Technology for an Efficient Classroom Learning - A Student-Centric Approach

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Abstract

Technology is the biggest asset of this 21st century. There are contradictory views when it comes to advantages of technology but when we conceptualize its substance in the education sector, it qualifies as making a Professor's teaching very fast, simple and effective. The purpose of our research is to create an awareness about the teacher & student-friendly gadgets and applications available which make understanding easy and learning, interactive. The Objective is to explore the technical medium of expression and student management systems that can be adopted and further analyzing its relevance and adaptability. The case studies analysis was conducted, following which its implications are listed as to Bring a greater clarity in students, It gauges the students attention as classroom experience becomes much more interesting & exciting for students, thereby motivating them to discover, Students in smaller cities, towns and villages have almost never travelled beyond their community, so to help them travel around the world with Virtual Reality augmentation is thrilling and exciting yet very cost effective, Teaching goes beyond just classroom hours as students and teachers can interact at convenient times on a common platform and Live video conferencing by connecting students from different countries of different cultures binds this world together and brings the student community closer. The research illustrates an abundant scope for an effortless implementation and practicability. So further study may be conducted on this premise. The Devices & Applications to be considered for research are Kahoot, Apple Pencil and I-Pad and QR Code Technology for Integrated Attendance.

Introduction

In a world where new gadgets are being invented faster than ever, humans are becoming increasingly dependent for an enhanced efficiency. Where every sector from agriculture to aeronautical space engineering is dependent on tech savvy equipments, how can Academia remain passive? Where employers are seeking for experienced individuals in young college graduates, how can we depend on just internships for a practical exposure? Simulation and Modeling Equipments are here to offer a much better view with a dynamic approach

Teachers can get a real time formative assessment on all their students based on their performance linked with Online Cloud. Their role in a classroom is not limited to delivering a lesson, but is also to support and guide their students. Here, Technology in Education aids in critical thinking and problem solving skills which helps Educators to find lacunae in understanding. Technology can be a blessing in terms of pedagogical resources and a means of connecting with the younger generation.

Technology In Teaching

The Primary goal of introducing newer technology developed in this world, year after year, is manifold.

1. To bring a greater clarity in students in terms of subject and its practical applicability. Discussing about a topic, theoretically listed in books is an out dated concept. Audio-Video based reality shown within a classroom brings practical knowledge to life.

2. It gauges the students attention as classroom experience becomes much more enriching & exciting for students.

3. Students in smaller cities, towns and villages have almost never travelled beyond their community, so to help them travel around the world with Virtual Reality augmentation is thrilling and exciting yet very cost effective.

4. Teaching goes beyond just classroom hours as students and teachers can interact at convenient times

5. Video Conferencing Live by connecting students from a different class running in different part of the world binds this world together and the student community closer.

Literature Review

In the publication titled "Teaching and Technology: Case studies from India" (*British Council-2017*) provides a snapshot of wide range of Digital services of education available in India. The case studies of twenty two individual teachers of Government, private and night schools are analysed. The study shows that their is no place or time constraints. Everyone can make difference at their own level by using technology.

O'Bannon and Judge (2004-2005) focused their research on implementation of project 'Preparing Tomorrow's Teacher to use Technology's. They concluded that the model improved teachers perception towards technology. They found that mentoring and collaborating with teachers proves a bridge in the process of technology adoption by the teachers.

In the research paper titled ' Effect of technology on a student's motivation and knowledge retention' by *Granito, Mark and Chernobilsky, Ellina (2012)* it was pointed that technology can be a powerful tool for those who have curiosity and interest in it. The traditional teaching still suits for those who have no interest in technology. In order to understand and adapt, technology needs to be taught at an early age.

Objectives

1) The foremost objective of the research is to create awareness regarding the present day available teaching tools.

2) To understand the relevance and reliability of the teaching aids by contemplating their technicalities in depth.

3) To suggest the best ways for student- teacher interaction and making classrooms live and full of enthusiasm.

Research Methodology

The research is descriptive in nature. The study is based on secondary data and the required data has been collected from various secondary sources i.e. research papers, several journals, articles, and from all the information that is available on the internet relevant to the topic. Case study Analysis of NPTEL, Google Classroom, Integrated Attendance with QR Code, Kahoot and Apple Pen & projector has been taken into consideration.

Case Studies

I) Google Classroom -

Google classroom is a user friendly program and a free web service developed by Google Inc. It streamlines the process of creating, distributing and grading between teachers and students

It combines various Google devices like Google docs, slides and sheets for writing. Gmail for login and communication, Google drive for storage and sharing and Google calendar for scheduling events and deadlines.

For the academicians it provides centralized e-learning content materials.

The functions that are offered by Google Class are listed below-

- Create, Collect and Grade Assignments
- Teachers can look upon the progress of students
- It provides complete work done by the learner in a single window.

- Teacher can make announcement regarding the monthly test,quiz, seminars, workshop etc.

- Students may ask questions as to

How we can start ?

- Are we required to set up a Google account for login

- Any individual can access Google class by two ways :

  1) we can join class (as a student) with the help of the code provided by their teachers.

  2) we can create class (for the teachers) with the help of code provided by the school or the college.

  - Any relevant material in the form of link, videos,movies can be added

  - Teacher can make separate accounts for different classes or split classes within the same account.

  - There is an ample scope for customization by a teacher. For example, in the announcement zone teacher can set option where students can post their queries and comments or Student can post their queries only or where student can comment only

Distinct features of Google Class

1. The work done never lost. It synchronizes the assignment with the calendar so student gets regular notification.

2. Teacher can connect with parents and provide in personalized feedback by looking at single screen record of the student.

II) NPTEL

National Program on Technology Enhanced Learning

Imagine a situation and you are sitting at your home and attending lectures of most prestigious institutions of India. This opportunity is no more an imagination but a reality. The Programme

called NPTEL (National Program on Technology Enhanced Learning). It is a flagship program by Ministry of Human Resource Development run by 7 IIT's and IIS. This Course has been designed not only for the students but for all Professors , Faculties, Industries etc

IIT BOMBAY   IIT DELHI   IIT GUWAHATI   IIT KANPUR   IIT KHARAGPUR   IIT MADRAS   IIT ROORKEE   IISc BANGALORE

Courses Covered

Aerospace Engineering, Agriculture Engineering, Architecture and Planning Biological Sciences & Bioengineering, Chemical Engineering , Civil Engineering Computer Science and Engineering, Design Engineering Electrical, Electronic and Communications Engineering Additionally, Humanities, Business and Social Sciences, Management Studies, Mathematics and Basic Sciences, Mechanical Engineering,Metallurgy and Material science & Mining Engineering and other Multidisciplinary courses such as Ocean Engineering and Textile Engineering are also a part of this program

Duration of the Course	Hours	Number of Assignments	To be evaluated
4 Weeks	10 Hours	04	03
8 Weeks	20 Hours	08	06
12 Weeks	30 Hours	12	08

This course offers a 4,8 and 12 Week Programes. Learners can choose amongst these, covering a narrow to wide spectrum of above listed subjects. The Lectures are uploaded every week and assignments in context with the covered topics are to be submitted. There are multiple choice questions ranging from 7 to 14 in number that reflect the understanding of the trainee. The trainee can avail more opportunities to improve their scores also.

Features of the Course

1. There are 270 courses for certification

2. Trainees over the age of 13 can register for these courses

3. No enrollment fees is to be paid

4. The viewership of all video content are free of cost

5. Trainees have to bear a minimal expense of Rs 1100 for the certification where an online based MCQ exam needs to be attempted.

6. The Exam is conducted in dual sessions during the year (October and May)

7. Candidates who get a consolidated score (Assignment score + Exam Score) of 40 or above will be awarded a certificate.

The certificate will display *Elite + Gold*, or *Elite*, or *Successfully Completed*.

The score criteria for this is shown as under.

Score	Type of Certificate
>=90	Elite + Gold
60-89	Elite
40-59	Successfully Completed the Course
<40	No certificate

Response of the course in the State of Madhya Pradesh
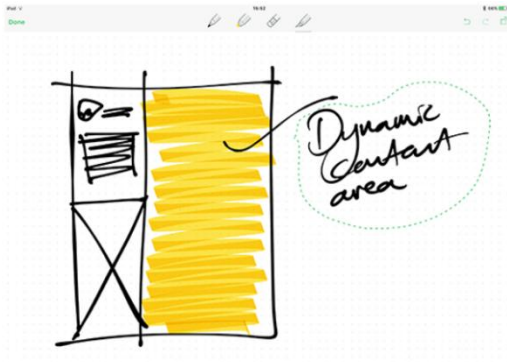
College	City	Registered Students	Present During the Exam	Certificate Issued	Elite + Gold	Elite	Successfully Completed
Lakshmi Narayan College of	Bhopal	123	108	103	05	72	26

Technology							
IEHE	Bhopal	147	132	126	08	79	39
LNCT (Science)	Bhopal	98	88	84	06	57	21
Madhav Institute of Technology & Science	Gwalior	150	135	124	03	70	51

Advantages of NPTEL Certification Course

1. It broadens our practical knowledge base

2. Candidate gets certificate recognized and issued by IIT's and IIS's

3. Institutes across the country have recognized and offer credits to this courses :

   ➢ 1 Credit for 10 Hour Course

   ➢ 2 Credit for 20 Hour Course

   ➢ 3 Credit for 30 Hour Course

4. Candidates have an opportunity for undergoing an internship at IIT's

5. The interaction with colleagues of this course helps broaden a trainees network across India

Iii)Evernote

Screenshot of the Application being used on I-pad with the support of an Apple Pencil

With the modern times, the chalk and duster and even the white board marker have now taken a backseat.

With classrooms across almost all Universities and Colleges going tech-pro, the aid of DLP (Projectors) is inevitable. Combining the two, a DLP and a smart tablet becomes the new class board where all information written with an Apple Pencil onto the Tablet (I-pad) instantly gets displayed on the screen with graphical images and videos to embed in them. This proves to be the biggest advantage in classes like Maths , Economics and Stastistics where exact measurements can be drawn with ease as the app comes with scalar measurements.

Also, it saves writing time and efforts on a huge area (Blackboard or Whiteboard) , as it requires writing like a simple notebook and gets displayed as a larger projection. Teachers would never have to face their back to the students also.

Also, unlike the class board where information gets deleted once the board is erased once or cleaned, Evernote allows teachers to store information on the tablet for future use. Additionally, on a click of a button it can be shared with the entire class on the Whatsapp Group/ email etc for their revision.

Requirements

1. An Apple Pencil
2. Apple I-Pad
3. Projector Pin

IV) Kahoot

Kahoot is a game-based learning platform, free for teachers and students.

One can Play, learn, have fun and celebrate together. It is a live time game portal where a teacher can create an online room and students can join in with a self generated PIN visible to entire class on screen. Teachers can pose various prepared questions on screen while students can choose an option from the multiple choices on their own phones and a detailed assessment of each students can be done on the questions answered correctly, incorrect or skipped. We are continually blown away by the creative ways technology is coming handy in the field of education whether be in classrooms, corporate training sessions or other scenarios. Introducing new topics, revising content, encouraging teamwork etc; technology is easing all walks of life, day after day

This application creates a live game room by generating a PIN Number for a Quiz where students enter this PIN and become a part of the game. The questions get screened and students can answer each question. This entire series is entirely over the internet where marks are added for each correct answer and the top 5 scorers are displayed on the screen at the end of the game. It is an interactive application which engages all students. Teachers at the end of each question can show the correct answer and discuss the area in detail ensuring attentiveness from students. The quiz can also be shared and teachers can also work cohesively on a certain quiz.

Requirements

1. Seamless Internet Connectivity
2. Smart Phones/ Tablets or a Laptop/PC

V) QR Based attendance

Integrating the Attendance with the help of Institutes ERP and a Quick Response Code

The teachers in today's time are responsible for diverse tasks. One such redundant and repetitive task is taking attendance on a daily basis. This takes up quite a considerable time and effort of teachers especially with classes having more than 40 students.

The new technology available is the QR Based Attendance where a student can scan the auto-generated QR Code (Uniquely Generated in Each Class) with their mobile phones and mere scanning will automatically link their attendance with the ERP of the University and teachers will get an error free, effortless attendance marking scheme.

The teachers can at a click of the button, disclose an auto-generated *Quick Response Code* which can be scanned by students physically present in the class. Within a period of 30 seconds the entire attendance of the class is fed in an *MS Excel File* completely automating a cyclical and monotonous procedure.

Requirements

1. Smart Phone with a Scanning Application (Available for free)

2. Integrated Excel Sheets

3. QR Coding Mechanism.

Suggestions

1. The methodologies discussed herein above are viable and easy to implement. However universities and colleges shall have to invest certain sum in upgrading the infrastructural

capabilities. This would be grounds for an easy implementation of the above suggested technologies

2. There is huge necessity of up-gradation of teachers, professors and lecturers alike to readily be aware and willing adopt to innovative technologies for an efficient teaching and easier learning.

3. Additionally, the students must also have access to smart phones and the ability to harness their advantage by using these technologies to good means.

4. The global education is upscaling its technology at a fast pace. Hence, everyday, a novel ways of teaching are being invented and implemented. Institutions in India should be willing to adopt these methodologies for students betterment

Limitations of The Study

There are limitations to our research where we could evaluate and put forth only a few applications which were distinctive. However, there are many more such applications (available on both Android OS and IOS) such as Udemy, Unacademy, BYJU's etc which are also equally relevant for our research but could not be a part of this analysis due to constraints.

Conclusion

By doing research and analysing the case studies we came to a conclusion that to adapt the innovations of technology in India can definitely confer a first mover advantage to Teachers and Institutes. One of our Literature review covers the stories of teachers who made a difference in the phases of learning by adopting unique technologies in several backward regions including towns and villages and the untapped potential of students harnessed from it. Our case studies not only creates an awareness but somewhere offers a self inflicting thought as when every technology and resource is both affordable and viable, why not adapt this mode in a classroom's daily learning curriculum. There seems no reason to refuse and continue the traditional learning when we have ample scope for creating long lasting impact on students whilst improving our own efficiency as academicians. The Applications Google Classroom and Kahoot are a medium of virtual interaction with the Students outside the classroom space. These Smartphone applications give teachers access to high-quality professional development material, lesson-planning resources and teaching-learning material for little to no cost.

We believe India has just begun exploring the potential of technology in education but primarily, it must be borne in mind that learning is futile if teachers lack a strong understanding of their subject and a basic conceptual knowledge or if the students are not aware of accessing such tech based mediums. Additionally, academicians should be willing to learn, adopt and implement these forums in their classrooms. These form to be prerequisites for a successful blend of Education with Technology. In the absence of such segments, adoption to any new technology will merely be a wasteful expenditure rather than a fruitful and a long term investment.

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