one each in USA and Sri Lanka) manufacturing locations globally. The sensors are embedded from the furnace level of the manufacturing line until the bottles are packed. The raw material, sand, soda ash, etc., is poured into a furnace at over 1500 degree celsius temperature. The raw material gets melted here to form what is known as molten glass. In the furnace process, there are about 150 variables (temperature, air flow, oxygen, humidity, etc), which are monitored using the sensors. Hitherto the parameters were recorded in a paper based log book.

The PoC was monitored for three months, until September. The results were impressive.

"We were able to find out, where the defects in the bottle were originating from; areas of defects and the reasons. This resulted in getting us the required buy-in from the operations team. They also suggested us additional features. Thus enhancements were added from September to November 2017. A phase two rollout was conducted in the same three production lines. The respective personnel were invited to view how RTMI worked, the data gathered, etc. They got convinced of the viability and effectiveness of the technology. A whole hog rollout began in February 2018 and thus far RTMI has been implemented in 46 production lines. In the past two months, data is getting acquired from close to four thousand sensors. Up until now, we have analysed close to 2 mn datapoints," explains Sheth. In the USA plant, there is a US$ 20 mn automation project that is planned and therefore, the IoT rollout will be done later. New equipment rollout is awaited in the USA plant, which will require reconfiguration of the manufacturing plant.

Employee training, awareness and ideation workshops

An extensive training of the manpower was also carried out for the approximately 900 employee base using the RTMI system. Both classroom and hands-on training was conducted. The UX of the system has been customised for the semi-educated workforce. Many of them are not even literate, so the challenge was to have a UX that will mean the same for all kinds of users. "I organised a 72 hour UX challenge on a crowdsourcing platform viz. Topcoder. Twenty companies submitted their designs for data entry and report screens, and i chose the design from a spanish company, which was awarded with a prize money. The point is the UX was designed and ready to use in three days," says Sheth.

It is important for the employees to get a feel of the technologies available and how will they have in case, they are implemented. "We hired a vendor and did roadshows in all the companies, giving demonstrations of AI, IoT, VR, AR and many other technologies. Moreover, an ideation workshop was organised for the employees on how would they like to see these technologies change their functions. On the basis of the suggestions, received, about 50 ideas have been prioritised and a roadmap has been created to implement the ideas over a period of three years. We are at the year two of the roadmap and about 17 ideas have been implemented already," says Sheth.

Feature

CtrlS wants India to be global hub for hyperscale data centres

CTRLS IS INVESTING ₹2,000 crores in setting up 3 hyperscale data centres in the country

Srikanth RP
srikanth.rp@expressindia.com

Research firm, Gartner, predicts 14.2 billion connected things will be in use in 2019, and the total will reach 25 billion by 2021, producing immense volume of data. Similarly, IDC is predicting that worldwide spending on IoT will reach $1.2 trillion in 2022, growing at a CAGR of 13.6 per cent over the 2017-2022 forecast period. India too, is in the midst of a huge wave of digital transformation. Besides the government accelerating up the digital agenda, almost every sector is actively adopting digital technologies. This is spurring the need for ramping up of data centers in India, and is estimated to reach values of approximately US$ 4 billion by 2024, growing at CAGR of around 9 per cent during 2018-2024 (Source: ResearchandMarkets.com).

While the growth remains positive, demands from data centre players have also increased significantly. Performance demands have increased exponentially, and the time for delivering an optimum IT infrastructure has decreased considerably. This has led to increased demand for hyperscale data centres. Hyperscale refers to the ability of an IT architecture to scale quickly and exponentially to respond to demand that is increasingly heavily. In an app-driven world, where everyone wants everything instantly, hyperscale data centres score heavily thanks to their unmatched scalability to quickly expand or contract with changing business dynamics and most importantly with comparatively lower software and hardware costs.

Hyperscale data centres offer mega capacities (such as 50 MW and upwards with ability to collocate 50,000 servers and more) and provide a new approach to the way

Sridhar Pinnapureddy, Founder and CEO, CtrlS Datacenters

data centres are designed, operated and managed to handle the complexity of new workloads and the increasing demand on IT services.

Hyderabad-based CtrlS, is betting heavily on this emerging market, and is counting on India's traditional strengths in services and talent to be a big player in this segment, through its plan to build 3 Tier-4 hyperscale data centres, 100 MW (1 million sq. ft.) data centre in Mumbai, 150 MW (2 million sq. ft.) data centre in Hyderabad and a 70 MW (1 million sq. ft.) data centre in Chennai. This is pegged to be the largest facility in the country with 5 million square feet in the later part of 2020. Says Sridhar Pinnapureddy, Founder and CEO, CtrlS Datacenters, "CtrlS is investing ₹ 2,000 crores in setting up 3 hyperscale data centres in India. With this, we will emerge as the world's largest Tier-4 data centre player with 5 million square feet of total data centre space spread across 10 data centres in India." As part of these plans, it is working on setting up three hyperscale data centres in Hyderabad, Mumbai and Chennai, while it currently has six data centres spread across Hyderabad, Mumbai, Noida, Bengaluru and Chennai. CtrlS is also launching its second Tier-4 data centre in Mumbai – this facility is powered by 15MW Power and spread across 150,000 square feet.

CtrlS has also been trying to improve its competitiveness in this sector by ramping up its energy efficiency ratios. It is powering its hyperscale data centres with solar panels. The building exterior shall be covered by solar panels – making it a hybrid data centre powered by both solar and conventional power.

With the expected surge in data and connected devices, it is expected that the demand for hyperscale data centres will also rise significantly. Cisco, for example, estimates that by 2021, traffic within hyperscale data centres will quadruple, and hyperscale data centres will account for 55 per cent of all data centre traffic by 2021. "The new technologies (such as cloud, IoT, Big Data, AI, Analytics) combined with data localisation will drive growth of hyperscale data centres in India. In fact, today there are just over 25 Tier-4 data centre operators across the globe. Compared to the largest Tier-4 player who would have a footprint of approximately one million square feet, we will soon enjoy a cumulative footprint of 5 million Tier-4 data centre space spread across 10 data centres in India," says BS Rao, VP-Marketing, CtrlS Datacenters.

The Indian government's focus on data localisation will also encourage every business entity to host their data locally in India — which in turn will trigger off a wave of new investments in ramping up data centre capacity — all factors which present big opportunities for a data centre player such as CtrlS.

"Thanks to the Indian Government, data localisation will soon become a reality. In fact, most of the businesses will now have to host the data locally in India, be it a bank, insurance, financial services or an ecommerce company – they will now have to comply with the guideline of RBI and Government of India. This is one of the key drivers for growth in India. We are witnessing growing demand for data centre colocation infrastructure – this will turn India into a cloud data centre hub, perhaps the largest in the Asian region. Indian data centre capacity is likely to surpass 20 million square feet by 2025," states Pinnapureddy.

REGD.NO.MCS/066/2018-20, PUBLISHED ON 28TH OF EVERY PERVIOUS MONTH & POSTED AT MUMBAI PATRIKA CHANNEL SORTING OFFICE, DUE DATE 29 & 30 OF EVERY PREVIOUS MONTH, REGD. WITH RNI UNDER NO. MAHENG/49926/90

sify

Sify Global Data Center coming soon to Hyderabad

Making it to the **Gartner top Data Center list,** isn't a reason for us to rest on our laurels.

While it is heartnening to be recognized as a leader in providing high-grade facilities for colocation, cloud and managed hosting services, we aren't ready to bask in glory. We are going forward, doing what we do best, by bringing to you the Sify Global Data Center at Hyderabad.

Gartner includes Sify Technologies as a representative vendor in **"Market Guide for Top Data Center Service Providers in India".**

Scan the QR code to download the report.

Sify Data Center Services:

- Data Centers Colocation
- Cloud (Private, Public, Hybrid)
- Cloud/DC (Build, Migration & Managed Services)
- DR & Backup as a service
- Partner Cloud Services (AWS/Azure)
- Managed Security Service
- Hosted SAP S/4HANA Cloud
- Oracle Exadata as a service

marketing@sifycorp.com
www.sifytechnologies.com
+91 8750442233

Our end-to-end ICT Solutions

■ Network Services ■ Data Center Services ■ Cloud & Managed Services
■ Applications Integration Services ■ Technology Integration Services

Gartner Inc., Market Guide for Top Data Center Service Providers in India, G00334189, 24 October 2018. Gartner does not endorse any vendor, product or service depicted in its research publications, and does not advise technology users to select only those vendors with the highest ratings or other designation. Gartner research publications consist of the opinions of Gartner's research organization and should not be construed as statements of fact. Gartner disclaims all warranties, express or implied, with respect to this research, including any warranties of merchantability or fitness for a particular purpose.