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DIGITAL LEARNING



COVER STORY

Digital Learning : An Overview **06**

RESEARCH FRONT

Digital Learning:
Inherent Risks and Preventive Measures **30**

TECHNICAL TRENDS

A Brief Introduction to HR Analytics and Reporting **24**

ARTICLE

A Framework for Next Generation Digital
Learning Environment **35**

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From the Desk of Chairman, Publication Committee



Dear Fellow Members,



It is a pleasure to pen this write up for this issue. It is needless to say that CSI Publications – be it CSIC, JOC or Adyayan are a strong media which take CSI to greater heights. In the past, the entire IT industry, academia viewed CSI rather seriously and with respect. A lot of support was forthcoming from State and Central governments and National organizations. All the office bearers, Divisional and Regional chairmen worked relentlessly in promoting IT and Electronics wings of CSI.

The interaction between the industry and the academia was very strong and with mutual understanding. It is high time that this environment is further strengthened. This is possible with concerted efforts of all of us.

Areas such as AI, IoT, Big data analytics are becoming

more prominent and getting strengthened. Some academic institutions have already started courses of study in disciplines such as Data Science, AI & Machine learning. I am sure many other universities/ academic institutions will take a lead in this direction. If we do not do, some others will do. When this is so, there is an absolute need for CSI to go for quality articles/ research papers in its publications. It is a cycle. The more the quality – the more the recognition.

Rightly, President, CSI has invited in the May and June issues of CSI Communications quality articles from members and researchers for publication. Let us work in this direction. Kindly send your articles to any the Chief Editors/Editors/me.

With best compliments,

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CONTENTS

Cover Story

Digital Learning : An Overview 06
Pranjali Vatsalaya

Digital Learning 08
T. Jayanthi, D. Rajeswari and S. Sathya Priya

Digital Learning: A Mysterious Potential 11
Deepak Sharma and Dr. Priti Sharma

Digital Learning: From Conventional to Next Generation Learning 14
Preeti Gulia and Ayushi Chahal

Digital Learning - A Paradigm Shift in Education 18
Anitha P

Digital Learning 21
A. R. Revathi and Shwettha M

Technical Trends

A Brief Introduction to HR Analytics and Reporting 24
K.V.N. Rajesh and K.V.N. Ramesh

Role of Virtual Reality in Surgical Simulation – A Digital learning Strategy in Healthcare 28
Archana Sasi

Research front

Introduction and Initiatives of Digital Learning Schemes in Indian Higher Education 30
Mamoon Rashid, Vishal Goyal, Shalu Jindal, Harjeet Singh and Unnati Gulaty

An Introduction to Pervasive Biomedical Informatics 33
Partha Pratim Ray and Poulami Majumder

Articles

A Framework for Next Generation Digital Learning Environment 35
S. Balakrishnan and D. Prabha

Indian Government's Initiative for Digital Learning 39
Ashish Agrawal and Gargi Agarwal

PLUS

Call for Paper for CSI Journal of Computing 07

Workshop on IBM Cloud and Services - A Report 23

Executive Committee Resolution 41

National Conference on Industry 4.0 (NCI4.0- 2019) 42

Life Membership Form (Summer Offer) 44

Matdaan Sankalp Abhiyan - A Report 47

Management practices in Ancient India - Presentation Report 48

From CSI Chapters & Divisions 49

From CSI Student Branches 51

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Editorial



Prof. (Dr.) S. S. Agrawal
Chief Editor



Dr. Ritika Wason
Editor

Dear Readers

"Online learning is not the next big thing, it is the now big thing." - Donna J. Abernathy

The above quote by Donna J. Abernathy, an educational author does not just indicate a new phenomenon, but it highlights the new renaissance in education, termed "Digital Learning." All over the globe educationists, philanthropists, policy makers are finding new means and mechanisms to make learning possible for one and all irrespective of their age, location, or availability. Replacing the conventional modes and means of learning, Digital Education is emerging as the new frontier enabling anytime learning for everyone at their own pace and in the domain of their interest. Digital learning is changing the face of education in India rapidly, crating increased learner power and also changing the educational landscape of rural India. As professional, we can develop competence in accessing and sharing knowledge through these techniques and tools.

After exploring the domain of Emotional Intelligence in June-2019 issue, we have dedicated this issue to Digital Learning and its impact in varied domains. This issue showcases articles exploring the field of Digital Learning.

The fundamentals of Digital Learning have been effectively traced by Pranjali Vatsalya in the first cover story entitled "Digital Learning-An Overview." With relatable examples they explain the concept, applications and trends in digital learning. The next story entitled, "Digital Learning" by T. Jayanthi, D. Rajeswari and S. Sathiyapriya further clarifies the fundamentals of Digital Learning while highlighting some of its notable applications. The hidden potential of Digital Learning has further been elaborated in "Digital Learning: A Mysterious Potential" by Deepak Sharma and Priti Sharma. Over the years digital learning has not just been confined to a particular technology-driven platform, instead with the advancement of technology digital learning strategies have also grown in leaps and bounds. The next cover story entitled, "Digital Learning: From Traditional to Technological Learning" by Preeti Gulia and Ayushi Chahal explores the same. The cover story, "Digital Learning- A Paradigm Shift in Education" by Anitha P investigates the components of Digital Learning while comparing it to conventional learning mechanisms. The final cover story, "Digital Learning" by A. R. Revathi and Shwetha M further reiterates the components and characteristics of digital learning.

The technical trends section showcases the different industrial trends supported either directly or indirectly by digital learning. The first article "A Brief Introduction to HR

Analytics and Reporting" by K.V.N Rajesh and K.V.N Ramesh delves into the specifics of HR Analytics. The next article, "Role of Virtual reality in Surgical Simulation- A Digital Learning Strategy in Healthcare" by Archana Sasi discusses how Virtual reality is enabling surgical simulations and promoting digital learning in healthcare. The article in research front, "Introduction and Initiatives of Digital Learning Schemes in Indian Higher Education" by Mamoon Rashid, Harjeet Singh, Vishal Goyal, Unnaty Gulati and Shalu Jindal further reiterates the effects of digital learning in the Indian Higher Education scenario. The next article, "An Introduction to Pervasive Biomedical Informatics" by Partha Pratim Ray and Poulami Majumder elaborates on the field of biomedical informatics. The article, "A Framework for Next Generation Digital Learning Environment" by S. Balakrishnan and D. Prabha beautifully explores the next generation digital learning environment. The cover story entitled, "Indian Government's Initiative for Digital Learning" by Ashish Agrawal and Gargi Agrawal introduces the varied Indian Government digital learning initiatives.

The issue also reports workshop on IBM Cloud and Services at BVICAM, New Delhi. Matdaan Sankalp Abhiyan by Lucknow Chapter has also been reported and Management Practices in Ancient India by Chennai Chapter is also covered. Various CSI chapter, divisions and student branch activities carried out all across the nation have also been highlighted.

We are extremely thankful to all our contributors as well as readers. Original, plagiarism-free, unpublished articles are solicited throughout the year from CSI members as well as non-members. Our sincere gratitude to the CSI publication committee members, editorial board members, authors and reviewers for their great contribution and support in realising this issue.

Our special thanks to Prof. A. K. Nayak, President, CSI for his constant encouragement, support and guidance in publication of July, 2019 issue.

We look forward to receive constructive feedback and suggestions from our esteemed members and readers at csic@csi-india.org

With kind regards,

Prof. (Dr.) S. S. Agrawal, Chief Editor
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President's Desk

From : President, Computer Society of India

Date : 01 July, 2019

Email : president@csi-india.org / Cell : (91) 82106 93239



Currently, the nation battles a spate of issues & problems like skill-gap and unemployability and the present education system is having the issues ranging from an outdated syllabus, Infrastructure, lack of hands-on practical experience, lack of quality educators and so forth.

Higher education in India continues to remain a dream for many students. But with an initiative like digital India, the Human Resource Development Ministry is promoting & spreading the digital learning to provide greater access to higher education to the masses in India.

Top & premier institutes of the country both in the public and private sector have agreed to join hands with the Human Resources Development Ministry to formulate & develop a cohesive structure and policy for digital education system. Hence DIGITAL LEARNING is gaining popularity in India.

The theme of this issue of CSI Communications Digital Learning is of great importance as it will focus on technology innovation and trend setting initiatives in primary, middle, higher & mass education. The Society will experience the contribution of this great Technology in the current decade but the benefits of the same should be completely and uniformly understood and utilized by the learners of formal, non formal, working professionals & masses in general.

In recent years CSI has played a significant role in creating IT awareness by organizing massive numbers of seminars, conferences & workshops starting from Chapter level, State level, National level & International level on current state of affairs of technological development. The Past few months have witnessed more than hundreds of events which was regularly published in past issues of CSI Communications. In coming months the quantum of such activities are in progress & such events will be regularly covered in CSI Communication.

I request to the Regional Vice President & Chapter office Bearers to kindly organize more & more activities to take forward the name & fame of CSI to common masses with their realization of benefits from this largest Society of IT professionals.

The birth of CSI was inspired by the pioneers of Information Technology in India. Started with 16 members in 1965, CSI has scaled it's membership height to more than lakhs. It is not only the reflection of the increasing outreach of CSI but also expanding the boundaries to the remotest part of the country

With the faith of the members in the Society. The strength of CSI lies in its appeal & association with students, academicians, scientists, computer and IT professionals as well as practitioners.

Though CSI is having good number of Chapters, Institutional Members, Student Branches still then it's association with the increasing number of companies & corporations are most required. In this direction, the efforts will be to enhance our services so as to render satisfactory services to the members & ensure their continued association.

Technical activities are conducted by the chapters & student branches which are quite visible by the reports published in CSI Communications. Chapters & student branches are requested to come with more & more technical activities to cater the effective services to their members because it is the need that members should be addressed regularly & value to members should be enhanced.

Summer Discount in Membership fees

CSI has taken an initiative to make the exponential growth in its life membership enrollment for which 15% discount in life membership fees has been announced. The life membership enrollment form is also given in this issue for availing the opportunity of membership discount. I request all the hon'ble members of the CSI to make wide publicity of this summer discount scheme among their relations & known circle which is for the time period from 15th May to 15th July 2019.

I seek the active & kind support of the Members to make CSI more Dynamic, Vibrant, Productive & sustainable to achieve the height of excellence.

I sincerely request all the Office Bearers, Executive Members, Chapter Managing Committee, CSI student Branch Coordinators, SIG Managing Committee & CSI office staffs to kindly work with responsibility for the Society (CSI) to serve honestly for the cause of every Division, Region, Chapter, SIG, Student Branch & every Individual Members including Student Members.

Let us come forward to make Clean CSI & Green CSI with transparent activities & visions to make it Swachh, Pardarshi & Hara Vara.

With warm regards,

Prof. Akshaya Nayak
President, CSI

Digital Learning : An Overview

► **Pranjali Vatsalaya**

3rd year student, Pursuing B.Tech in Electrical Engineering from Indian Institute of Technology, Madras

Introduction

The trend of Digital Learning has been around for a while. In recent times, all that we hear on TV and Radio is Bollywood star Shah Rukh Khan asking parents to let their kids grow with "Interactive Learning". That's not it! In a recent advertisement, we could even hear a son tell his father that the old days of repeated writing and by-hearting are gone because he has an App that helps him learn with such interest that he doesn't forget concepts forever. This is the future of learning. Today, we see kids talking to their devices and discussing their doubts. Gone are those days when parents had to come up with interesting ideas to motivate their kid to study. With Digital Learning apps everything a parent needs for his kids is a click away.



Fig. 1: Digital Learning for kids

What Is Digital Learning

Wikipedia, a Digital learning platform, defines Digital learning as "any instructional practice that effectively uses technology to strengthen a student's learning experience". In the ever-expanding age of digitization, an increasing number of students are gradually moving towards digital platforms in almost every field including business, arts, engineering, and medical sciences. Commonly confused with eLearning, Digital Learning includes appealing, interactive and adaptive software, conventional literature, video lectures, and games.

[1] Thus making it a "choose-your-own-adventure" kind of learning.



Fig. 2: Diversity of content in Digital Learning

Current Trends

It was on 28th February 2012 that Digital Learning saw a boom. On this day, Digital Learning moved beyond Dora-the explorer and Bob-the builder to online platforms like Moodle and Byju's. And hence, 28th February was declared as Digital Learning Day worldwide.

The following trends are influencing student learning:

1. Augmented Reality / Virtual Reality / Mixed Reality

Augmented, virtual, and mixed reality are parts of the new age technology that improve teacher-student interaction while simultaneously designing lessons that are both fun and engaging. Virtual Reality (VR) has the capacity of bringing the outside world into the classroom and vice versa. [2]

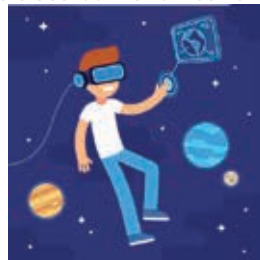


Fig. 3: Use of Augmented Reality in Digital Learning

2. Redesigned Learning Spaces

Educators have realized that the chalkboard system isn't always the best way to occupy kids. Group discussions, debates, elocution, etc. are the new way to go and classrooms are being designed to promote this. The 21st-century classrooms are using SMARTboards and pods of SMARTdesks as an alternative to chalkboards. [2]



Fig. 4: An interactive classroom

3. Cloud-based learning

Cloud-based learning refers to learning online from data which is stored on the cloud. These resources are virtually accessible by multiple digital devices. Some other benefits of having a cloud-based learning system are fewer costs for customer support, software installations, and data management; lesser set-up time and technological maintenance; flexible learning on the go and vast space to capture and store data.

4. Gamification

Gamification of learning refers to the application of video game design principles in learning. The object is to motivate and fascinate learners by using the same elements that make a video game challenging and enjoyable. Drexel University's Vice President Susan Aldridge says "These virtual game worlds provide a unique

opportunity to apply new knowledge and make mission-critical decisions while identifying obstacles, considering multiple perspectives and rehearsing various responses.” As these games are devised to give instant feedback, students are intrinsically motivated to keep playing them, thus sharpening their skills.

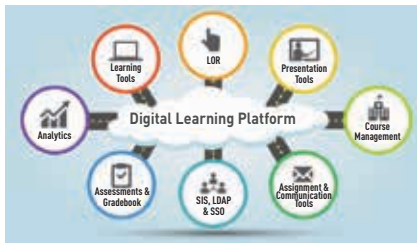


Fig. 5: Digital Learning platform

Its impact on the education system

Now, what's new with Digital Learning is that the student can choose his own topic, language, time, place, and a convenient pace, thus allowing him to study without worrying about timetables and schedules. Digital Learning technology can enable students to

grasp concepts quickly, relate theory and application adeptly, and engage in receiving information readily, while also advancing instructional techniques and promoting the comprehensive sharing of knowledge. If knowledge is not implemented practically, cramming up a lot of theory may become tedious and unproductive. Hence it is important to know the practical applications of the topics studied. An effective way to do this is to include real-life demonstrations, scenarios and artificial simulations coupled with theory. However, it is not to be forgotten that even though the technology is changing the role of a teacher, it will never eliminate the need for one. With Digital Learning, teachers will be equipped to provide personalized guidance and supervision to guarantee that the students learn and stay on track. [1]

Behind the Scenes

Today, no industry is untouched by the miracles of artificial intelligence. With AI incorporated in education, there is now a degree of personalized learning where each student studies at his pace

and not a class average. Apart from this, AI allows the automation of meticulous tasks, enabling teachers to play their natural role of being a motivator and guiding force. This leads to a significant rise in the quality of education. Increasing dependence on digital content, also means that the content needs to be designed, customized, and updated in real time. But with the present diversity of subjects, this seems like a Herculean task. By using AI, we can digitize books and create digital learning interfaces that are relevant to students of all age and grades.[3] As AI educational solutions continue to develop, we hope that AI will help bridge the gap between teaching and learning, thus allowing schools and teachers to do more than ever before.

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- [3] <https://www.livemint.com/>

About the Author



Pranjali Vatsalaya is a 3rd-year student, currently pursuing B.Tech in Electrical Engineering from Indian Institute of Technology, Madras. Her Research interests include Defence technology, Internet of Things and Machine Learning. She is currently working on a project on Signal Processing and Wireless communications. Apart from being an avid reader, she holds the prestigious NTSE scholarship and has also represented her college in various inter-college Volleyball tournaments.



Call for Paper for CSI Journal of Computing

(e-ISSN: 2277-7091)

Original Research Papers are invited for the CSI Journal of Computing, published on line quarterly (e-ISSN: 2277-7091) by the Computer Society of India (CSI). The Journal of Computing, offers good visibility of online research content on computer science theory, Languages & Systems, Databases, Internet Computing, Software Engineering and Applications. The journal also covers all aspects of Computational intelligence, Communications and Analytics in computer science and engineering. Journal of Computing intended for publication of truly original papers of interest to a wide audience in Computer Science, Information Technology and boundary areas between these and other fields.

The articles must be written using APA style in two columns format. The article should be typed, double-spaced on standard-sized (8.5" x 11") with 1" margins on all sides using 12 pt. Times New Roman font and 8-12 pages in length. The standard international policy regarding similarity with existing articles will be followed prior to publication of articles. The paper is to be sent to Dr. R R Deshmukh, Chief Editor in the email id: rrdeshmukh.csit@bamu.ac.in with a copy to Prof. A K Nayak, Publisher, in the email id : aknayak@iibm.in and Dr. Brojo Kishore Mishra in email id: brojomishra@gmail.com.

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“Once you stop Learning, you start dying”

— Albert Einstein

Introduction

Digital is a word with numerous potential implications and suppositions. The strict significance references innovation or encoding data in zeros. We live in the advanced age, a time unmistakable as a result of pervasive systems administration and productive utilization of innovation in practically all parts of every day human life. We have been living in this time since the Internet started to change how we live, making Digital communication an essential normal for human activity.

A large portion of you more likely than not caught wind of Digital learning. The E-Education has surely lighted the instructing division. Gone are the times of slates, the chalks and the dusters. They have been substituted with electronic instruction which fortifies understudy's learning knowledge.

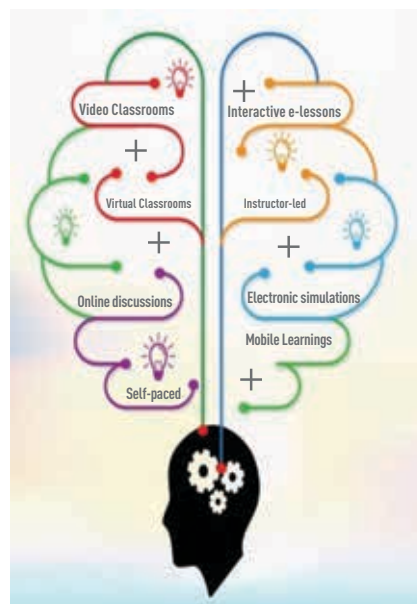
Scope of Digital Learning

Freedom to choose the place

Digital learning or e-education is not bounded with the traditional classroom type of teaching where every period was supposed to be of forty minutes but it has given the freedom to both the students as well as the teachers to choose their place. You can take online classes anyplace as indicated by your accommodation including going to it at the solace of your home. Be that as it may, this is appropriate for generally expert courses and not for the school going kids.

Time Consumption

Another gigantic bit of leeway that online learning has given to the understudies worldwide is that learning is not any more confined to explicit timings when the classes were led. You can pick your very own adaptable time and begin realizing when you are



free. You can download recordings of the classes from web and you can comprehend what was educated in the class today.

Speed and Convenience

There is no compelling reason to contend with the remainder of the class but instead e learning enables you to learn at your very own leisure. The tutorial videos are available online and you can view it as many times as you want to make your concepts clear about a topic. This implies you don't need to invest much time in one exercise as then the sections become progressively intelligent.

The Digitalized Content

Digitalized substance implies you get fantastic scholastic substance which is anything but difficult to peruse and get it. It is conveyed through the different specialized instruments, for example, PCs, PCs, mobile phones

and other electronic contraptions. The substance is composed by exceptionally experienced scholastic substance journalists and they are enlightening upheld by videos and images for better understanding.

Digital Learning Technologies



Portable Devices

Computers accustomed be the first appliance for accessing the internet, yet Tablets and smart phones are measure leading the pack. These days' individuals utilize an assortment of mobile phones, contingent upon where they are and what they are doing. Portability and simple access have turned out to be significant elements for Internet users.

Cloud-based learning

Cloud-based learning alludes to learning and access online data and meanwhile the information is stored in the cloud. Learning resources are we can access at any time. It is virtually available and can be accessed by smart electronic devices. Cloud-based learning techniques are:

- Less costs
- Secured Data Collection
- Time Consumption and easy maintenance
- Flexible learning

The primary concern raised with respect to cloud-based learning is the security is not sufficient.

E-Learning users ought to choose among facilitating and managing their own virtual stage and utilizing an outdoor supplier. Especially, associate degree intensive comprehension of the supplier's provisions, requirements and arrangements is principal to ensure an unrestrained commercial activity.

Learning collaboration with Digital devices

Digital classroom learning is virtual data collections that users will store, edit, and transfer, and these collections will embrace varied formats as text, audio, video and images. Such portfolios can be utilized for continuing learning video, yet in addition building advanced profiles, investigating learning information, and as a device for overseeing learning networks. Understudies will progressively utilize computerized portfolios to show their abilities and learning as they apply for school and employments.

E-Learning Methods

Autodidactic Method

These days this is the most well-known technique that uses Wikipedia, blog page and any perusing material like ppt, pdf, documents to supply the initial data to the workers/users. This also allows additionally enables Subject consultants or experts to the cluster type of users/educators on the classroom learning to resolve their queries and doubts.

Mobile Learning

The ease accessibility and reasonableness of smart phones has created the area for versatile authorised learning or mobile based learning. Primarily dynamic terminated e-content/course to versatile excellent modules aren't sufficient. The capacities of the mobile phone, together with disk space, Internet connection, and the displaysize should be considered. This can be enormous

advantage, as it technical skill expenses of generation even as the time taken to make e-courses for mobile learning.

Social based Learning

Social media is very powerful and it will be used for business learning also. An ever increasing number of associations understand the genuine intensity of social learning and urging their representatives to collaborate more inside themselves and other similarly invested individuals. Employers and Learnerwork jointly on an activity and network on social platforms to discussion problems, queries,

Simulation Tools

Simulation eLearning is a creating new ideas and designs of innovations. It contains multiple format like images, graphic animations, video, audio. Importantly, there are often custom designed videos or games, which could very well include 3D elements using simulation tools. New software learning is an example of a course that has a high degree of interactivity.

Game-based Interactive learning

Games area unit thought of to be fun by learners, however they will be a strong techniques of experiential learning as well. Many organizations specialise in the term Gamification which helps them to increase productivity and knowledge by motivating them to learn with game-based courses. Gamification focus on creating technology and motivation for the learners to find out the items whereas the play.



Conclusion

The timing has never been better

for using technology to alter and improve learning in the least levels, altogether places, and for individuals of all backgrounds. From the modernization of E-rate to the proliferation and adoption of openly licensed educational resources, the key pieces necessary to realize best the transformations created potential by technology in education are in place.

Digital Learning dashboards and collaboration and communication tools will facilitate connect academics and families with fast ease. This all is made more likely with the guidance of strong vision and leadership at all levels from parents, teachers, students and experts. For these roles, too, technology permits greater communication, information sharing, and improved follow in order that the strong vision is owned by all and dedicated to helping to serving to each people within the system improve learning for students. It is a great step of reasonable risk and improvement for the utilization of today technology to encourage and support the Digital learning.

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Digital Learning: A Mysterious Potential

► **Deepak Sharma and Dr. Priti Sharma**

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1. Introduction

Digital learning simply means learning with the help of technology. Anything you learn using technology comes under the category of digital learning. Many people misunderstood it and think that learning technology is digital learning but that's not correct. Technology has become an indispensable part of our life. One cannot separate his or her life from technology because almost every task is somehow connected to technology.



Digital learning simply means learning with the help of technology. Anything you learn using technology comes under the category of digital learning. Many people misunderstood it and think that learning technology is digital learning but that's not correct. Technology has become an indispensable part of our life. One cannot separate his or her life from technology because almost every task is somehow connected to technology.



Talking about learning using the technology we have lots of online platforms through which one can learn anything. The most frequently used platform is Youtube. On Youtube, 100 Million videos watched in a single day and nearly 65,000 videos are added each day. Many platforms like Youtube, Unacademy, Udemy, CourseCraft, Skillshare simply remove all the constraints between the teacher and the students and simplifies the learning process.

2. Evolution Of Digital Learning

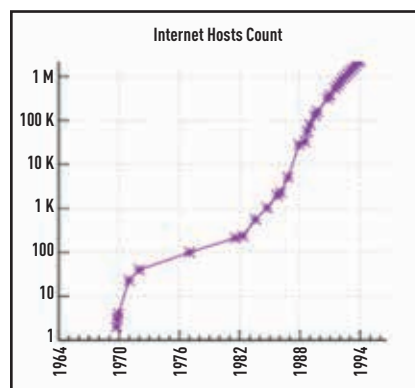
As of April 2019, more than 3.2 Billion people are using the internet worldwide. In India, more than 493 million people have an active internet connection and almost 50% of the total population uses the internet in a month. Today you can find content related to any topic and learn about it and all you need is the computer and an active



Tim Berners-Lee

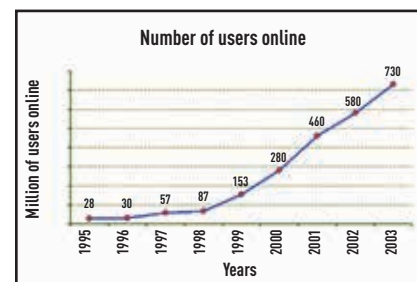
internet connection but it's all started in the 1990s when the World Wide Web (WWW) also known as "The Web" was invented by the English scientist **Tim Berners-Lee**.

Phase 1: 1990 to 1995: Just the beginning



In 1990 the World Wide Web was developed so that scientists and researchers from the different parts of the world can share information and their research work. This is just the beginning of digital learning. At that time very few people have access to technology also the cost of the computer was very high. The only 10K user has access to the internet. Due to the high cost, it's impossible for the general public to access technology. Price of a computer back then was around \$7,570 (Inflation adjusted price) around 4 lacs in India rupees. The internet is also very expensive and having an email account was counted as a prestigious thing.

Phase 2: 1995 to 2000: Preparation for the take-off



Digital Learning comes in reach of the general public in around 1995. This happens due to the decrease in the cost of electronic devices with the advancement in the electronics world. Back then computers are used only for research and military purposes but by the end of the 19th Century, people start using the computer for general purpose such as storing and maintaining data.

The oldest K-12 online schools are a product of that time. As people now getting aware of a completely new world where they can share ideas and thoughts with different people from different background. World Wide Web is not a new concept now and it's getting bigger as time passes. People started

to take online courses but still, their number is very less. Only the privileged class is exercising the potential.

Phase 3: 2000 to 2010: When it all started

In the earlier 20th century with the advancement in the electronics field price of Electronic devices start decreasing. Now people are buying computers and using them for business, education, entertainment, and

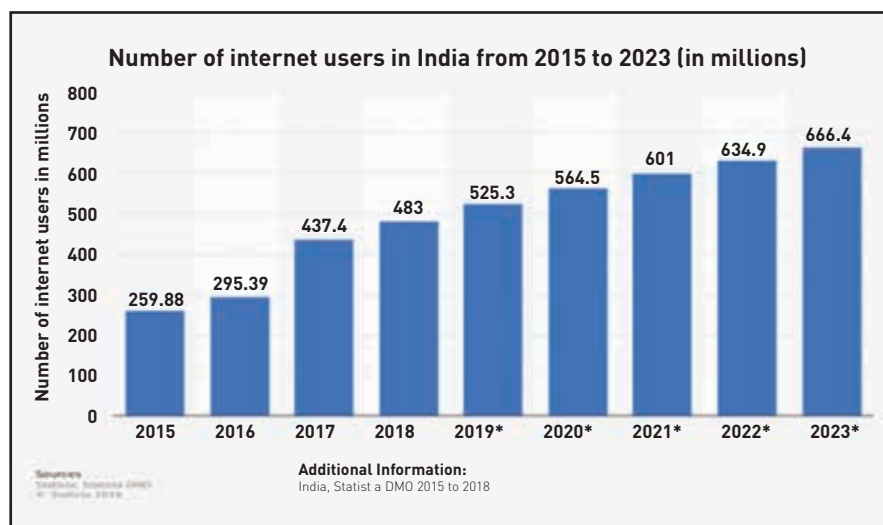
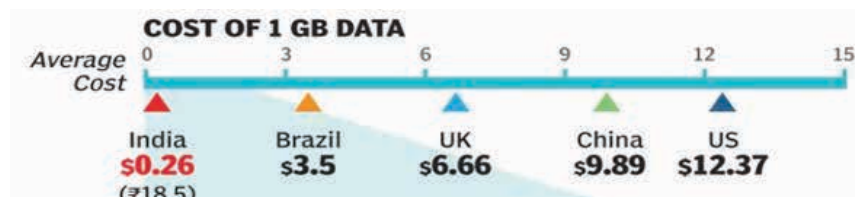


- 100 million videos watched per day
- 65,000 videos added each day
- 60% of all videos watched online
- YouTube sees 72 hours of newly uploaded video every minute.

many other things. With the increase in the number of internet users, Digital Learning starts increasing exponentially. In 2005, One of the biggest platform of digital learning “Youtube” (14 February 2005) launched by Google. Youtube is an American video sharing website. Everyday lots of content uploaded and watched by users. On Youtube, you can find a video for anything starting from “How to write a C program” to How to play a Guitar” and a lot more. Social media platform like Facebook, Orkut and Myspace also launched in during this period.

Phase 4: 2010 to 2019: Driving with Acceleration

People actually start considering Digital Learning as a considerable option for learning new things. Many platforms like BYJUS (2011), Unacademy (2015), Udemy (2009) launched and becomes successful during this period. The main reason behind their success is the availability of resources. According to recent research by Times of India 1GB of data cost around \$0.26 (INR 18.5) which is lowest in the world. With a decrease in cost, many people start using it. More than 50% (525.3 million) of the total population in India is using the internet in a month and it's increasing at a fast



speed. By the end of 2023, roughly more than 666 million people might have been using the internet in India.

Learning is the bridge between the Educator and the learner. It has lots of advantages some of them are:



3. Positive Impact of Digital Learning

Digital Learning opens a completely new dimension of learning. It actually provides “Equal opportunities of learning” for each and every person who is connected to the internet. Digital



I. Availability of the content:

Complete content is available online and the user can access it anytime. For example: before digital Learning, the scenario was that educator and learner have to set a fixed time and at that time they both need to be available but now there is no need of it. Digital Learning provides us the facility

that educator can make content whenever feel comfortable and learner can consume the content anytime after the creation of the content.

- II. Location Independent:** Previously when we didn't have digital learning setup people living in 'X' cities have more opportunities as compared to that of people living in a small town. It is observed that the quality of teaching in small cities is not that good. Digital Learning provides a way for the small town people to get the best quality content at their doorsteps. This makes a way for a better future for them without leaving their home town.



- III. Reachability:** Digital Learning gives a platform to both educator and learner to perform at their best. A good Educator can increase its audience and learner can reach to a brilliant quality educator. Reachability also increases the market competition which ultimately increases the quality of the content.

4. Negative side of Digital Learning

There is no doubt in it that Digital Learning is something which leads the world to a better future. Digital Learning has so many positive but there is a negative side also. People should be aware of how to use the resources for their betterment. Some point about which people should be aware of:



- I. Distraction:** The Main platform for Digital Learning is the Internet which is full of distractions. Suppose you are watching an educational video on youtube and suddenly an advertisement appears about a new movie. Now you have two choices, one is to continue with educational video or to go with the movie advertisement. The problem is most people go with the movie advertisement.
- II. The credibility of the content:** Many online platforms on which people search for content is unreliable such as Youtube. On Youtube, anyone can make a video and upload it. There is always a huge possibility of getting dirty content which is error prone so it's always advisable to choose

your resource for learning wisely. Lots of content available for free which is not correct. Learning from an ambiguous source is both time-wasting and dangerous.



5. Conclusion

Digital Learning is the future of Innovative learning. A number of internet users are increasing more people can take advantage of learning new things. Demand for Digital Learning will certainly increase. People will give more priority to Digital Learning then the conventional one in the near future. There is some concern related to Digital Learning and technology as it is full of distracting elements. People should use technology for their betterment and not for wasting their valuable time and resources. Social media is the biggest concern because it not only wastes time but can make a huge negative impact on the youth. It is suggested that students should be told about "How to use the internet" and workshop should be arranged for the same in universities and schools. By doing so negative effects can be minimized.

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Digital Learning: From Conventional to Next Generation Learning

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Introduction

Gone are the days of paper, pen and chalks. Today, we live in the digital world where there is a digital boom in the information and technology. This boom results into the shift of the education and learning practices in every field from the basic traditional ways. Digital learning is a learning which is facilitated by different types of digital devices or internet. [1]

India is a country which is growing exponentially in terms of technology. Rise of internet in India with the help of smart-phones and high-speed internet data availability India has over 1.3 billion technical driven persons. Seeing this potential for digital technologies, our honorable prime minister has also visualized the nation transformation through "Digital India" project.

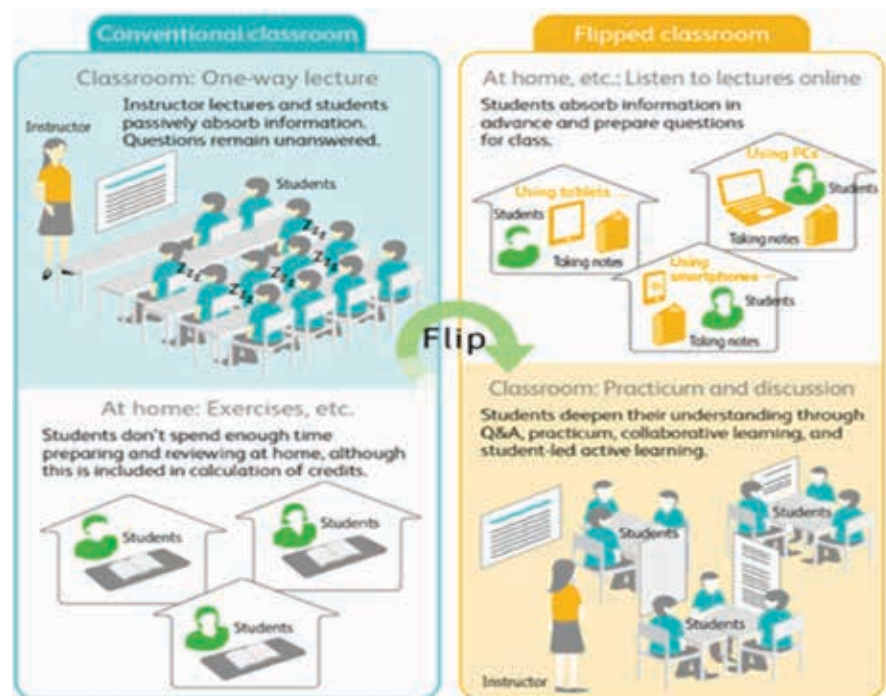
Digital learning gives the control to the learner irrespective of time, place and pace. Digital learning can happen anywhere, at any time. It is not limited to schools or universities only but, it can take place at homes and in any type of social environment. Digital learning does not mean to continue traditional learning process, but to enhance the learning by different means. [2]

Digital learning is not only limited to the education field only. It also helps other different sectors to grow more and more. Some of these are:

- Healthcare sector
- Retail sector
- Telecommunication sector
- Information and Technology sector
- Manufacturing sector
- Banking sector
- Financial securities
- Investment industries

Digital learning strategies

Digital learning has come a long way since the era of internet and digital devices have become a pioneer part of our lifestyles. Digital learning is often



confused with e-learning. It is to be noted that digital learning includes e-learning as one of its strategy. [3] Digital learning is combination of the strategies listed below [4]:

- **E-learning (online learning)** : E-learning is learning utilizing electronic technologies with the help of internet for education, outside the traditional classroom learning. Fig. 1 shows e-learning.



Fig. 1: E-learning

- **Flipped learning** : Flipped learning is a learning in which instructions moves from group learning space to individual learning space. It is a type of blended learning. In it one learning content online to the learner outside the class. Figure 2 discripts flipped learning.
- **Blended learning** : It is some what mixture of traditional learning and online learning. Some portion of this learning is done as e-learning and rest part is done as a traditional classroom learning. Figure 3 shows Blended learning.
- **Personalized learning** : It is not a wide spread term. It refers to a learning technique which is done personally by individual according to its need. Learning content and approach may vary person to person.

- **Individual learning** : It a learning in which teaching strategy is made with respect to every student's weakness and strength.
- **Differentiated learning** : When learner of different interests, learning profiles and readiness come along then tutor have to plan teaching strategy according to every learner. This is called of differentiated learning.
- **Gamification and badging** : It is a technique in which learning is done with the help of games. It helps in engaging learners in learning activities[5].
- **E-textbooks** : These are the books a learner can read in digital form with the help of any digital device like smartphone, laptops and tablets etc.
- **Social learning** : Now-a-days there are many digital learning tools with the help of which learners can network, interact, collaborate and exchange different ideas in a learning process.
- **Micro learning** : These are short term learning activities. It generally includes different short term online courses that last for 60 minutes or so.
- **KPI based learning** : Learning is done by sending or receiving data through integrated applications that links content with key performance indicators (KPIs).
- **Mobile learning** : It is popularly known as m-learning. It is integration of hardware, software and mobile technology. It not only includes smart-phones as a device but also other devices like laptops, desktops, tablets.

According to a survey most used digital learning technique is differentiated and blended learning as shown in figure 4.

Use of Internet in digital learning

Digital learning is a way through which you can learn from wherever you are and whenever you want. Digital learning have basically three participants: first, a digital device like smart-phones, desktops, tablets, LED or projector etc.; second, a internet connection; third, a learner itself. Figure 5 shows how digital learning and

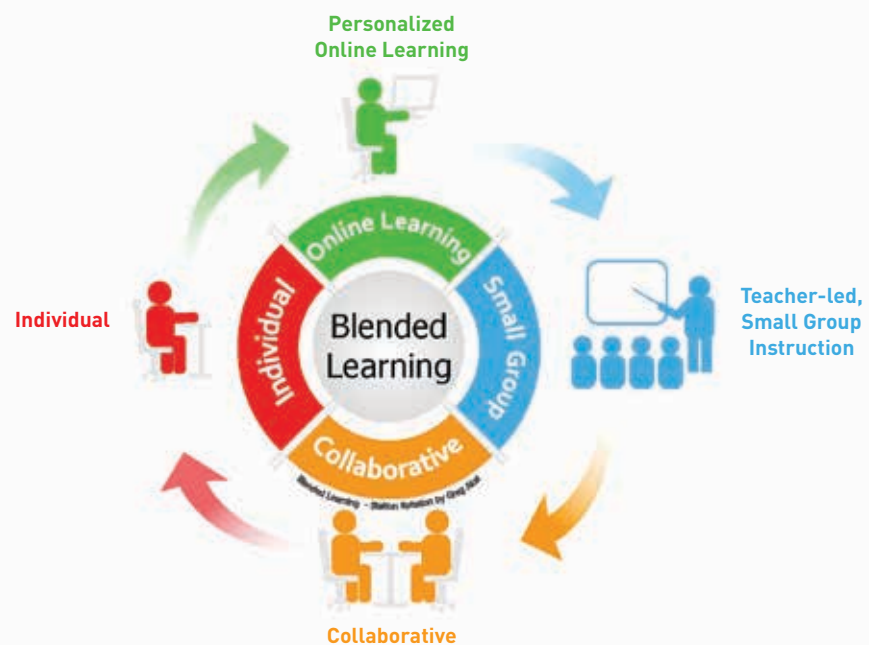
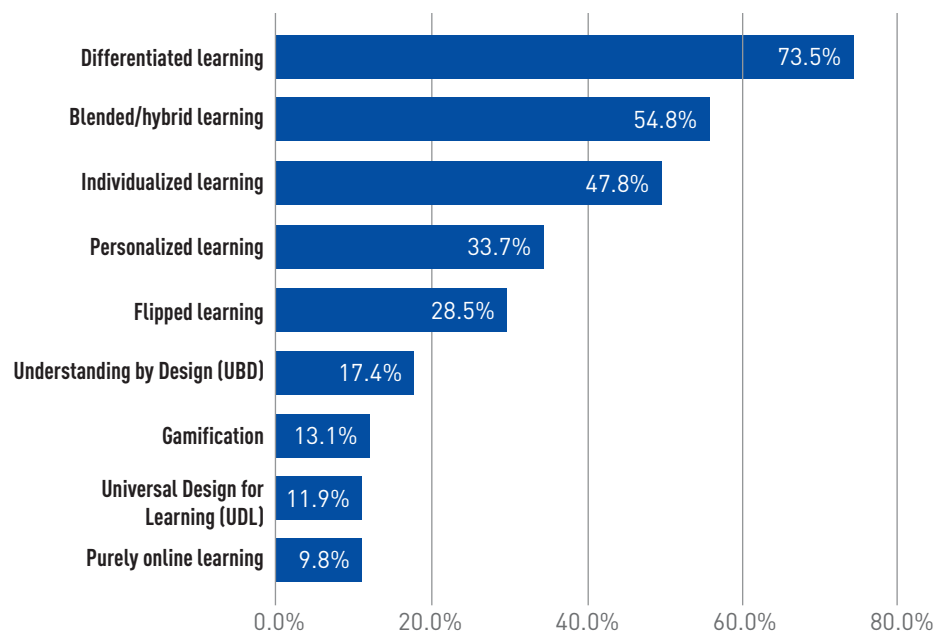


Fig. 3: Blended learning



Source: 2018-19 State of Digital Learning in K-12 Education

n=9,279

Fig. 4 : State of digital learning strategies

internet goes hand in hand. [6]

To make Digital learning independent of time, place and pace there is a huge role of internet in it.

- Internet is the only key by which a learner can approach its learning

content from anywhere over the globe, at any instance of time.

- Today, internet is not just limited to finding information but it also helps people of same interest come together, not only for entertainment

and social point of view but also for academic and scientific interests.

INFRASTRUCTURE

To support Everywhere, All the Time Learning



Fig 5: Digital learning and Internet

- Internet provides a virtual platform to learners over which they could come together virtually and work as a team on same problem or project while being at different geographical places physically.
- Internet helps to remove burden of paper work for the learner. Everything is available online
- Internet act as a medium between the tutor and the learner which can act as one-to-one learning as well as one-to-many learning medium.
- Once the learner have learnt the content, he/she can always reach to it at anytime and read it as many time as learner wants.
- Blogs, wikis, e-journals, e-books, e-learning portals are all about internet only. They plays an important role in education system today. [7]

Different digital learning tools

In this digital world, to remain up to date and master every evolving technology, a learner should be aware of different digital learning tools present in the market.

- Google+ communities** : It is one of the social media thing from the search engine. It can be used to post different type of videos, share documents, socialize with friends or colleagues or family, send messages, can share project based

artifacts, can create long threaded discussions etc.

- DropBox** : It is a sort of file sharing system. It is basically used for backing-up, sharing and storing files on internet. Example of such a technology is an application named 'Dropcanvas'.
- YouTube channels** : It is the most popular and largely accepted form of digital learning tool. It contains any kind of content whether it is academic or not. It helps in development of different learning forms like flipped classroom, blended learning and khan learning.



- iTunesU** : It provide different quality courses for every possible content. It is a sort of online course catalogue which helps in flipper learning, personalized learning, project based learning, blended learning.
- Cloud based Word Processors**: Google drives, Microsoft word online, Zoho Documents, spread sheets are some of the examples of Cloud-Based Word Processor technology. In this kind of digital learning tool a learner can write from any place, save comments, and curate all steps of writing process in digital portfolios.
- Evernote** : It is simply a note saving tool which can be used to save web screenshots, take quick note , take pictures of learning products such as papers. It uses the mobile app, web browser or computer based application.



- Pocket** : It is simply used to save the content on web . If you do not have time to read a content on web or do have a time to read but wan to save it for future reference, then you have to just click on bookmark present in your toolbar. This click

will save the content in your digital pocket from where you can read anywhere, at any time.

- Zotero** : It is generally used by the researchers to make their research more functional and organized. It helps researchers to save their academic works with access to citation support materials. It helps in social learning process by collecting all the research at a place where researchers can discuss and share their ideas.



Advantages of digital learning

- Digital learning can be done from any-where. There is no boundation of place. This type of learning is very flexible in nature. One can learn digitally as well as do another kind of job also. [8]
- Digital learning saves time and money. Learner can learn at any time that is suitable to him or her.
- Digital learning increases engagement and concentration power of the learner with the strategies like gaming.
- It provide learner proper time to improve themselves. It helps them to grow on their own rate.
- Digital learning provide rich, deep and latest content to study which helps learner to remain up to date to most recent ideas and technologies being launched recently.
- Digital learning provides a vast platform to the learners on which they can share their thoughts, discuss their ides, solve out their problem and publish their work.
- Digital learning provide ownership to the learner about what to learn and how to demonstrate one's learning.
- Digital learning is also cost effective. As in case of e-learning

some courses have very small fees or no fee.

Disadvantages of digital learning

- There is a need of proper infrastructure for digital learning. One must have a digital device like smart-phone or laptop and a internet connection i.e. broadband or mobile data. [9]
- Interoperability is also another disadvantage of Digital learning. Learner may find different learning material on different apps or platforms but there can be a problem when he/she wants to interact all the stuff at the same time.
- Security and cheating is also an issue with digital learning. One's work or idea can easily be stolen. But this problem can be removed with some advanced technologies.
- If some ones work need a lab or workshop then there will be a problem in digital learning, because everything can't be done virtually.
- In case of e-learning, there can be many fraudulent online courses. That could cause wastage of money

and time.

- If learner is not dedicated and fully motivated towards his/her goal then one can easily get distracted in digital learning.

Conclusion

Digital learning is a powerful tool in a hand of a common man with which one can change the world if used wisely. Now-a-days anyone can get a solution to their problems which are few clicks away. Knowledge is available everywhere and all the times one should not misuse it and should to create a progressive environment.

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Digital Learning - A Paradigm Shift in Education

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Introduction

For many centuries education has been associated with books and classrooms. With fixed curriculum, timings, location and a well streamlined way of teaching it catered to generations of learners and improved human civilization. With the advent of computers, internet, mobile devices and cloud technologies, the millennial learners are no more interested in learning by the slower, rigid traditional means. The process of training has correspondingly evolved to address the changed learner profile.

Digital Learning is a process of technology enabled learning and it brings about a paradigm change in the mode of learning. High-speed internet Technology, mobile devices and Cloud are the backbone for a digital learning experience and Information is at the core of it. The goal of digital learning is to provide flexibility to the learners to have a control over the time, place and pace of their education. Diagram 1 illustrates the overview of Digital Learning

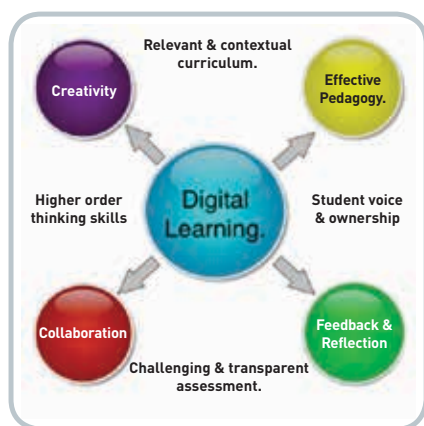


Fig 1: Digital Learning Overview

Features of Digital Learning

Following are the features of Digital Learning discussed with help of

a diagram [2]

- Flexible learning time – Learners can schedule their training in a flexible way around their other work schedules. This model supports lifelong Learning
- Convenient learning place – All you need is a device and a good internet connection to learn – tedious travel to get to a learning center is avoided
- Self-paced learning – Learners learn at their own pace; it is not one-size-fits-all model. The faster learners can move ahead and complete quickly while the thorough ones can take their time to finish.
- Easy cross-referencing and up-to-date content – Extensive library search for reference material and hunting for the latest revisions is not required. All references are available at a mouse-click and the content is up-to-date.
- Ease of Access – Content can be viewed from a laptop or a tablet or a mobile device and the reading experience is as easy as reading any other content on these devices.

- Aligned with the lifestyle of digital generation – A born-digital generation cannot relate to voluminous books and tedious ways of searching. Digital learning fits this learner profile and thereby makes learning interesting.

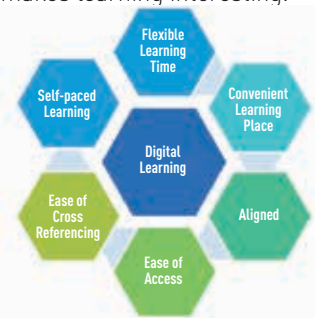


Fig. 2: Features of Digital Learning

The Digital Learner Profile

Millennial generation learners are capable of handling new technologies and rapidly grasping the latest evolutions to gain best advantage of the same. They are used to seamless experiences in their day to day lives whether it is while interacting with their

Digital Learning Vs. Traditional learning

Learning Parameter	Digital Learning	Traditional learning
Personalized Content	Learning content can be personalized based on the learner preferences	Common content for all learners; personalization is not feasible
Flexi-time	Learn at Any time based on learner convenience	Learners have to make themselves available at specified time
Structure of Information	Information is organized well for cross reference and supported by nice, presentable views	Information is available but it can be time consuming to search for reference and presentation format is rigid.
Learner involvement	Increased involvement of the learners. They have to read, search, re-read, pause and take intermediate learning tests.	Trainers have a bigger responsibility in scheduling the learning, executing it and ensuring that learners have got what they were supposed to from the session.
Training Room	Physical presence of the Learners is not required	Trainers and learners have to be collocated.
Learning Metrics	Data about learning can be easily gathered and analyzed. Important insights can be derived to optimize and improve the learning material	Surveys has to be manually administered to assess training effectiveness. It is not accurate and it is tough to derive insights from the same.

friends on social media or ordering food for delivery through online food apps. They expect to have the same slick experience while learning also and to cater to this ask the training approaches have to be revolutionized. The revolution in imparting digital learning is already underway and many more drastic changes will come about in the near future. Many more improvisations in terms of using voice assistants and robotic trainers are underway. The training process has to keep up to speed with the technology evolutions because the untold ask of the Learners is that their "Learning Experience has to be Digital and Cool in keeping with the latest tech trends". The below diagram 3, depicts the Digital learner profile.

Trainers can enrich the learning approach by leveraging collaborative aspects of social media type interactions among the learners. Learning can be made competitive and thereby improve the involvement among learners. They can post queries and clarify each other's doubts and the trainers can also take inputs from these conversations to improve the content delivery in future. These conversations are also searchable records for future learners. The following diagram 4 shows that the digital material used by digital trainer has increased from 2017 to 2018.

The Digital Trainer Perspective

Trainers in Digital Age can seamlessly deliver content through technology from anywhere in the world. This gives them more flexibility and comfort. To handle new technologies, teachers may require additional training. Such training will improve their confidence level to use technology to deliver the course. Learning software



Fig. 3: The Digital Learner Profile

helps the tutors to organize the content in more attractive and presentable making it very interesting and interactive for the learners.

Another important factor for trainers in digital learning is feedback system. System can generate various insights into the learning behavior which form a seamless feedback to the teachers. This feedback can be used to enhance and enrich the courseware. The system can also record all comments and reviews provided by the learners during the course.

Trainers can enrich the learning approach by leveraging collaborative aspects of social media type interactions among the learners. Learning can be made competitive and thereby improve the involvement among learners. They can post queries and clarify each other's doubts and the trainers can also take inputs from these conversations to improve the content delivery in future. These conversations are also searchable records for future learners. The following diagram 4 shows that the digital material used by digital trainer has increased from 2017 to 2018.

Digital Learning Challenges

Multiple factors affect the effectiveness of Digital Learning; some of them are listed below.

- Constantly changing technology landscape demands frequent and sometimes expensive updates to the course content
- Ease of access also can lead to content misuse and copyright violations
- Cost for initial setup and ongoing updates are high

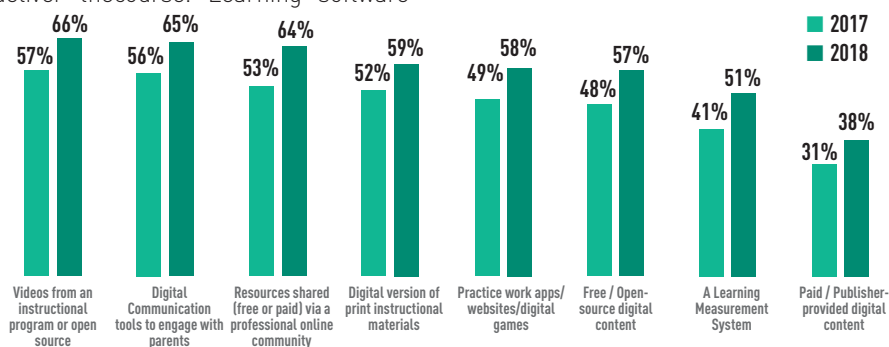


Fig. 4: Digital materials used by digital trainer

- Screen distractions of the learners affects the effectiveness of the learning
 - Chances of cheating during tests are higher and tough to monitor.
- The digital learning challenges were faced by digital learning in the year 2017 & 2018 is mentioned in the following diagram 5.

Conclusion

Digital learning in the new age is Inevitable and must be proactively embraced by both the Tutors and Learners. The time has come for it to become the main mode of education and the required tools and technologies are already available to support it. Educational institutions which employ Digital Learning tools will attract more students and thereby get more revenues. So in conclusion Digital Learning is a Win-Win proposition for Learners, Tutors and Institutions.

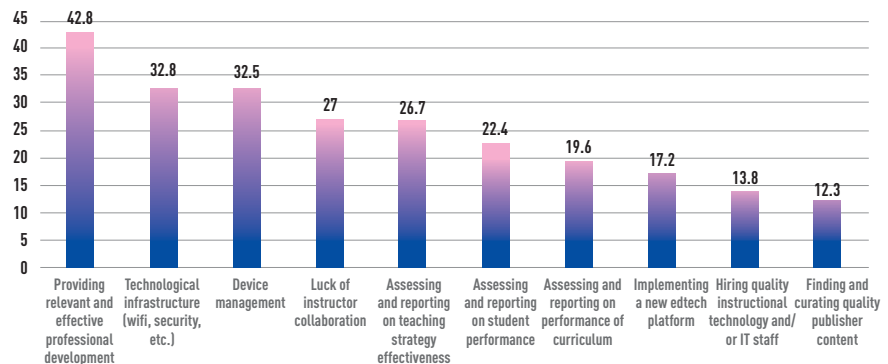


Fig. 5: Digital Learning Challenges in 2017-18

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KIND ATTENTION !

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Fourth Coming Issues : August 2019 : **BLOCK CHAIN**

Please note that Cover Theme for **August 2019 issue is Block Chain**. Articles may be submitted in the categories such as: Cover Story, Research Front, Technical Trends, Security Corner and Article. Please send your contributions by 20th July, 2019.

The articles should be authored in as original text. Plagiarism is strictly prohibited.

Please note that CSI Communications is a magazine for members at large and not a research journal for publishing full-fledged research papers. Therefore, we expect articles written at the level of general audience of varied member categories. Equations and mathematical expressions within articles are not recommended and, if absolutely necessary, should be minimum. Include a brief biography of four to six lines, indicating CSI Membership no., for each author with high resolution author photograph.

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Issued on the behalf of Editorial Board, CSI Communications.

Prof. (Dr.) S S Agrawal
Chief Editor

Digital Learning

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“There is incredible potential for digital technology in and beyond the classroom, but it is vital to rethink how learning is organized if we are to reap the rewards”.

– Geoff Mulgan, “Chief Executive of the NESTA”

Introduction

Thinking about a day in daily life without anything digital becomes a great hardship. Digital learning is the key answer to avoid difficulties and to make learning easier. Digital learning has almost changed the education system. Simply it is a way of learning with the help of technology irrespective of the factors such as time, place and path. The time is unbound, which makes learning more effective. The place to learn is also boundless that is, anyone can learn regardless of where they stand. Also, this makes one self-comfortable to learn anything that they crave for. It assists the students to learn beyond their subjects. Moreover, it adds one to gain more knowledge.

Basically, there are a few necessities for digital learning as shown in Figure 1. The requirements are technology, digital content and instruction. Firstly, to make use of the available technology we need some source of internet access and a hardware device. It gives the content that is demanded. Secondly, digital content is sharp quality information in the form of any document or material delivered through the technology. Lastly, despite of this, the guidance provided by the teachers is always important and helps to grow with encouragement.

According to Thomas [1] The world is going beyond what we can actually think. The potential of technology is rapidly blooming everywhere across the globe and it is satisfying that this can be used to do a lot more in the education system.

Need for Digital Learning

The most crucial question arises ‘Why Digital Learning?’ [2] it is said in a quite simple way.

- The availability feature makes it

more important for everyone to make use of it.

- The records of assessments and others are maintained well.
- It helps one to easily understand anything that is unfamiliar to them.
- It keeps us updated with the current development in the world that cannot be done in Traditional method.
- Though the cost is slightly high it seems worthy to be spent to gain knowledge.

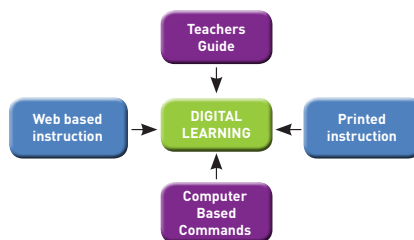


Fig.1: Illustrates the process of Digital Learning

Digital Learning Vs Traditional Learning

Digital learning introduces a different way in the style of learning instead of boring classrooms. While examining the cost as a factor the traditional method in Fig. 2 seems to be more suitable for all. Confirming to [3] there lies a demand for technical knowledge, support before getting into digital learning and not as same as traditional way.

The guidance for any moral support is always higher in case of traditional education. In digital learning the students are habitually connected with the outside world. As there are both pro and cons its Quality it good.



Fig.2: Aged teaching methodology

Characteristics of Digital Learning

The list of features available are

- There is no limit of time. Since it is available 24/7, we can make use of them whenever it is required.
- There is always full freedom to choose the place. This also becomes a great advantage as before this was introduced only in schools and colleges and in particular places the students can learn.
- They even have the liberty to choose their subject or topic in which they are interested in instead of forcing them to Learn something in which they have zero interest.
- They can opt for any language they are most comfortable with to learn the concepts thoroughly.

Why Schools and Colleges should adopt for Digital Learning

- The world has been changing with technology. To get going with the growing world, we must also make some changes within our self.
- The students who are the future changers. This would bring a great development in the education systems.
- Also the teachers and students will be benefited a lot. This

advancement will also lead to the developments in the society.

Some Desired Digital Learning Sites

- a. **meritnation.com** : The school made easy app helps all the students to be an expert in all the subjects and gives the solution for all NCERT questions.



Fig.3: Traditional learning Versus Digital learning

- b. Byjus App – This app teaches all the concepts in a very easy way.
- c. Sololearn App – It helps any person to learn coding ease. They provide help in all the developing programming languages
- d. UDEMY – This guides students to learn anything regarding techniques.
- e. NPTEL – The courses are offered by IIT an IIS. This encourages students to take up online courses not only on the subjects but also on value education.

There is a large number of apps and websites that deal with digital learning. They help students to get smarter and intelligent.

Benefits of Digital Learning

There are a number of benefits of Digital Learning as stated in [4] the main reason why students prefer and enjoy DL.

- Students can learn the topics that are already been taught in the class in case if they are not well known with that with the help of the books, so we can use the advanced technology as shown in Fig. 4.
- Anyone could easily gain any information that they are searching even if they have no idea about what they are dealing with.
- There may be a more number of books one would like to read. But some pull out because they may not be able to afford all the books. In such cases this is a solution as it helps people to read books without

buying.

- They can get trained well under a personal tutor. This will give them individual attention which many are seeking.



Fig.4: Advanced approach towards learning

- This helps one in getting upgraded with any updated information in the world.
- They can take assessments periodically to check how well they have understood any concept, and they can read any books online to improve their skills up to their satisfaction.
- It is more convenient to learn any topic the way one can understand rather than choosing one that makes it burdensome.

Challenges caused by Digital Learning

Every coin has 2 sides as same here too there are some disadvantages.

- It is very essential to maintain self discipline as it is very easy to skip the classes in e-learning and some technological difficulties are also likely to be considered.

- Sometimes it reduces the confidence level when talking to someone in person.
- A very essential aspect is time management. Students lack how they should manage their time.
- Absence of peer support is also a major problem.
- Another drawback caused is security issues.
- As Mortaza said by [5] the students' health is affected in many ways which is an essential factor to consider.
- Students tend to lose contact with teachers. This shortens the motivation and advises that are given by experienced teachers.
- Cost is one more problem that people face.

Conclusion

To sum up we can say it is not easy to live in this generation without a digital support. Digital Learning helps all the students to experience a different way of learning. They get to improve their knowledge in everything. This helps in making a difference in the usual process of education system. Regardless of the time and place factors makes it more suitable for everyone to use them whenever and wherever they want. It has become easier to find the answer to the many y's and solution to many problems and students try to learn some tricks. Students become more smarter and motivated in this way.

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Fig.5: Finest learning system

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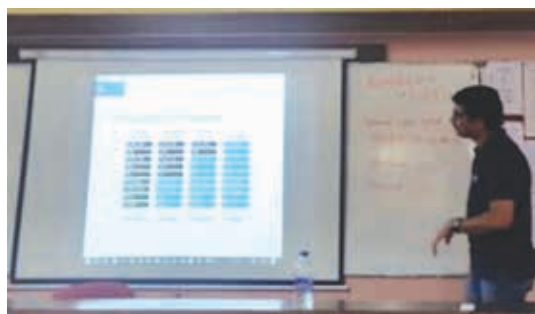
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A REPORT



Workshop on IBM Cloud and Services

15th June 2019 at BVICAM in collaboration with IEEE Delhi Section, CSI Delhi Chapter and IBM India



Bharati Vidyapeeth's Institute of Computer Applications and Management (BVICAM's) IIPC, New Delhi, organized one day workshop on IBM Cloud and Services on 15th June 2019. Event was held in collaboration with IEEE Delhi Section, CSI Delhi Chapter and IBM India. Keynote speaker of the workshop was Dr. Mani Madhukar, Program Manager, IBM India Pvt. Ltd.

Dr. Mani started the workshop by giving an introduction on Cloud Computing with its features of providing on-demand availability of computer resources, related to storage and computing power. Continuing in his talk, Dr. Mani explored features of IBM cloud and facilities provided by it. IBM Cloud is a suite of cloud computing services from IBM that offers both platform as a service (PaaS) and infrastructure as a service (IaaS). With IBM Cloud IaaS, organizations can deploy and access virtualized IT resources -- such as compute power, storage and networking -- over the internet.

In his workshop, Dr. Mani also gave hands-on training on IBM Watson services. Watson is a question-answering computer system capable of answering questions posed in natural language developed in IBM's DeepQA project. One can use Watson for natural language processing, visual recognition and machine learning. He gave a detailed overview on IBM Watson services and product such as Watson Studio, Watson Machine Learning, Watson knowledge catalog etc.

At the end of the workshop participants were awarded with the certificate of participation. Faculties of BVICAM, students and participants from other colleges and Institutes attended the workshop enthusiastically and willingly asked their queries at the end. The entire event was co-ordinated by Dr. Sunil P. Singh and Dr. Imran Khan, Assistant Professor, BVICAM

A Brief Introduction to HR Analytics and Reporting

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In the past few decades, Human Resources (HR) departments of organizations have seen great changes in their nature of work and the way they function. During the socialist era comprising of government run public sector industries and family owned private sector industries, there were departments with names such as personnel and administration, industrial relations and labor relations. Their function was more into creating and enforcing various employee policies based on the inputs from the management. In that era of strong trade unions and frequent disputes and strikes, these departments were more involved in resolving disputes between the unions and management.

Coinciding with the time of liberalization, globalization and economic reforms, there has been a huge growth in knowledge based and technology based companies in the areas of Information Technology and Business Process Outsourcing. A look at Fortune 500 companies shows a number of large technology and software companies making it to the list. The traditional industries have also become highly technology dependent and have huge number of knowledge workers in their workforce. Finance related companies like those in Banking and Insurance domain are one example. Many kind of job profiles that we see now, did not exist three to four decades back.

With this huge change in the kind of industries and the nature of jobs, the employees have become the most important resource and assets of the organizations. The employees are thus being called the Human Resources and the department or function managing the lifecycle of the employees is being called the Human Resources Department. In the current age, the cost of maintaining the workforce

ranges from anywhere between 20% to 50% of the cost of the modern organizations. Also, this is the age of large multi-national corporations with employees and work locations spread across various geographical locations spanning multiple continents. In this context, Human Resource Department is one of the most critical functions of the organization in optimizing costs, aiding in organization growth and achieving the organization goals and vision.

Such a critical function like Human Resource Department needs technology to help them in becoming effective business partner of various other critical functions and departments like Operations and Finance. Various Human Resource Management Software solutions (HRMS) like Oracle PeopleSoft, SAP SuccessFactors, Kronos Workforce Central and Workday HRMS are available in the market for this purpose. HRMS is used to maintain the entire employee life cycle and their records from the time of recruitment till exit or retirement.

In addition to the usual traditional functions like employee and labor relations, the Human Resource Department in the current age performs and manages many functions related to employees such as the following:

- Hiring and Recruitment
- Compensation and various other employee Benefits
- Training and Development
- Rewards and Recognition
- Managing Career Growth
- Compliance to various labor laws and government regulations
- Employee Satisfaction
- Performance and development and appraisals
- Employee Immigration and Visas
- Safety and Health

The above list of functions is just a glimpse of some of responsibilities of

Human Resources Department. Many a time, a single HRMS software may not have the functionality to manage all the various HR functions. Various available commercial software products or custom developed software may be used for managing some of these HR related functions.

A large amount of HR related data is generated by these various software systems used by HR department. This HR data of past and present should be easily available in useful format for various day-to-day functions of HR department. This HR data should also be easily available to the management for getting critical insights for decision making and strategic planning. That is where HR Analytics and Reporting comes into picture. The objective of this paper is to give a brief introduction to this area.

HR Reporting and Analytics

Before going into details, the concepts of dimensions, measures and metrics in context of HR Reporting and Analytics need to be understood. Measures are numerical values like employee count, number of hires, number of exits, salary and revenue on which various mathematical operations like sum, average, maximum, minimum and percentage can be performed. Dimensions are descriptive attributes which are of interest to business and can be used to categorize the measures to answer various business questions. Some examples of Dimensions in context of HR are Organization Structure, Geography, Supervisor and Time. Many of the Dimensions contain Hierarchies which allow for aggregation of data at various levels of granularity. An example is Geographical Hierarchy of work locations at the level of region, country, state, city and work location. Another example is the Supervisor Hierarchy starting from the immediate

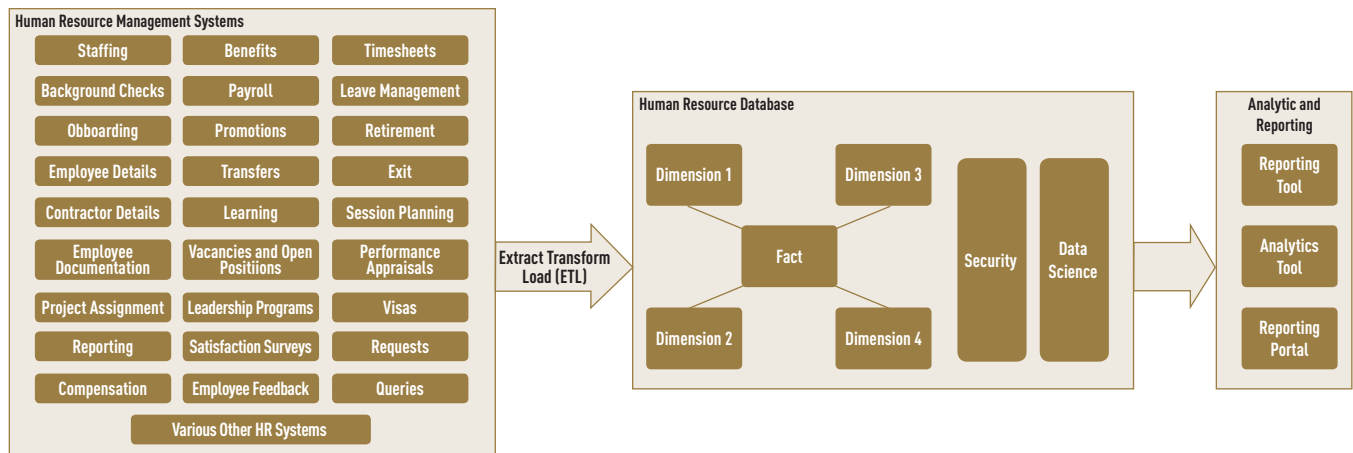


Fig. 1 : Generalized Architecture for HR Analytics and Reporting

reporting manager of an employee and rolling up till the CEO of the company. Another Hierarchy which is not just specific to HR domain is Time. It usually consists of Year, Quarter, Month and Day. Dimensional hierarchies are very useful and powerful aspects of HR Analytics and help in easy analysis by the way of drilling up or drilling down a hierarchy. The key concept in context of HR Analytics is the Metric. HR Metrics are quantitative measurements derived out of measures and key to measure the contribution of HR department to organizational performance. Some of the HR Metrics are Cost per Hire, Employee Turnover, Job Satisfaction Rate, Revenue per employee, Cost per employee and Billable Hours per employee.

For carrying out day-to-day HR operations and follow-ups, the HR executives need to generate various detailed reports. These transactional or operational reports are usually in tabular format with a number of columns and rows of employee data. HR executives usually download them into spreadsheets and do various operations like filtering, adding formulas and lookups on them and then take necessary actions on the respective data. New Hires report, Pending Appraisal Submission report, Birthday and Service Anniversary report are few of the examples.

Then we have something called Descriptive analytics. This allows for study of available HR data to draw conclusions for answering various

questions related to HR domain. These are current and trend dashboards on various areas of HR function. These are in summarized format and show data in various visual formats like summarized tables, bar charts, pie-charts and trend charts. The dashboards allow for various filters to be applied. When detailed information on various data points in the dashboards is required, the drill down functionality to generate the detailed report of the underlying data is also available. Headcount Dashboard, Attrition Dashboard, Staffing Dashboard are few of the examples.

For the advanced HR users and analysts, the functionality to do adhoc reporting and advanced analytics is provided. The data sources with the required HR related fields are created and provided by the IT team. With some amount of training, the advanced analytic users in HR department can generate various visualizations on their own and then publish the dashboards to various users of their department as required. The latest versions of data visualization tools are so user friendly that they provide suggestions about the appropriate type of analytics features to be used based on the type of data source fields selected by the user. Advanced analytics tools even allow for advanced machine learning techniques like clustering to be applied on the selected data. This can be done without understanding the underlying intricacies and complexities of the machine learning techniques. Some of these tools allow trend lines to be

automatically plotted based on the selected numerical measures.

With HR Department climbing up the value chain from a support function to a Business Partner, they need to align some of the department goals to the organization goals. For this, the Key Performance Indicators (KPI) need to be identified and constantly tracked and monitored against the goals. KPIs are the important metrics used to measure performance of a process. Some example of HR KPIs are Time to Hire, Quality of Hire, Return on Investment on Training and Average Time to fill a Job Vacancy. HR Analytics systems provide the facility to track these KPIs and see if the HR Department is progressing in the right direction to achieve these goals. It can be seen that these HR KPIs are directly tied to the strategies related to growth and revenue of the company.

Predictive analytics in HR domain is the usage of Regression and Machine learning techniques on current and historical employee data for the purpose of building models for prediction. Examples are Attrition Forecasting, Talent Forecasting, Workforce planning and Targeted Retention.

HR Analytics Architecture

A generalized architecture for HR Analytics and Reporting as shown in Figure 1 is discussed in this section. The important components and layers are:

- Sources to HR Data Warehouse: The sources consist of various HR systems related to staffing,

background checks, onboarding, employee details, contractor details, employee documentation, project assignment, reporting structure, compensation, benefits, payroll, promotions, transfers, vacancies and open positions, learning, leadership programs, satisfaction surveys, employee feedback, timesheets, leave management, exit, retirement, performance appraisals, visas, succession planning, requests and queries. This is just a representative list of various HR systems. This may vary from organization to organization. Many of these functionalities may be a part of the main Human Resource Management Software (HRMS) system which is in use in the organization. Remaining other functionalities may be catered to by other HR related products and custom built software.

- Extract Transform Load (ETL): The mentioned list of HR source data systems gives an idea of how vast the whole HR system is. These systems generate a huge amount of diverse data corresponding to the employee tenure in the organization. To be able to make sense out of this diverse data and make it useful for HR Analytics and Reporting, the data needs to be properly modelled and stored in the HR Data Warehouse. Data Modelling is an entire subject in itself and out of scope of this article. The data from these different HR systems need to be extracted, transformed and loaded into properly modelled tables in the HR Data Warehouse. ETL tools like Informatica, Talend, Oracle Data Integrator are used for these purpose. The data load from these various HR source systems to the HR Data Warehouse is done at scheduled intervals of time. This scheduled interval is usually daily in many cases.
- HR Data Warehouse: The ETL loads the HR data into the properly modelled database structures in the HR Data Warehouse. The Dimensional modelling techniques

are usually used to implement a Star Schema kind of structure. The Star Schema consists of Fact table having foreign key relationships with a number of Dimension tables. The Fact table consists of the Foreign keys and various numerical measures which can be aggregated. An example Fact table in HR scenario is a table containing foreign keys and measures like employee count and salary. The dimension tables consist of surrogate key, natural key and the dimension attributes and hierarchies. Examples of Dimension tables are Organization Hierarchy, Supervisor Hierarchy, Geographical work location Hierarchy and Time Dimension Hierarchy tables. There can be other simpler dimensions like Gender, Job Band, Ethnicity, etc. The fact will be designed to store current as well as historical data. The amount of history to be maintained in the HR data warehouse would be as per the organization and compliance needs.

- Security: The HR data from the HR Data warehouse needs to be accessible to the HR users and other users as per their assigned security roles. The security roles are determined as per the data privacy policies of the organization and countries from where the organizations operate. This security layer in the HR Data warehouse usually contains some kind of security header and security detail tables. When queries are run on the HR Data warehouse by appropriately joining with the required security tables, only the required amount of HR data as allowable for the role, gets visible to the respective HR analytics and reporting user.
- Data Science Layer: For organizations which are at higher levels of maturity in terms of HR Analytics, the HR data in the HR data warehouse is used by data scientists to come up with models for prediction, forecasting and planning for use cases like attrition, talent retention and headcount

growth.

- Analytics and Reporting Layer: When we talk about HR Analytics and Reporting, this is the layer which is actually visible to HR and other end users. Readily available reporting and analytic products or custom built web reporting portals may be used for this purpose. The commonly used tools available in the market are Tableau, SAP BusinessObjects, OBIEE, Spotfire and QlikView. These allow for running reporting queries and analytics on top of the data in the HR Data Warehouse. These allow for publishing standard reports and dashboards to the HR user community. They also allow for adhoc querying and analysis by advanced users. These analytics and reporting tools usually allow for creation of some sort of metadata layer on top of the Data Warehouse. The metadata layer allows for the end users to be abstracted from the intricacies of the database structures and complex queries run to answer the business questions. The reports and dashboards are made accessible to end users in a secure manner through the web portal that come with the respective Analytics and Reporting tool.

Security

Security considerations are of utmost importance in HR Analytics and Reporting. HR Data Warehouse contains sensitive personal information of the organizational workforce. Strict data privacy and data protection laws are in place in various countries when it comes to personal information. For example, the European Union has the General Data Protection Regulation in place. Since HR Data Warehouse has all the employee personal data of past and present at one place, any lax in correct and strict implementation of data security will have compliance and legal repercussions too. The main idea is to provide access to just the exact amount of HR data to the HR Analytics and report user as dictated and demanded by the role that he or she is performing at the time of usage. Various levels at which the security is implemented is discussed as follows:

- Data Source/ Dashboard/Report level security: Based on the role or security groups to which the HR user belongs, only those specific Data Sources/ Dashboards/ Reports are made accessible to the respective users and user groups.
- Column Level Security: Certain fields like Ethnicity and salary are very sensitive and the access to the same is provided to a restricted set of HR users. Other users will not be able to see these sensitive fields though they may be able to see the data source.
- Row Level Security: This aspect has already been briefly touched in the HR Analytics Architecture section. Even if a HR user has access to a HR dashboard, the data that he sees in the dashboard should be as per the organization policies. For example, a reporting manager should be able to see the data corresponding to only those employees who report to him. A location manager should be able to see only the necessary employee data corresponding to his location. Similarly, the head of

a business unit should be able to see the data corresponding to the employees of his business unit. This is implemented by the way of row level security. Any query run against the HR Data Warehouse by the user from the front end HR Analytics and Reporting tool will automatically get joined with the security tables in the Data Warehouse. This restricts the amount of retrieved data as per the security policy that applies to the respective user role.

Conclusion

In this knowledge based economy, organizations have rightly realized that employees and the knowledge and skill that they possess, are the most important asset. The value of Human Resource Asset can be summarized by the following quote: "Our assets walk out of the door each evening. We have to make sure that they come back the next morning". Retention of right talent, managing attrition, employee satisfaction, employee development and employee costs are very important

for organization sustenance and growth. As a business partner, HR Analytics and Reporting is a very important and indispensable tool in the hands of HR department to perform their activities. Without the insights gained from the HR Analytics and Reporting tools, the HR department cannot contribute effectively to the organizational goals.

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Role of Virtual Reality in Surgical Simulation – A Digital learning Strategy in Healthcare

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Digital learning- An introduction

Digital learning is a practice that utilizes technology efficiently to reinforce the real-time learning experience through instructional practice. It enhances the learning methods and make it easier and clear for learners to comprehend their thoughts. It provides high training quality, access to challenging equipment, feedback at all times through formative evaluation and learning opportunities. It includes many different tools and applications to support and empowering teachers and students. This technology's outcome will be used by teachers for their professional learning possibilities and student's personalized learning experience. Figure 1 shows the future digital learning instruments accessible to learners and management.



Fig. 1: Future Digital Learning Platform [1]

Digital Learning Strategy – An Overview

Traditional training in the classroom is just impractical and boring. Digital learning strategy comprises digital resources like online courses, videos, articles, blogs etc and a vast range of practices such as blended learning, adaptive learning, e-textbooks, learning analytics, mobile learning, e-learning, badging and gamification, classroom technologies, augmented reality, virtual reality etc. Adopting personalized learning for learners using digital learning is a main

factor in assisting individuals to merge learning with work for future learning. A personalized learning plan for students is shown using Fig. 2.



Fig. 2: Personalized student learning plan [2]

Introduction to Virtual Reality

Virtual Reality (VR) is a simulated environment that is similar or entirely distinct from the actual world. It is created with the help of software and presented to the user as a real time working environment. Currently VR uses multi-projected environments, VR headsets to create realistic images,

noise and physical presence of a user in a simulated real time environment. An individual can view, interact and move around virtual elements with an artificial reality devices. This reality impact is generally produced by VR headsets composed of a tiny front-eyed, head-mounted display but can also be produced through specially designed rooms with several big screens. Figure 3 display the VR headsets using virtual reality technology. Graphical virtual reality environment for gaming is displayed using figure 4 as an example.

Virtual Reality- Real time application



Fig. 5: Virtual Reality Infographic elements [5]

Virtual reality applications can be used over different fields such as Military, Health, Fashion Design, Sports, Media entertainment, Telecommunications,



Fig. 3: VR headsets using Virtual Reality technology [3]



Fig. 4: Virtual Reality Environment for Gaming [4]

Constructions, Engineering, Scientific visualization, Language programming, Education and Film industry. The infographic elements of virtual reality is displayed using Fig. 5.

Role of Virtual reality in Health Care

Health care is one of the great adopters of virtual reality. Different healthcare organizations are making progressive use of VR in the treatment of therapy, diagnosis, medical marketing, phobia treatment, surgical simulation, skills training and robotic surgery. These applications are slowly gaining popularity and many healthcare organizations are now implementing and recognizing them. Figure 6 illustrates how VR technology is applied to the human body using VR headsets. The role of virtual reality in surgical simulation is discussed in this article.



Fig. 6: VR technology is applied to the human body using VR headsets [6].

Surgical Simulation using Virtual Reality

Surgical Simulation is a specialty of Medical Simulation, where learners as well as specialists teach and guide recent surgical findings through the use of modern surgical simulator techniques. This kind of simulation plays a crucial role in preoperative planning and surgical preparation, ranging from modest suture exercise for a single student simulations to robotic surgery for a full interprofessional surgical team. There is a huge demand to reinforce these technique by which physicians can learn new emerging procedures. Proper education in current medical and surgical procedures is often outstripped by the need for physicians to integrate a procedure into their practice. Fig. 7 shows the image for surgical simulation.



Fig. 7 : Image for Surgical Simulation [7]

Conclusion

Digital learning is a type of teaching that allows learners to regulate the place, moment and route through the technology. This increases the learner's critical thinking abilities, effectiveness, and productivity. Virtual reality can be used to simulate how machinery responds, emulate the operation of equipment, or to replicate soft skills such as human behavior and deeds. The emergence of virtual reality has converted surgical simulation by creating a fresh atmosphere in which people can master their manual skills and abilities without compromising patient safety.

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Introduction and Initiatives of Digital Learning Schemes in Indian Higher Education

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1. Introduction

In Indian Higher Education Sector, development of basic infrastructure is governed by Ministry of Human Resource Development (MHRD), Government of India. This body currently focuses to improve the quality of Higher Education by including various Digital Learning initiatives through colleges, universities and cluster centers. The main motive of expansion in Higher Education Sector is to improve the rate of Gross Enrollment Ratio (GHR) to 30% by year 2020 which was 21% in year 2017. However its expansion will require large human resources and physical infrastructure which is fortunately leveraged by the fast expanding IT facilities in terms of Digital Learning. Digital Learning is a kind of learning where instructional practices are delivered by the use of technical tools and is quite different than online kind of learnings. The power of Digital Learning is to help student base to understand concepts in better way and more quickly than traditional learning methods. Digital Learning gives emphasis on keeping the balance between theory and applications and helps students to engage themselves more readily to generate valuable output.

2. Types of Digital Learning Resources

The inclusion of Digital Learning resources improves quality of teaching methods to greater extent if used appropriately. There are five types of such resources available which can be used for benefitting teaching practices and learners as well. These are shown in Fig. 1.

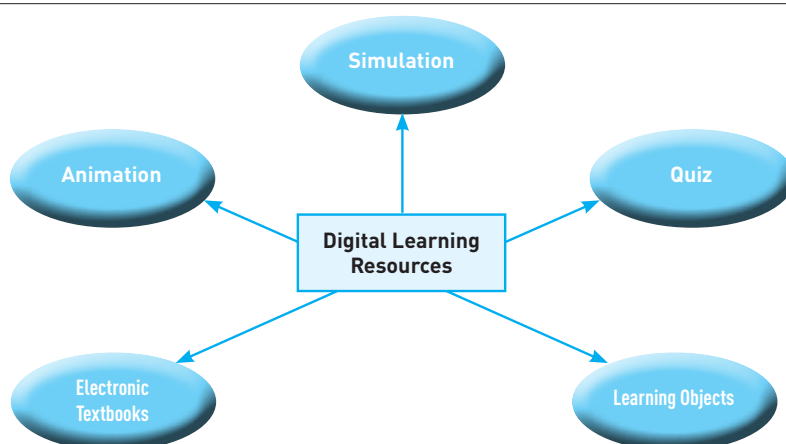


Fig. 1: Various Types of Digital Learning Resources

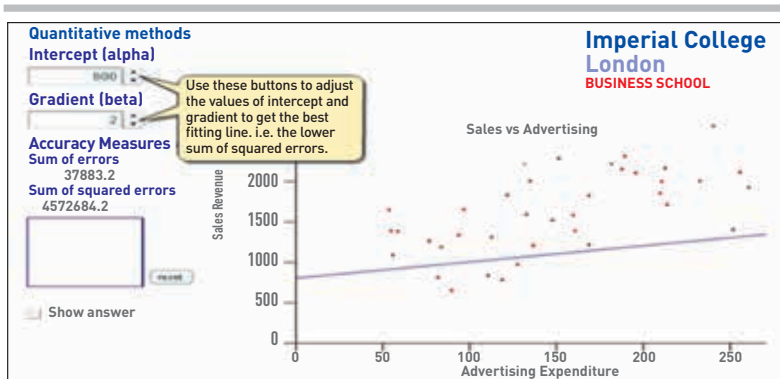


Fig. 2 Simulation Example for Explaining Qualitative Methods
(Retrieved from Flexible Learning)

2.1 Simulation

This is one of the digital learning resource which helps teachers to explain instructional practices dynamically and helps learners to test their ideas without going for actual experiments. The example of simulation is shown in Fig. 2.

2.2 Animation

This type of Digital Learning resource helps in demonstrating teaching practices which are difficult to show in two dimensional planes. Animations usually make learners to understand the concepts step by step in dynamic intervals. The example of

animation demonstrating teaching practice is shown in Fig. 3.

2.3 Quiz

This type of Digital Learning resource helps the various learners to test their understanding about the various concepts and thus help them to gain visibility of the percent of actual understanding. An example of quiz for testing learning and getting feedback related to it is shown in Fig. 4.

2.4 Electronic Textbooks

Electronic Textbooks are also known as Digital Textbooks or e-textbooks. The concept of Digitalization in textbooks have reformed the education sector to greater extent and offers various books at very low costs and update them in new versions without printing on papers. Many countries around the globe have made digital textbooks compulsory at college and school level. All textbooks in South Korea were digitalized in 2015 [1].

2.5 Learning Objects

Learning Object Resources are called as digital entities which are primarily used for Training and education [2]. Learning Objects are basically a new form of learning content where content is self-contained, reusable and can be aggregated with metadata easily.

3. Digital Initiatives in Indian Higher Education

The various schemes launched under Digital Initiatives in Indian Higher Education are listed in Fig. 5.

3.1 Study Webs of Active learning for Young Aspiring Minds (SWAYAM)

SWAYAM is an Indian Massive Open Online Courses (MOOCs) platform which has been launched by MHRD in collaboration with All India Council for Technical Education (AICTE) for the betterment of quality education which must be accessible anywhere, anytime and by anyone using Information Technology Tools. This initiative is covering courses meant for school, college and university courses and is capable of hosting around 2000 Courses with learning of 80000 hours. The courses available on this platform are free of cost for learning and are delivered by the best teachers around the country.

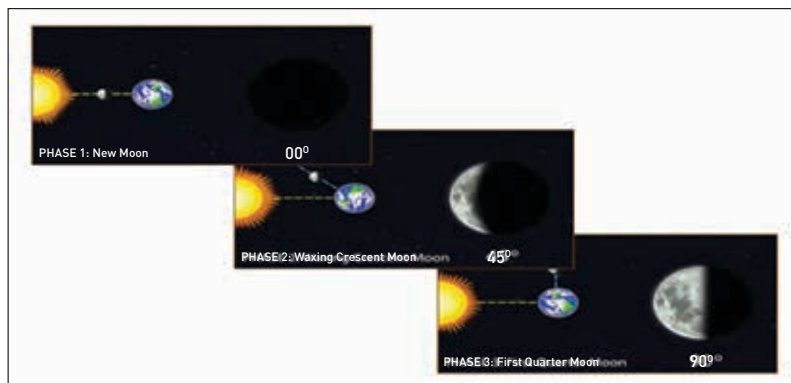


Fig. 3 : Animation Example of Phase Angles in Understanding Visuals of Moon

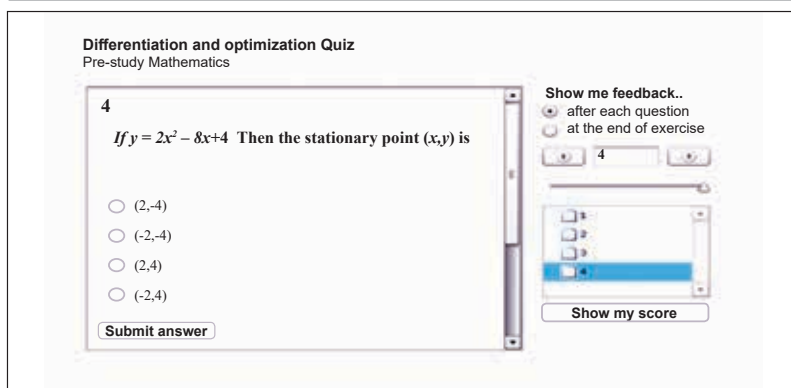


Fig. 4 : Quiz Example for Testing Learning and Gaining Feedback

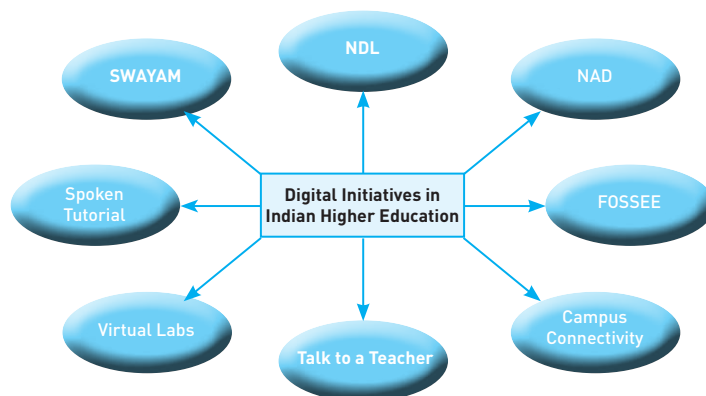


Fig. 5 : Digital Initiatives in Indian Higher Education

3.2 National Digital Library (NDL)

NDL is the initiative launched by MHRD under its project of National Mission on Education through Information and Communication Technology (NMEICT). This project contains a repository for learning which virtual one is where searches are done in single window only. NDL repository contains learning material in terms of audios, videos, lectures and

textbooks. The beauty of this project is its availability of content in all Indian languages. Moreover this project supports special type of devices for learning of differently-abled people.

3.3 National Academic Depository (NAD)

NAD is the initiative launched by MHRD to facilitate various academic awards issued by academic institutions. The main motive of this initiative is to

bring the concept Academic Digital Certifications a reality for every Indian citizen. This initiative promises to replace the physical certificates in terms of paper with Digital ones.

3.4 Virtual Labs

Virtual Labs initiative does not require any physical infrastructure to conduct various kinds of experiments on user side. This initiative is quite helpful in those kind of platforms where availability of physical infrastructure is not possible. Under this initiative any two institutions can share costly equipment's for the enhancement of knowledge and skill. So far, 205 number of virtual labs are operational with 1515 number of experiments to be accessed by 600000 students. For more details one can visit <http://vlab.co.in/>

3.5 Campus Connectivity

This project is launched by of National Mission on Education through Information and Communication Technology (NMEICT) to leverage Information Technology in learning and teaching processes. Under this project, 25000 colleges and 2000 polytechnic colleges are aimed to get benefit of 20 broad bands of 512kbps speed and 419 universities to be provided with Optical Fiber with 1 Gbps of speed. The campuses are required to be WiFi enabled under Digital India Scheme and

it already is covering all IITs, NITs and IIMs.

3.6 Talk to a Teacher

This initiative was developed by IIT Bombay funded by MHRD for providing access at free of cost to various courses of graduate and postgraduate level taught by eminent professors at IIT Bombay. Under this project virtual classrooms are provided to faculty by using A-View tool which is developed by Amrita University. 80000 teachers have been already trained so far under this project for the delivery of various courses.

3.7 Free and Open Source Software for Education (FOSSEE)

This project was sanctioned in IIT Bombay and its main motive is to promote the use open source software's in educational institutions. The promotion is done in terms of documentations, spoken tutorials, conducting workshops and conferences. 2000 college level teachers and students have already participated under to project to make it success. FOSSEE team uses various open source toolboxes like MATLAB and hardware projects like Arduino to train students across the country.

3.8 Spoken Tutorial

This initiative was launched by MHRD for learning various Open

Source Software's from any place and at any time. In this project, open discussion forums are available where you can start any new discussion and get lot of replies from Spoken Tutorial Community. These forums support posts where one can attach files from computers as well.

4. Conclusion

The inclusion of Digital Learning is helping students, especially ones in remote areas, in learning new technologies and quality education without making physical presence in classrooms. Digital Learning based education is available all time and at any place without any constraints. Digital Education is much cheaper and enables students to save time and various hidden costs in terms of transportation and maintenance fee. Digital Learning India programme will surely transform India into knowledgeable and empowered country.

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An Introduction to Pervasive Biomedical Informatics

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I. Introduction:

In recent times a lot of smart technologies have been developed worldwide to make the world smarter. There are different scopes of development where smart e-healthcare is one of the most concerned topics among them. To make the world health healthier and more manageable we should think about it in more depth technically [1], [2].

II. Coining a new term:

Pervasive Biomedical Informatics (PBI) is a novel domain of research that is combined of pervasive computing, biomedical engineering and informatics. In this article we coin the "Pervasive Biomedical Informatics" to design and imply a new area that could bring a new horizon in smart healthcare system. To know about this term first we should know about each part of this term. Pervasive means anything at anytime, anywhere. It helps to make effective communication in every useful device like laptop, mobile or smart devices by using computational method to minimize the need of interaction with computer. Pervasive computing devices are network connected and constantly available. Pervasive computing is energy constraint, consumer safe and logistics [3]. It is widely applied in healthcare system. Biomedical Engineering is the field where the engineering principles are applied and design concepts to medicine and biology for healthcare purposes. In this context, the informatics would involve processing, analytics, management, and prediction of clinical or pervasive biomedical data. Further, Internet of Things (IoT), big data, and machine learning (ML) shall be incorporated within this proposed field of PBI to enhance the qualitative and predictive measures of aforementioned pool of data. This proposed applied field

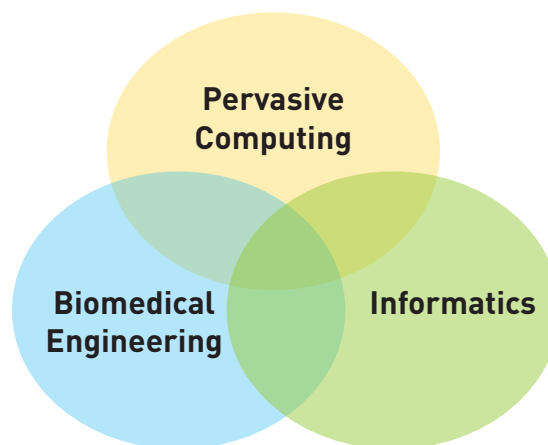


Fig. 1: Three major fields of Pervasive Biomedical Informatics

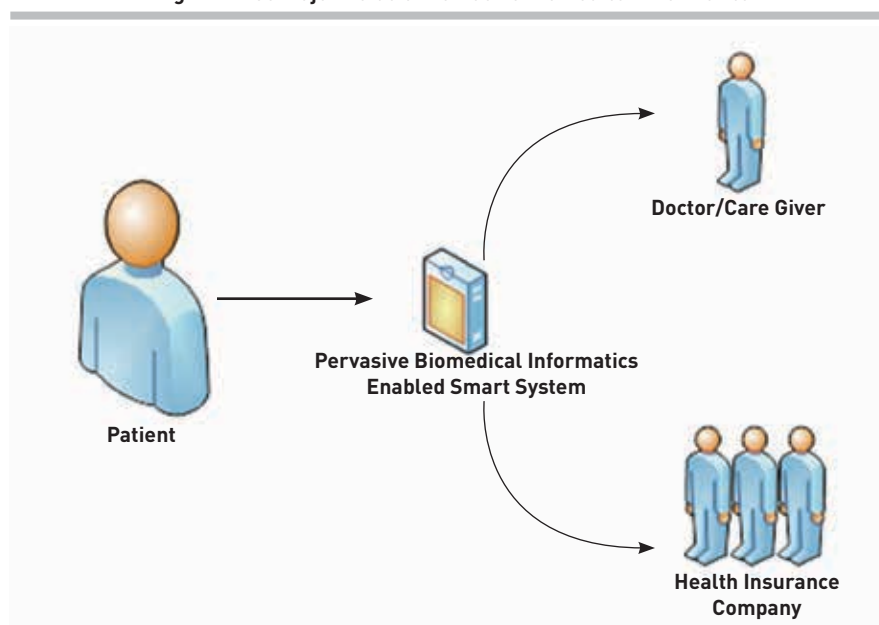


Fig. 2: A schematic representation of Pervasive Biomedical Informatics system

shall establish the interaction between humans and information alongside the construction of interfaces, organizations, technologies and systems.

III. Objectives:

We are trying to make these three fields come together for the sake of healthcare[4], [5]. The aims of this proposed area are a) to make health

awareness among the individuals through high quality information processing system, b) make the resource constraint and low time consuming system, c) use of easily accessible devices like low cost smart devices, mobile, laptop, d) to predict the health condition of a patient by using data science, machine learning and telecommunication and alarming the doctors or care givers for taking necessary action [6], [7]. The main reason to coin this area to make a smart healthy society. It may improve the whole infrastructure of healthcare system.

IV. Possible applications:

A glucose monitoring device can be used as a PBI enabled smart system. The working principle of this device works biomedically that means this device can monitor the blood glucose level by using the biomedical kit strip by self-help [8]. If this device is being improvised with machine learning process and incorporated with data science interpreter system then this biomedical device may act as pervasive computing device along with information processing capability. When the patient or the smart user constantly monitor his/her blood glucose level then each output will be saved in data processing center of that monitoring device [9]. Those real-time blood glucose level data through a year or more or less will be processed and analyzed accordingly. This system shall predict the upcoming health condition and shall aware the patient as well as the connected doctors about the condition if necessary. If the condition needs serious health checkup

and surgery then the interconnected health insurance company also get informed which may assist the condition economically [10], [11], [12]. Hence, a complete health care can be monitored and possibly cured through Pervasive Biomedical Informatics. This new field will definitely enlighten us towards the smartest healthy society [13], [14].

V. Conclusion:

This is the new genre of healthcare society which involves pervasiveness along with biomedical applications and data informatics. If this three fields can successfully come together then it may help the whole society to keep healthy and aware.

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A Framework for Next Generation Digital Learning Environment

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The Next Generation Digital Learning Environment (NGDLE) is considered as a ecosystem - a learning situation comprising of learning apparatuses and segments that stick to normal guidelines. While the customary Learning Management System (LMS) gives regulatory capacities, the NGDLE is planned to straightforwardly bolster learning. To do this, cutting edge situations must address five measurements: (i) “interoperability and integration (ii) personalization (iii) analytics, advising, and learning evaluation (iv) collaboration (v) accessibility and universal design”. The NGDLE is considered as both an ecosystem and an outlook that will enable understudies (students) and teachers to profit by the full scope of improvements in advanced education.

1. Introduction

Educational technologies in the 21st Century Educational technologies are increasingly commonplace and expected in formal learning environments. In addition to traditional multimedia like videos and audio, these technologies now allow for students to interact with these environments, providing much richer learning experiences. As these technologies continue to evolve and become more sophisticated, it will have profound implications for formal education environments. One of the most pressing of these implications is what these technologies will mean for the relationship between the student and the teacher. As technology continues to impact on the ways in which students learn, it is also, and will continue to impact on the ways in which teachers and students interact with each other and with content.

The emergence of new technologies has raised questions about what the impact on education will be since the invention of the printing press. What is perhaps different about the trends emerging in the 2000s and 2010s is that information and knowledge is no longer predominantly the domain of institutions. Even after the Gutenberg’s invention made books available to the masses, the majority of these books were still to be found within university, monastery, or library walls. It was also only possible to carry a certain number of books around, as anyone who attended school in the 20th Century can attest. The capacity to both access and store vast (practically limitless) information in mobile devices is a change that is fundamentally different to those that have come before. Students in higher education contexts are constantly connected and are interacting with each other and with content using mobile devices. These trends raise questions about how these devices influence the ways in which students acquire, store, update, and use information and knowledge. Figure 1 shows the LMS as a component of the network.

effective adaptive environments are resulting in an evolution in digital and emerging technologies. Data and analytics are being used in ever more sophisticated ways to track students’ progress, predict their learning trajectory and inform interventions. These developments have allowed much more targeted and personalized learning experiences which support the development of learning complex concepts and ideas, not just procedures and declarative facts. The field of learning analytics, for example, has grown rapidly since the first Learning Analytics and Knowledge (LAK) conference in 2011. Learning analytics innovations are focused on collecting and analyzing data generated about, for and from students about various aspects of their learning. This includes audit trail data generated as students interact with digital environments, personal data about who they are, what their preferences might be and data about their knowledge and abilities generated through assessment.

Technologies that are and will continue to impact on education need to be built on a foundation that includes a deep understanding of how students learn. Without this, the kinds of technologies available will struggle with facilitating learning beyond procedural domains or simple adaptations that treat all students as the same on the basis



Fig. 1: The next generation digital learning environment - LMS

1.1 Data, analytics, and their impact on learning and learning environments

The growing use of data, sophisticated algorithmic work and increasingly accessible and cost

of observable behavior rather than the underlying cause. It will also be difficult to determine what role the teacher will need to play working alongside these environments. The science of learning will contribute here in two ways. First, the capacity for conducting laboratory-based experiments leads to increased confidence that different kinds of conditions and interventions cause specific outcomes. Second, and perhaps more importantly, if these technologies are to fulfill their potential, the science of learning will help to better understand individual differences. With learning scientists, designers, data scientists and developers working together with teachers, it is possible that the potential of adaptive educational technologies will finally be realized after what seems like decades of promise.

2. Evolution of digital learning environments

Education institutions, similar to all administration associations in the computerized data time, must look for each mean to upgrade nature of administration conveyance and drive proficiency and cost-reserve funds. At the end of the day, the voyage for the advanced change in training should prompt a more extensive vision that empowers steady development and upgrade of instructing and learning; it should likewise improve the operational

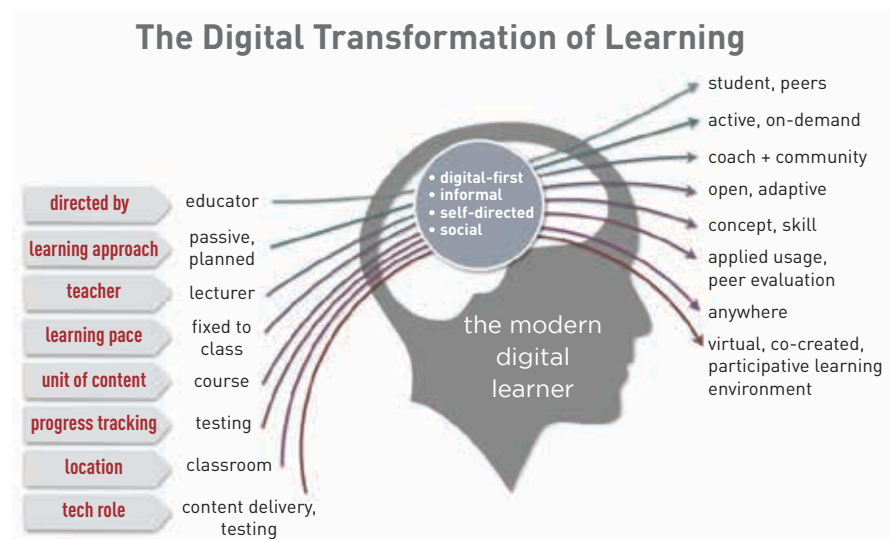


Fig. 2: Digital Transformation of learning – The Modern Digital Learner

efficiencies of managerial and the board administrations for understudies, instructors, and the network.

Historically, education institutions received advanced innovation to acknowledge enhancements in the productivity of school authoritative procedures, for example, booking classes, overseeing spending plans, following understudies, diminishing operational expenses of vitality in structures, upgrading wellbeing and security, and giving data apparatuses to staff, scholastics, understudies and

scientists.

Ground breaking educational organizations is currently observing the intensity of innovation to change the learning condition, blending the physical with the virtual, and acknowledging better understudy results. These organizations comprehend the present change elements and are moving quickly to improve and change their plans of action, recognizing the advancing job of workforce, understanding the necessities of the understudies of things to come, and analyzing their instructive conveyance procedures.

3. Key Challenges Observed in most Traditional Learning Environments

The developing accentuation on a culture of proof is reflected in this development of scholarly innovation. The calling is moving past the beginning times of giving "novel" usage and arbitrary demonstrations of advancement. As scholarly technologists, we are progressively expected to turn out to be increasingly methodical and intelligent in our ways to deal with changing and evaluating educating and learning. We are likewise building up a more extravagant comprehension of learning and how to help our grounds constituents. Because of the current instructive condition, Advisory Committee for Teaching and Learning (ACTL) distinguished the accompanying 10 significant educating

E-LEARNING MODELS	CHARACTERISTICS OF MATERIALS AND SUPPORT TECHNOLOGY
FIRST GENERATION (1980s) Model centered on materials	<ul style="list-style-type: none"> – Contents in paper format – Digital content reproducing books – Audio Conferencing – Video Conferencing – Instructional Software
SECOND GENERATION Model centered on the virtual classroom (199s and early 2000s)	<ul style="list-style-type: none"> – Virtual Learning Environments – Video Streaming – Online materials – Access to resources on the Internet – Beginning of interactivity: e-mail forum
THIRD GENERATION Model centered on flexibility and participation (Late 200s)	<ul style="list-style-type: none"> – Specialized online content, also generated by students – Reflection (e-portfolio, blogs) – Very interactive technologies (games, simulators, online visualization) – Online learning communities – M-learning (mobile learning)

Fig. 3: Evolution of educational models, materials and support technologies

(Source: UOC, 2009, p. 18)

and learning issues:

1. Establishing and supporting a culture of proof
2. Demonstrating improvement of learning
3. Translating learning investigation into training
4. Selecting fitting models and techniques for e-learning
5. Providing devices to meet developing understudy desires
6. Providing expert improvement and backing to new crowds
7. Sharing substance, applications, and application advancement
8. Protecting institutional information
9. Addressing rising moral difficulties
10. Understanding the developing job of scholarly technologists

4. The Role of Technology in the digital transformation of education

Current innovation has saturated the classrooms and re-imagined the whole educating and learning process, bringing about strong learning condition. In this segment, we present the best 4 technological trends that are molding the study halls of things to come.

(i) Personalized or customized learning experiences

With the approach to meet learner's needs, availability, and preferences, the personalized learning has come onto the scene to initiate custom e-learning and teaching methodologies.

Learning platform, programming and computerized gadgets are as one making incalculable better approaches to modify education. For instance, educational infrastructures are furnishing their understudies (Students) with computerized gadgets like PCs, laptops and tablets.

(ii) Innovative Learning (game-based, mobile-based, and video-based)

Interactivity adds attraction and attention to the learning process. With the bored talk-chalk method, learners are losing their abilities to learn, understand, and to grasp. This innovative trend of learning catches learner's attention by delivering educational truism in the form of videos, games, etc., to make difficult learning



Fig. 4: Top 4 Digital Transformations in the Educational Technology

concepts enjoyable.

Similarly, Mobile-based learning offer learners the flexibility to access educational content seamlessly across multiple digital devices with their convenient.

(iii) Artificial Intelligence (Speech-to-text Option)

The role of AI in educational technology is unpredictable. This technology doesn't aim to replace teacher, only to provide personalized learning (which I have discussed above), so that learner can use the most of it.

Likewise, AI possess Speech-to-text feature which is available in vast range of digital devices, as found in Apple's Siri which is equipped with Natural language progression. They have the human like capabilities and are no longer limited to aspects like speech recognition, problem-solving, helping students in note taking and writing even more comfortable and fast-paced.

(iv) Usage of Virtual, Augmented and Mixed learning experiences

Advances of Augmented Reality (AR), Mixed Reality (MR), and Virtual Reality (VR) have opened new doors towards learning assets. These advances help understudies to adapt more successfully than conventional homeroom techniques by conquering language boundaries and pleasing visual students.

This technological trend offers immersive learning solutions not only to teaching professionals, but also to doctors, dentists, surgeons, etc. With the approach of AR, VR, and MR,

"students feel immersed in audio, video, gaming and other forms of content created via these technologies". This digital transformation maximizes the eLearning portfolio and gives new pace to educational sectors.

5. Digital Transformation in Education – A Framework

While there are numerous ways training foundations can take to change, there are some key structure rules that are basic for all pioneers to consider as they hope to fabricate a progressively powerful arrangement and guarantee effective execution through the real market advances they are encountering. From characterizing a dream, recognizing holes to giving a binding together innovation building structure- and a complete arrangement of arrangements that address these holes - this system will help instruction organizations change four noteworthy measurements: educating and learning, organization and the board, wellbeing and security, and research and information.

(i) Vision and leadership (Engage)

The beginning stage is the advanced vision building process, to set up a procedure for the fate of the establishment and an unmistakable comprehension of the bearing to take, as far as computerized activities.

The advanced vision should explain the establishment's future state: "What are the most significant and important zones of core interest? What kind of experience might you want to convey for understudies, workforce, and staff, both

on and off grounds? A solid vision will enable all partners to adjust around a key topic, for this situation, the change of conventional and physical figuring out how to powerful, captivating, virtual learning conditions, where the physical and virtual combine for most extreme advantage of understudies, workforce, staff, and the network”.

Also, authority, money related building and responsibility are fundamental parts of computerized change achievement.



Fig. 5: Digital Transformation in Education - Framework

(iii) Culture (Interact)

To guarantee the fruitful usage

of computerized change activities and the reception of cutting edge inclining conditions by instructors, staff, and understudies, a profound and educated way to deal with advanced culture must be at the core of the foundation. The beginning stage ought to be the creation and advancement of a culture where teachers, workforce, and staff use innovation apparatuses on an everyday premise to pick up the genuine advantages of coordinated effort empowered procedures and to good example the utilization of these advances for their companions.

(iii) Process and methodology (Run)

The way toward changing learning conditions should concentrate on making the correct abilities for instructors to embrace successful showing approaches and development that put the student at the core of learning process—regardless of whether commitment is eye to eye, at a separation, or through mixed learning modes. These incorporate cooperative information and learning procedures that cultivate creative ways to deal with enable students to create key skills and prevail in the 21st century: “flipped learning, versatile learning, venture based learning, and customized adapting, just to make reference to a couple”. New innovation causes it

conceivable to make situations where understudies to get what they need, when they need it.

(iv) Technology

Innovation assumes a key job in empowering better approaches for learning as well as in building up new plans of action required to drive the very change that training foundations are attempting to impact. The present understudies request dependably on access to the system, assets, and data expected to acknowledge achievement.

6. Summary

The adventure toward the digital transformation in training is subject to a more extensive vision and an organized system for usage of those needs to upgrade the quality and development in instructing, learning, and research while improving operational productivity of organization and the executives. The compelling reception of new advanced advances and methodologies will make training progressively pertinent, connecting with and inspiring for students, empowering quicker time to authority. In any case, teachers must execute these new advances in a manner that changes learning situations, making progressively virtual open doors for understudies, and blending the physical with the virtual.

About the Authors



Dr. S. Balakrishnan [CSI-2060000034] is a Professor and Head at Sri Krishna College of Engineering and Technology, Coimbatore, Tamilnadu, India. He has 17 years of experience in teaching, research and administration. He has published over 15 books, 3 Book Chapters, 12 Technical articles in CSI Communications Magazine, 1 article in Electronics for You (EFY) magazine, 3 articles in Open Source for You Magazine and over 100 publications in highly cited Journals and Conferences. Some of his professional awards include: 100 Inspiring Authors of India, Deloitte Innovation Award - Cash Prize Rs.10,000/- from Deloitte for Smart India Hackathon 2018, Patent Published Award, Impactful Author of the Year 2017-18. His research interests are Artificial Intelligence, Cloud Computing and IoT. He has delivered several guest lectures, seminars and chaired a session for various Conferences. He is serving as a Reviewer and Editorial Board Member of many reputed Journals and acted as Session chair and Technical Program Committee member of National conferences and International Conferences at Vietnam, China, America and Bangkok. He has published more than 6 Patents on IoT Applications.



Dr. D. Prabha is an Associate Professor in Department of Computer Science and Engineering at Sri Krishna College of Engineering and Technology, Coimbatore, Tamilnadu, India. She has completed her Under Graduate Studies and Post Graduate Studies in Computer Science and Engineering. She has received her Ph.D in Information and Communication Engineering from Anna University, Chennai in the year 2014. She is presently guiding 8 Ph.D. research scholars registered under Anna University, Chennai. Her research interests include Data Mining, Big Data Analytics and Soft Computing. She has published several papers in premier indexed journals. She is serving as a Reviewer in IEEE Transactions on Cybernetics journal, Springer's International Journal of Machine Learning and Cybernetics Journal and Taylor & Francis's Journal of Experimental & Theoretical Artificial Intelligence.

Indian Government's Initiative for Digital Learning

► **Ashish Agrawal and Gargi Agarwal**
Assist. Professor, SRMSCET, BLY

From the dawn of the civilization to the present day, learning has been an imparted activity in human's life. Learning made human to make their life better day by day. In India, learning was started with the sacred name like center called "Gurukul" then this shifted to schools, ashrams, universities etc. But as the time passed, the method and technologies for making learning process better also evolved. In today's digital era, learning is no more a classroom based chalk and duster learning, its now more than this and become "digital learning".

The govt. Of India has taken lots of initiatives to make digital learning effective and started various MOOCs (Massive Open Online Courses). At the University of Prince Edward, Canada, Mr. David Cornier coined the term MOOC in 2008 and it becomes popular mode of learning in 2012. MOOC is the online course aimed at providing open access world of knowledge and inspiration. There are various MOOCs in India and Abroad like- NPTEL (India), WIZIQ (India and USA), Open2 Study (Australia), Course Era (USA), Udemy (USA), edx (USA) etc. The difference between early MOOCs and later MOOCs are-

- **Early MOOCs-**
 - Open access,
 - Open licensing of Content,
 - Reuse and Remaking of Resources.
- **Later MOOCs-**
 - Closed licenses for the course
 - Free course

Digital Learning in India

Like MOOCs Indian Govt. has developed a platform for digital learning known as "Swayam Prabha" for the student of all age groups. The tagline of Swayam Prabha is "Free DTH Channels for Education".

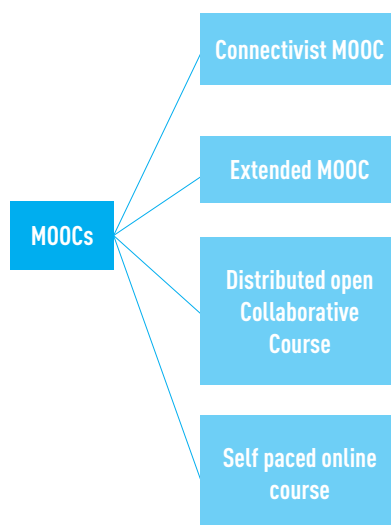


Fig. 1: Types of MOOCs

Swayam Prabha is

- Launched by Hono. Shri Pranab Mukherjee on 9 July 2017.
- A group of 32 channels devoted to telecasting of high quality knowledge and information Enriched educational Programmes.
- 24x7 based platform
- All the programs are telecasted through GSAT-15 Satellite
- The information and library network centre (INFLIBNET) maintains the web portal of Swayam Prabha.
- Two transponders in GSAT 15 Satellite been allocated by department of Space.
- An Amount of 68.40 crores has been allocated for a period of three years.
- Bhaskaracharya Institute for Space Application and Geo Informatics (BISAG) and Electronics cooperation of India (ECIL) would be responsible for setting up the required infrastructure to run it.

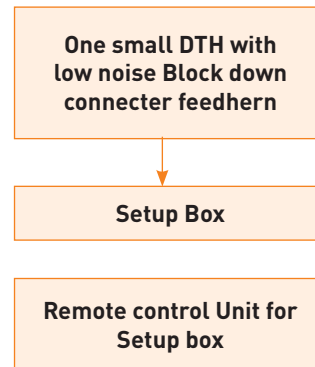
The 32 Channels(C) of Swayam Prabha

- C 1: This channel provides the content on language and literature
- C 2: This channel provides the knowledge of arts, history, philosophy based subjects
- C 3: This channel is mainly for Sociology, Political Science and related subjects
- C 4: This channel is responsible to provide Education, Psychology, Home Science and related subjects
- C 5: This channel contain management related subjects like - Library Science, Information Science and related subjects
- C 6: This channel provides the knowledge of legal subjects like Legal Studies, Rights
- C 7: The purpose of this channel is to provide the knowledge of financial subjects Commerce and Finance
- C 8: This channel basically helps to have the knowledge of PCM related subjects
- C 9: This channel basically focus on science subjects to study about plant and animals (zoology and botany)
- C 10: This channel provide the content Applied Sciences, Allied Physical and Chemical sciences and related subjects
- C 11: This channel is based on Chemical Engineering subjects through NPTEL
- C 12: This channel provides the Knowledge of Civil engineering subjects through NPTEL
- C 13: This channel provides the knowledge of computer science engineering subjects through NPTEL

- C 14: This channel provides knowledge of Electrical and electronics engineering subjects through NPTEL
- C 15: This channel provides knowledge of basic engineering subjects through NPTEL
- C 16: This channel provides the content of Humanities, Social Sciences and Management through NPTEL
- C 17: This channel provides the knowledge of mechanical engineering subjects through NPTEL
- C 18: This channel gives the knowledge of Mathematics, Physics, Metallurgy and related subjects
- C 19: This channel is for biology subject
- C 20: This channel is for Mathematics subjects
- C 21: This channel is for chemistry subjects
- C 22: This channel is for physics subjects
- C 23: This channel is for Liberal Arts and Humanities
- C 24: This channel is for Agriculture, Vocational and Allied Sciences
- C 25: This channel is for D.El.Ed (Regional Language)
- C 26: This channel is for State Open Universities' programs
- C 27: This channel basically focus on secondary school education
- C 28: This channel basically focus on higher secondary school education
- C 29: This channel is for PG Subject's & YOGA

Higher Education	<ul style="list-style-type: none"> Graduate / Postgraduate Course Content Certification ready through SWAYAM
School Education	9-12 th Class
	<ul style="list-style-type: none"> Indian learners in India and Abroad (CBSE Schools in Abroad)
	Assist 11th and 12th students preparing for competitive exam

Fig. 2: "Covering of Swayam Prabha DTH Channels"



Installation Process of SWAYAM Prabha Channels

The subscribers of Free Dish DTH of Doordarshan can view these channels using the same setup Box without any additional investment.

Fig.3: Installation Process of Swayam Prabha Channel

- C 30: This channel is for Gyanamrit education
- C 31: This channel focus on school teacher education
- C 32: This channel focus on teacher education
- Fig. 2 specifies the courses covered

by Swayam Prabha are helpful for which age group of students. Figure 3 specifies the installation process of the Swayam Prabha DTH Channel and also help to know how easily one get install the Swayam Prabha Connection. Figure 4 specifies the comparison between

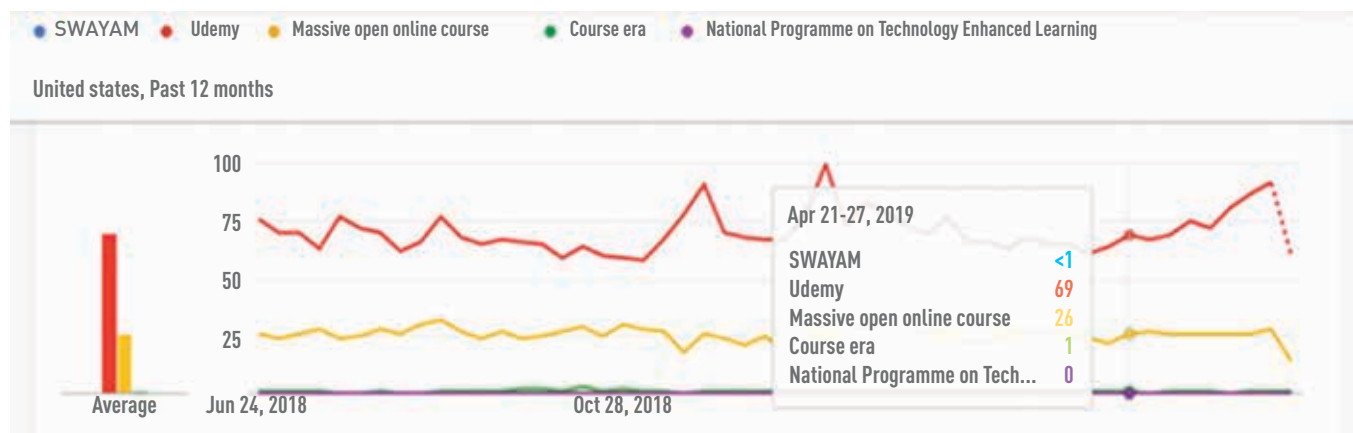


Fig. 4: Comparing different digital learning Programs

Contd. from pg. 40

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17th June 2019

Executive Committee RESOLUTION via email **circulation dated 17th June 2019**

" Execom for the year 2019-20/21 , Resolved dated 17th June 2019 via email that, based upon the Final Enquiry Report in the matter of Shri I L N Rao & Shri Raju L Kanchibhotla that, **Computer Society of India is removing / terminating membership of Shri I L Narasimha Rao @ Shri I L N Rao, CSI Membership No. I0101600, Plot No. 125, West Balaji Hills, Near Swaroop Nagar, Dt. K V Rangareddy, Hyderabad, Andhra Pradesh - 500039, email : ilnrao@yahoo.com and Shri Lakshminarayan Raju Kanchibhotla @ Shri Raju L Kanchibhotla, CSI Membership No. I0170975, Plot No. 85, 102, Arati Residence, Defence Colony, Sainikpuri, Dt. Hyderabad - 500094, Andhra Pradesh, email : kanchibhotla@gmail.com from 17th June 2019 for violating Section 2.8.2 of CSI Byelaws (page 16) that, " not misuse his authority or office for personal gains " .**

This **Termination of membership** from CSI of **Shri I L Narasimha Rao @ Shri I L N Rao CSI, Membership No. I0101600 and Shri Lakshminarayan Raju Kanchibhotla @ Shri Raju L Kanchibhotla, CSI Membership No. I0170975** is based upon the **Disciplinary Committee report** headed by Prof. K K Aggarwal, Past President & Life Time Achievement Awardee of CSI for financial irregularities', mishandling of fund etc. & **Final Enquiry Committee Report** duly made and approved by Dr. Durgesh Mishra, Prof. M.S. Prasad Babu, Dr. D.D. Sarma and Prof. Arvind Sharma. Only Committee member **Mr. Apoorva Agha** had attended the enquiry at Hyderabad on 11th May 2019, but, not able to give any comment / observation/s / note/s on Final Enquiry Report.

IT IS HEREBY FURTHER RESOLVED THAT, This Termination of membership from CSI of Shri I L Narasimha Rao @ Shri I L N Rao CSI, Membership No. I0101600 and Shri Lakshminarayan Raju Kanchibhotla @ Shri Raju L Kanchibhotla, CSI Membership No. I0170975 may be notified in CSI official portal , CSI Communication/s, local newspapers etc. and update detail/s to Societies of Registration at Hyderabad.

Sd/-Prof. S K Yadav
Hon Secretary, CSI

National Conference on Industry 4.0 (NCI4.0- 2019)

Organized by

MGM's College of Engineering and Technology



(L to R) Pradeep Rath (RVP-6 CSI), Aji Joshi (RedHat National Manager), K.G. Narayankhedkar (DG-MGM), Sudhanshu Ojha (GM-SAARC D-Link), K.C. Mistri (Principal MGM) and Indra Vijay Singh

MGM's College of Engineering and Technology organized a "National Conference on Industry4.0 – NCI4.0-2019" recently in collaboration with IEEE and CSI. The Outreach Partners for the said conference were D-Link and 3i Zone. The Conference was attended by 147 delegates and had 17 speakers from the Industry and Academia. The Conference was inaugurated by Mr. Aji Joshi, Partner Manager, Red Hat. He highlighted various technology domains in Industry 4.0 having potential of block chain adoption. He also explains the types of database, benefits and adoption of block chain technology in industry 4.0. He further mentioned, the used technology dimension like Big data, Cloud, IoT, Artificial Intelligence, Autonomous Robotics and Cyber Security...etc. Mr. Aji Joshi explains the different scheme for startup in IT industry in various disciplines.. He is former Secretary of CSI Mumbai Chapter.

Chief Guest for valedictory function was Dr. G.P. Tripathi, Director, IoT in the Dept of IT, He elaborated industry 4.0 revolution, components, security issues and time management. He also discussed about the impact of Industry 4.0 on economics.

Guest of Honor, Mr. Pradeep Rath, Regional Vice President (Region-6), Computer Society of India, emphasized on the onus of the faculties and the institutes in molding the students with fast paced technological transformation and the significance of Industry - an Academia Concept. He highlighted some key points about the social and commercial startups with first incubator of IIT Kanpur and TISS Mumbai.

The informative speeches of Director General Dr. K. G. Narayankhedkar emphasized for the need to readdress the teaching and research using leveraging technologies in the present context and elucidated various domains of teaching and research. He also highlighted different innovative technologies initiated at MGM CET for teaching and research like, Google Classrooms, MOOCS, MOODLE, and Whatsapp and given another name Education 4.0

On behalf of Principal Dr. S. K. Naryankhedkar, Dr. C. K. Mistri, Incharge Principal, highlighted the success of students in Hackathon organized by AICTE and Avishkars, Organized by University of Mumbai and highlighted best practices followed in MGM's College of Engineering and



(L to R sitting) K.C. Mistri (Principal MGM), Pradeep Rath (RVP-6 CSI), K.G. Narayankhedkar (DG-MGM), G.P. Tripathi and Indra Vijay Singh

Technology, Kamothe, Navi Mumbai.

The inauguration ceremony was held at Dr. Sarvepalli Radhakrishnan Hall, MGM CET, Kamothe, Navi Mumbai. Fifteen plenary talks from different Industry Personnel (Red Hat, TCS, L&T, TCL, D-Link, CEMS and CDAC) with six tracks were delivered in two – day conference. Tracks are mentioned as follows:

Track 1 - Industry 4.0 Overview

Track 2 - Role of Block Chain Technology in Industry 4.0

Track 3 - Sensor Technology and Its Applications in Communications

Track 4 - Role of Industry 4.0 in Agriculture

Track 5 - Smart City and Industry 4.0

Talk 6 - Role of Industry 4.0 in Smart Industry

Track 6 - Big data Analytics, AI, and open source technology/software

These tracks were having basic themes of Industry 4.0 including Block chain with Cyber Security, Healthcare 4.0, Smart Industry, Agriculture 4.0, Bio-mechatronics and Biomedical robots, Finance 4.0, Smart City and Smart Industry, role of Artificial intelligence and Machine learning in Industry 4.0... etc. Eleven contributed papers by faculty members and students were also presented during this conference.

The function ended with vote of thanks to the dignitaries for their grandeur presence and valuable insights rendered by the Convener of the Conference, Dr. Indra Vijay Singh.



(L to R) Rear Admiral Shekhar Mital (Retd) (MD&CEO CEMS), Pradeep Rath (RVP-6 CSI), Security Expert and K.G. Narayankhedkar (DG-MGM)

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Vishnu Prasanth
Data Scientist at Facebook (Dublin)



"It is the right time to change for Data Science, data is everywhere, we can work in any domain we want! Going back to school after several years is always a challenge, we must be ready to work hard, but it is worth it!"

Nadjat Ouslimani
Data Scientist at Soladis (Nice)



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Vipin Kumar
Senior Developer at Daher (Paris)



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& more.



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Email : sonali@csi-india.org / swapnil@csi-india.org Website : www.csi-india.org

Form - II

Version 2.3

w.e.f. 01st July, 2017

SUMMER OFFER

Life Membership

I, hereby, apply for new membership. On approval of Membership, I shall abide by the Constitution & Byelaws of the Society and the Code of Ethics. Please send a good quality minimum 300 x 300 pixels / passport size photograph to swapnil@csi-india.org to be used for making your CSI Membership Card (photo required only for Life Members) along with a copy of Voter ID / Aadhar Card / PAN Card / Driving Licence

I. Select the membership type

Indian ☐ International ☐

Please tick for Membership period

One Year ☐ Two Years ☐ Three Years ☐ Four Years ☐ Life ☐

Paste your (recent)
one passport size
photograph here.

II. Personal information:

Please fill in your personal information so that we can serve you better

Title of the applicant Mr. ☐ Miss ☐ Mrs. ☐ Dr. ☐ Prof. ☐

First Name Middle Name Last Name

Name you would like to be printed on CSI ID card

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Gender

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Form - II
Version 2.4
w.e.f. 01st July. 2017

III. Mailing address (BLOCK LETTERS):

Address line 1

Address line 2

Address line 3

Pin Code

City

State

Country

[City, State and Country to be filled in only for international address]

Name of the Chapter to be attached

IV. Payment details:

Please specify Mode of Payment: NEFT/ Demand Draft/Cheque]

If payment made through NEFT – Transaction details Date

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UTR No.

If payment made through Demand Draft DD / Cheque payable at par at Mumbai should be drawn in favour of "Computer Society of India".

Cheque ☐ DD ☐ Cash ☐ (Please tick as applicable)

Amount Paid in ₹ / \$

Cheque / DD No.

Dated

Drawn on Bank Name

Branch Name

Please fill following details if it is deposit in Axis Bank.

Date of Deposit

Mode of Deposit

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DD

CASH

(Please tick as applicable)

Axis Deposit branch name

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A/c type: Saving

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Attach photocopy of Pay-in-slip with application form and write your Name, Contact no. on the reverse side of the Cheque / DD / Pay-in- Slip.

III. Mailing address (BLOCK LETTERS):

I affirm that as a CSI member, I shall abide by the Code of Ethics of the Computer Society of India (CSI). I, further, undertake that I shall uphold the fair name of the Computer Society of India by maintaining high standards of integrity and professionalism. I was not a member of CSI earlier. I am aware that my breach of the Code of Ethics may lead to disciplinary action against me under the Byelaws and rules of the CSI. I, hereby, confirm that I shall be bound by any decision taken by the CSI in such matters. Further, I hereby convey my consent to receive the CSI publications in soft copy form and any other information about the activities of the society by email or by SMS on my Mobile number, from time to time, by the society or the members of the society.

Date: / /

Place:

Signature : _____

FOR OFFICE USE ONLY

Application received date : _____

Received by : _____

Application processed by : _____

Membership No.

**(Membership subscription fee details for the information of the applicant,
not to be attached with the Application Form to be sent to CSI)**

VI. Membership Subscription Fees:

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Note - Please attached below documents along with form.

1. Graduation Certificate
2. Highest Qualification Certificate

Matdaan Sankalp Abhiyan

Organized by

Computer Society of India Lucknow Chapter on 28th April, 2019



Computer Society of India-Lucknow Chapter, organizes various programmes time to time. Recently, CSI Lucknow Chapter organized one of the most successful Social Programme entitled **"Matdaan Sankalp Abhiyan"** on 28th April, 2019 at Dr. Ram Manohar Lohia Park, Lucknow.

The main motive of the programme was to make awareness among the people regarding that, voting is a fundamental right of any citizen that helps them to realize the importance of citizenship. To spread the importance of voting among more and more people, CSI – Lucknow Chapter selected the venue Dr. Ram Manohar Lohia Park to aware the crowd where people of every age come in abundance for Morning walk.

The Management Committee, CSI Lucknow Chapter, successfully organized the said programme. The Volunteers (students from National P.G. College Lucknow) arranged by Dr. Amitabha Yadav, our MC Member participated and coordinated the program very enthusiastically. The programme begins on Sunday, 28th April, 2019 from 5.30 am in the morning and successfully completed at about 8.00 am in which grown up youth and elderly people enthusiastically participated.

The Management Committee Members elaborated the importance of voting among the various sects of people and inspired them to exercise their right to vote. During the programme, the Management Committee, CSI-Lucknow Chapter read out the "Sankalp" for voting which was also reiterated by the audience present there. It was conducted many times during the period of 2 and half hours. A signature Campaign was also initiated by CSI- Lucknow Chapter in which people from all ages were participated. Hundreds of people exercised "Sankalp" to strengthen "Loktantra" and promised us that they will certainly exercise their right to vote. To make the programme more effective and inspiring, the volunteers were equipped with inspiring digital slogans on billboards which were attracting the people to eagerly read the meaningful and inspiring slogans for voting. The people were also attracted towards Computer Society of India and were enquiring and gathering the information about the Society. Lucknow Chapter inculcate crowd by this awareness programme and they will definitely go to their polling booths to cast their vote for



strengthening the "Loktantra". The Additional State Election Commissioner Shri Ved Prakash Verma, CSI Lucknow Chapter Chairman Shri G.P. Singh, Vice Chairman Dr. Pankaj Goswami, Secretary Shri Pawan Kumar Nigam and other members were present on the event. To spread awareness for voting to more and more people, representatives from various Electronic/ Print media were also present to cover the programme.

The secretary, Shri Pawan Kumar Nigam ensured that the coverage of Matdaan Sankalp Abhiyan reaches to more and more people of India via Uttar Pradesh and Delhi Channels. The said programme was telecast on various TV Channels including Doordarshan Uttar Pradesh, Live Today and Sakshi Prabha, Delhi as follows :

- Doordarshan Uttar Pradesh Samachar: 10.00 am to 10.30 am
- Doordarshan Uttar Pradesh Fatafat Samachar : 11.00 am
- Live Today, Lucknow : 01.00 pm
- Doordarshan Uttar Pradesh Samachar: 02.00 pm to 02.30 pm
- Doordarshan UP Chunavi Surkhiya: 04.00 pm
- Live Today, Lucknow: 04:20 pm
- Doorsarshan Uttar Pradesh Urdu News : 8.15 pm to 8.45 pm
- Janadesh : 7.30 am to 8.00 am
- Sakshi Prabha, Delhi: 9.00 pm

Chapter also registered its presence on Social Media viz. Facebook and Instagram. Our MC Member Dr. Amitabha Yadav created a page on Facebook and Instagram and made people aware of the event well before 28th April, 2019 and posted various photographs of the event after its successful completion to reach the event to more and more people and inspire them to cast their vote for the coming Lok Sabha Election 2019.

The event was successfully organized under the leadership of the Chairman-Lucknow Chapter Shri G.P. Singh in close coordination with vice Chairman Dr. Pankaj Goswami, Secretary Shri Pawan Kumar Nigam. MC and OC members Dr Nilu Singh, Shri Vinay Kumar Johri, Shri Kamal Kumar, Shri Nafees Ahmad, Dr Amitabha Yadav, Ex Chairman Shri Rakesh Puri, Shri Arivind Sharma, Shri Ashesh Agarwal and Shri Deepak Sharma were also enthusiastically participated in the event and made event a Grand Success.

Management practices in Ancient India

Organized by

Computer Society of India Chennai Chapter on 29th June 2019



Computer Society of India-Chennai Chapter organized a presentation on "Management practices in ancient India" on Saturday 29th June 2019 at 6.00 pm at Indraprastha A/C hall, Hotel Palmgrove, Chennai and was sponsored by Kaspersky and Futurecalls Technology. The presentation started with an introductory note by Hon. Secretary Prof. J. Jerald Inico, welcome address by Prof. P. V. Subramanian, Vice-Chairman, Guest of the day was introduced by Dr. A. Prema Kirubakaran, MC Member. The Guest speaker Mr. T. Jaganathan, Founder & MD of Futurecalls and author of the book "Management Immemorial", started his presentation with an introduction from Thirukurral that acknowledged the information of Indian Culture. Speaker quoted that Managing skills are well stated through Indian literature very long (2200 years) ago. Famous quotes from Zlg and Maxwell were illustrated to teach the importance of attitude. He also stated that the Management practices from ancient India picked few classical literature references from Ramayana and Mahabharatha. The design flow in the book depends on three sections inspirational attitudes, Scintillating skills and Leadership Traits, the three most requisites for the current scenario was well sampled and explained by giving examples from sundarakandam and went on with discussing one yojana out of twenty yojanas. The method of incorporating management skills using ancient

times techniques were discussed. Speaker gave a description of hanuman's character in Ramayana .He also quoted Jambavan's advise on leadership qualities and compared how it is practiced now and during ancient times. Self confidence buildings, realization of inner power were all explained with good examples. Hanuman's arms and Garuda's wings were compared to explain the need to kindle the inner power within us.

ViduraNeeti was stated as example for leadership qualities. A short comparison between Ramayana and Mahabharata explained the situation of dejection and how we should overcome it, when we are working as a team. Negative thoughts existing inside each one of us should be thrown out and be filled with positive thoughts. A calligraphy session was also organized and an artist from Ramana Arts and Crafts drew the picture of the Speaker and few participants. The presentation ended with an interactive session and certificates were distributed to all the participants. A lucky draw was organized to appreciate the punctuality of the participants and gifts were distributed. Vote of thanks was proposed by Dr. Iniya Nehru, Chairman, CSI-Chennai Chapter followed by moonlight dinner.

The entire programme was meticulously planned and well executed by CSI-Chennai Chapter and was greatly acknowledged by Hon. Treasurer Mr. Ananada Padmanaban, MC member Mr. Rajaram, CSI - Chennai Chapter's Past Chairmen Mr. Vasudeva Rao and Mr. Baskaran. It was really a memorable day for such large gathering as the speaker himself a successful entrepreneur to motivate everyone to take up in promoting essential skills to be successful as an individual, family, organization and society.

Contd. from pg. 40

different digital learning programs which is generated through Google trends. It specifies the comparison on the basis of uses of courses by user online by searching on Google.

Conclusion

Whether it is SWAYAM or SWAYAM PRABHA, the only motive of Indian govt. is to enhance the level and quality of learning with the use of digital media.

The courses and contents provided at these platforms are handled by reputed institutions of India, under the guidance and monitoring of NPTEL and motivating the choice based credit system (CBCS) in India. The Ultimate goal of these initiatives is to make students more intelligent and industry ready with the idea of "Keep learning, keep implementing".

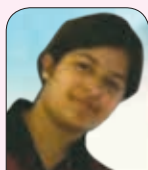
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About the Authors



Mr. Ashish Agarwal is an Assistant Professor at SRMSCET, BLY and has 5 years experience. His area of specialization are- Agile, Soft Computing and Software Engineering. Currently he is the member of IET and previously he was the member of CSI.



Ms. Gargi Agarwal is an Assistant Professor at SRMSCET, BLY and has 1 year experience. She has a keen interest in subjects like Database Management System, Software Engineering and Web Technology. Her two international and three national research paper has published.

COIMBATORE CHAPTER



Tamil Nadu Engineering Admissions Counselling online process for the academic year 2019-2020 have commenced and the aspiring students have already submitted their applications and got their certificates verified. The Computer Society of India, Coimbatore Chapter organized a guidelines session for the aspiring students on 16th June 2019 (Sunday) at PSG College of Technology, Coimbatore. Dr. T Purushothaman, Secretary, TNEA for this year made an elaborate presentation on the process of exercising the choices of branches and the institution starting from the stage of publication of ranking list. This was followed by a presentation by Dr. P Narayanasamy, Dean, Networking, PSG College of Technology and former secretary of TNEA. CSI Coimbatore Chapter is organizing this programme for the 15th consecutive year in PSG College of Technology. Dr. K Prakasan, Principal, PSG College of Technology delivered the presidential address motivating the students to pursue their passion. This session registered an overwhelming response of 1000 students and parents. After the presentation during the interactive sessions the Professors of PSG College of Technology, Dr. K Natarajan, Dr. Ramamoorthy, Dr. Vinoth and Dr. R Natarajan along with Dr. Narayanasamy and Dr. Purusothaman answered all the questions raised by the participants. Dr. N R Alamelu, Chairperson, CSI Coimbatore Chapter welcomed the gathering and the event was supported by The Hindu Tamil Thisai as a media partner.



KANCHEEPURAM CHAPTER



CSI Kancheepuram chapter in association with Centre of Excellence for Internet of things of SRM Valliammai Engineering college organized a Six Days IoT Boot camp from 23th May to 29th May 2019. The major objective of organising this Boot Camp was to provide the platform and unleash the potential of the students by Hands on Sessions. Dr. M. Senthil Kumar, Hon Secretary, CSI Kancheepuram Chapter welcomed the participants of various departments and the trainers of Respro Labs. The trainers gave a detailed explanation on Basic of IoT Components and their benefits. Many Real time Scenario were discussed in detail. Mr. Balachandran, Senior Developer of Respro labs highlighted the need of IoT in the fastly developing technology world. The students were eagerly participated in the Hands-on session, they do the basic programming IoT modules. The Trainer cleared the doubts of the students and he gave a detailed lecture about the sensors and its usages. As part of the Camp, Students went to Industrial visit to Delta Control Systems and Chennai engineers, Ambattur to know the Real time Scenario in the automation industries. Totally 56 students and 10 faculty Members were benefited from this boot Camp.



KOLKATA CHAPTER

AGM of Kolkata Chapter for the year 2017 – 2018 held on Saturday April 27, 2019. Mr. Subir Kumar Lahiri,

FROM CSI CHAPTERS & DIVISIONS



Chairman of [2017-18] presided over the meeting. Mr. Sourav Chakraborty thank all the esteemed members and read out the secretary report of 2017 – 2018. Various activities undertaken by the Chapter during the year 2017. Young Talent Search in Computer Programming was held at Shri Shikshayatan School, Kolkata and coordinator was Dr. Phalguni Mukherjee. YITPA Region II was held at CSIKC office premises and coordinated by Dr. Tanusham Chattopadhyay. State Level Student Convention was held at Haldia Institute of Technology, Haldia. CSI 2017 (The 52nd Annual Convention) held at Science City on January 2018. The focal theme of this convention was "Social Transformation – Digital Way". Convention was inaugurated by Dr. M Hinchey, President, IFIP and Swami Shastrajnan the Principal Maharaj of Ramkrishna Mission Vidyapit, Belur. Regional Student Convention was held at B P Poddar Institute of Management and Technology. Prof Mohit Kumar Roy was presented with Life Time Achievement Award. This year Chapter was received the Best Newsletter Award in the Eastern Region Category II for the year 2017-18. Dr. Pinakpani Pal and Mr. Sourav Chakraborty were declared as Patrons and Ms. Alokandanda Rao and Dr. Phalguni Mukherjee were conferred the Fellowship of the Society. Prof Subho Chaudhuri also thank Chapter staffs. Current Treasurer (2019-2021) of CSIKC, Mr. Snehasish Banerjee presented the audited report of 2017 – 2018. The reports were unanimously accepted in the AGM meeting. Mr. Gautam Hajra, Chairman (2019 – 2020), read out the selected Chapter awardees name. He also announced the OB's of 2018-2019/2020.



Mr. Gautam Hajra, Chairman
Mr. Sourav Chakraborty, Secretary
Mr. Aniruddha Nag, Vice Chairman

Mr. Snehasish Banerjee, Treasurer

Mr. Gautam Hajra, Chairman (2019-2020) thanks all the members present in AGM



On 5th June 2019, on the occasion of World Environment day, CSI Kolkata Chapter with SAB and Rural development forum, IEI organized one workshop on E-wastes and plastics in Rural and Urban Environment. The welcome address was given by Mr. Gautam Hajra, Chairman, CSI Kolkata Chapter. Dr. Subhabrata Roychoudhury, Secretary Science Association of Bengal explained the role of this type of workshop in the present context. Mr. Anirban Gupta, Director RDF explained his concern about today's growing pollution. An informative book, named "Bigyan Mela", based on environment was launched by Mr. S P Dutta, Chairman, RDF, IEI. Mr. D P Sinha, Fellow CSI & SAB briefly narrated the perspective of this type of workshop on World Environment Day. Mr. Sourav Chakraborty, Secretary CSI Kolkata Chapter explained the role of CSI on Environment day. Mr. Parijat Chakravorty, Director, V&P District Coordinator, All India Council of Robotics & Automation, Gol gave an in-depth view on how to productively use E-waste and Plastic Waste productively. Mr. Suchismita Majumdar, Mentor BITM showed her concern regarding reuse of Waste Plastics in environment. Mr. Rajarshi Roychaudhury, Director Cyber Guru explained cyber pollution in the light of Law. Finally hands on practice on Crafts from Waste Plastics was done by Dr. Sima Mukhopadhyay, Secretary Dr. T M Das Foundation. Total 46 participants participated in this event. Vote of thanks was given by Mr. Aniruddha Nag, Vice Chairman, CSI Kolkata Chapter.



FROM CSI STUDENT BRANCHES

REGION-V

Narasaraopeta Engineering College (Autonomous), Narasaraopet



12-6-2019 – Dr. Sreenivasa Kumar, Principal interacting the students during Seminar on Career Guidance



12-6-2019 – Mr. Sai Chand explaining about Blockchain Technology

Maharaja Institute of Technology Thandavapura



25-3-2019 - Technical talk on Computational Mathematics by Prof Leonid Mistetsky, Moscow State University, Russia



G Pullaiah College of Engineering & Technology, Kurnool

3-5-2019 & 4-5-2019 - Workshop on Speed Maths (Vedic Maths)

Kallam Haranath Reddy Institute of Technology, Guntur



6-6-2019 to 8-6-2019 – FDP on Machine Learning

Global Academy of Technology, Bangalore



10-6-2019 - Workshop on Python Programming

K S Institute of Technology, Bangalore



6-5-2019 – Event on TechVyuha 2.0



13-5-2019 – Certificate and Prize distribution during Computer Graphics Mini Project Exhibition

FROM CSI STUDENT BRANCHES

REGION-V

New Horizon College of Engineering, Bangalore



9-3-2019 - Alumni Talk



12-4-2019 - FDP on Deep Learning with Tensor Flow

REGION-VII

SRM Valliammai Engineering College, Kattankulathur



24-5-2019 to 30-5-2019 - FDP on Mathematical Computation
in Computer Science



13-6-2019 - Staff Technical Training Programme on Networking
and Data Security

Hindustan Institute of Technology and Science, Chennai



11-6-2019 to 15-6-2019 - Summer School on Research in Artificial Intelligence and Deep Learning



Student branches are requested to send their report
to sb-activities@csi-india.org

Chapters are requested to send their activity report to
chapter-activities@csi-india.org

Kindly send **High Resolution Photograph** with the report.