

Smart Classes Teaching Using Advanced Techniques for Quality Education

¹Dr. Amarjit R Deshmukh, ²Dr. Vandana Raghava, ³Dr. Rohtash Kumar, ⁴Meeta Aggarwal, ⁵Monu, ⁶Keenika Arora

¹Director SDE and Associate Professor, Department of Bharati Vidyapeeth University School of Distance and Online Education, Bharati Vidyapeeth University Institute of Management and Research, New Delhi, amarsuja@gmail.com

²Professor, Department of Management, College- IITM, Janakpuri, New Delhi (Affiliated to GGSIP University), vandanaraghava@gmail.com

³Associate Professor (Visiting Faculty), Department of Management, Bharati Vidyapeeth (Deemed To Be University) Institute of Management and Research, New Delhi, drrohtashkumargarg@gmail.com

⁴Assistant Professor, Delhi Institute of Rural Development, Delhi -110036, meeta2407@gmail.com

⁵Assistant Professor, Delhi Institute of Rural Development, G.T. Karnal Road, Nangli Poona, Delhi -110036, chaudharymini97@gmail.com

⁶Assistant Professor, Department of Management, Tecnia Institute of Advanced Studies, New Delhi, kinsaini@gmail.com

Abstract

Smart classrooms are presently using the most sophisticated teaching and learning technologies in the area of education. It is a novel approach to schooling. For learners of all ages, the smart learning approach provides smart thinking tools as well as a technologically based learning environment. The use of ICT and other educational technology in teaching-learning techniques also has a smart effect. Instruction via computer, internet, and multimedia procedures will become more common in the future. The smart class concept is a completely new vision and ability to generate interest in studies. Smart schools and smart classes are novel concepts for both teachers and students. Blended learning is also associated with the systematic blending of computers, the internet, projectors, and whiteboards. The concept of this education is effectively used in all areas or disciplines, from primary to higher education.

Keywords: Innovation, ICT, Multimedia, Smart Class, Learning, Educational Technology.

INTRODUCTION

Smart classrooms are technologically improved lecture theatres and classrooms. By combining computer, multimedia, and network technologies, these rooms open up new avenues for teaching and learning. The smart classroom is a highly technical idea in which material presentation is optimised, interactive, and quick access to learning resources is provided. It is also beneficial for contextual awareness, classroom arrangement, and administration. It

is abbreviated "SMART" for "Showing, Manageable, Accessible, Real-time Interactive, and Testing." The five dimensions simply encapsulate the wisdom of a smart classroom feature known as the "SMART" concept model.

Globally, technology has refurbished every industry into an innovative and creative model. The traditional methodology has already been abolished and drastic evolution has been seen everywhere. Developed countries are way ahead in implementing the modern system.

Whereas, developing countries like India, are on the verge to revamp their traditional process to a modern and digitized format. In India, a 'Smart Class', is a recent concept and a new vision in the education sector. The formulation of digital teaching began in India about 15 years ago, whereas in developed countries such as the US, Russia, Japan, and China the smart, digitized classes came into existence about 20-25 years ago. In a diversified country like India, adopting this modernized system is a challenge. There are many factors which confine in accepting these methods such as lack of internet connections, infrastructure, not well-equipped tools and many other aspects that refrain teachers and students from availing systematic teaching and learning. An innovative and technology-equipped classroom is embedded with a computer, audio-visual equipment and a smart interactive whiteboard. Several companies over the past 5 to 6 years have started to develop technology or products which can strengthen and improvise the smart education system in India.

Literature Survey

COVID-19 has had a huge impact on our lives, causing massive disruption to the world's economy. As a consequence, some industries will be set back by a few years. However, businesses that provide essential services or are purely digital in nature are continuing to function unhindered. And EdTech falls in that bucket [1].

Technological innovation has always made an impact on industries and education is one of them. Since the inception of EdTech, a paradigm shift from offline to online teaching-learning has been observed. The change, though quite recent in India, took place rapidly. By offering easy accessibility, cost-effectiveness, interactive live classes and especially access to expert faculty, the industry is exceedingly drawing aspirants from Tier II and III cities. It is on the verge of becoming the primary medium for competitive examinations. As per a DataLabs report, "India's EdTech market is estimated to soar to \$2 billion in

2021." Clearly, internet penetration has had a profound impact on India's education industry. This wasn't the scenario, a decade earlier. As opposed to today, the considered innovative modes for learning were PDFs that were downloaded and exchanged through CDs. The format regarded as highly tamper-proof and desirable by all users was still not compatible with smartphones. This necessitated the need for ePub, an electronic book file format that was scalable with smartphones, e-readers, tablets and computers [2]. PPTs and 3D models were the fanciest tools for teaching and studying back then. As technology progressed to spread its wing, it took online education under its ambit. The education sector started to reap the advantages of visual tools to simplify learning for students. People began to use interactive tools to educate themselves at any time, any place. Teaching methods started to witness evolution, collaborating with various technologies [3].

Presently, with upgraded video streaming services and significant improvements in DASH protocols, the latency of live streaming has gone down to under 3 seconds. This has enabled EdTech players to stream live classes to students at a much bigger scale through WebRTC, which through optimisations, can further bring down the latency to less than 1 second. This will take the teaching-learning experience several notches higher as students will be able to directly interact with their mentors using their mobile phone cameras [4]. Taking advantage of cutting-edge technology, e-learning apps like Gradeup are revolutionising education. Gradeup analyses Big Data to personalise feeds based on students' interests and enhance their learning experience. Inculcating the power of AI, NLP and ML into their systems, this EdTech start-up offers image/voice searches, solving complex mathematical equations, adaptive content based on user performance, personalised practice sessions and concept recommendations based on the user's interest. With continuous optimisation of their AI algorithms, the accuracy of their current model stands around 83 per cent [5]. Current AI models strive to evolve techniques that can help students retain

learning for a longer period, while also assisting in improving business and sales functions. Striving to enhance the learning experience for students, EdTech platforms are actively working to develop advanced and innovative learning tools such as voice-controlled processes and personalised automated campaigns. The voice-controlled processes, if developed, will allow teachers to run a complete session without touching any device, creating an interactive studio for a smoother experience and hassle-free learning. On the other hand, personalised automated campaigns backed by AI and ML will help in predicting the purchase propensity to further involve users with their products, allowing more time for CRM and marketing teams to experiment [6].

At the present pace, the future belongs to virtual reality. Students will be able to study in a virtual classroom-like environment, amidst peers, interacting with each other and other elements for in-depth and engaging learning. Virtual reality will be the actuality [7].

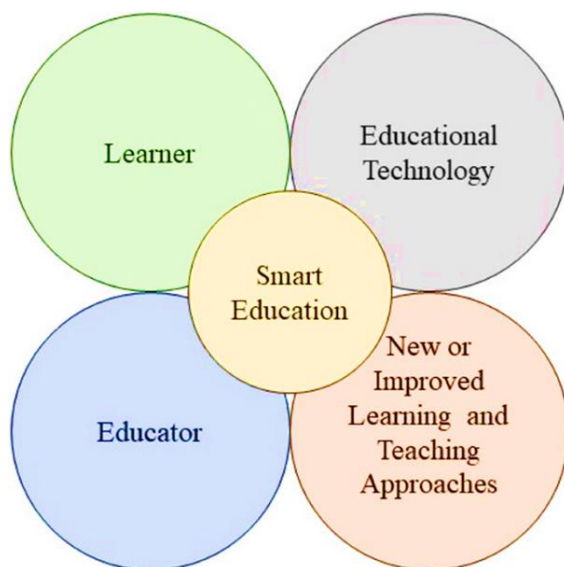


Fig.1: Element of Smart Education

In the present situation, the virtual classroom is a new concept. During pandemic and post-pandemic, many schools and educational institutes are either offering remote teaching or will be opening in a phased manner. To improve the remote teaching, schools and teachers are looking for better-equipped models, technology or products which can help

them to teach and build the engagement between the teacher and students close [8]. On the other hand, students and their parents prefer to have user-friendly gadgets such as tab, advanced tech-based laptops or monitors. Hybrid teaching is also becoming one the useful teaching methods, but there is a need to optimize this technique too. The pandemic has created ample opportunities for brands in Edtech sectors, startups and electronics to develop and create innovative products and offer user-friendly services. It is critical to create an innovative, user-friendly, and high-end features product that will blend with the smart class concept and cater to offerings that work with our end users [9]. Smart classrooms are a highly useful and vital idea for all schools in terms of enhancing the teaching and learning environment. Everyone is pleased with the notion of creating smart classrooms in every corner of the nation so that all students may enjoy their learning experience. The classroom should be improved as a learning environment for pupils [10].

Smart Class Vs Traditional Class

We are all aware that conventional courses have been imparting knowledge using a blackboard, textbooks, chalk, and a duster, and that instructors must plan lessons in advance to teach. Students, on the other hand, listen to these lectures and take notes. Teachers may need to take pupils outside of the classroom to illustrate a specific subject. If pupils have any questions about their topic, they must wait until the following day. Students are sometimes required to prepare test notes by consulting textbooks and visiting libraries. In the classroom, pupils and instructors have set schedules. Manual assessment and evaluation are used.

However, when it comes to smart courses, their goals are the same, namely to provide great education, but they do it in various ways. Smart classrooms make use of a number of technology instruments, such as internet-connected PCs or laptops, LEDs, e-textbooks, projectors, and so on. This allows students to

spend more time using audio and video resources. Teachers can quickly retrieve knowledge and communicate it to pupils. Students are also offered virtual lectures from professionals from all around the globe. Teachers and students may even communicate with one another after school using technology for successful learning. Let us talk about the smart class and its role in education.

Impact of Smart Classes on Students

When the contents are intriguing, learning is enjoyable. Smart courses achieve the same way by combining education with enjoyable features. We search for kids who have received a high-quality education. Today's world is very competitive, and one must stay up. It does not replace the notion of conventional education, but rather expands on it. Smart classrooms are chances that give students with high-quality education while also assisting them in better comprehending ideas and improving their reading and writing abilities in order to attain academic achievement. They have aided students in areas such as responsibility, time management, communication, interaction, teamwork, retention power, accessing online resources, learning new technical tools, achieving high academic outcomes, and so on.

Impact of Smart Classes on Teachers

As you are aware, as technology advances, teaching techniques are changing and improving for the better. Smart classrooms are the greatest alternative for instructors in this situation. Teachers have had an influence on smart classrooms for a variety of reasons, including interactive sessions, detailed synchronisation, easy maintenance, interactive learning environments, resource accessibility, excellent teaching techniques, confidence, time management, and personal coaching for students.

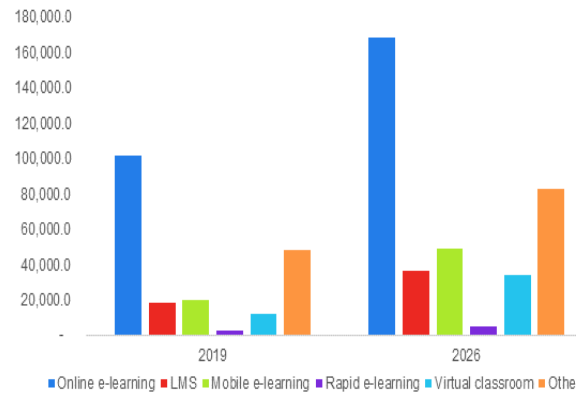


Fig. 2: Global E-Learning Market Size

Factors in improving smart classes

Manage resources in the cloud – As the realm of smart classes and digital learning is gaining traction, it is necessary to have an integrated platform to store all the resources. For the learners as well as the teachers, the cloud storage feature will be an additional benefit of being easily accessible from anywhere, too easy to use, and efficient in synchronizing and updating.

Face to face interaction – It is vital to have face to face interaction among students and teachers to bring effectiveness to the learning process.

Video-assisted learning – Today, videos are curated for academics to offer an interactive and dynamic learning environment. An interactive whiteboard is one of the prevalent products in enhancing engagement and interaction. Similarly, it is important to develop education-based technology to improve the current techniques.

Game-based learning methodology – To promote critical analysis skills and enhance interactive sessions among students, teachers engage them with education-based games such as quizzes, and puzzles making a learning method fun.

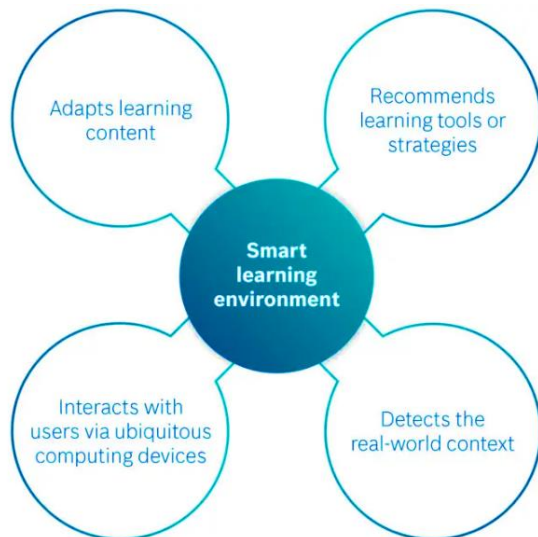


Fig.3: Smart Learning Environment

Along with these, it is also important to dwell on a product which can offer features such as screen casting, throwing and mirroring between devices providing an active learning environment. Virtual and augmented reality techniques to build an interactive learning platform will be added in improvising the methodology. To create an engaging, interactive, and effective environment in the education system, it is of utmost importance to enlarge the product portfolio. It is extremely imperative to develop and modernize education in India. A smart learning approach will bring quality education to students by helping them grow, develop skills and build better concepts. It will also provide teachers with the capabilities to continue teaching and inspiring their students to learn, regardless of their location and the current situation. In recent years, there has been a considerable improvement in educational standards, development, and innovation in the education sector. Schools and other educational institutions have started to use interactive intelligent boards, projectors, and smart notebooks, among other innovative teaching techniques. And we cannot dispute those technological advancements make the educational system more engaging and user-friendly. Students prefer to exchange and transfer study information through tablets, phones, and other devices, which saves them time and effort. On the other hand, clever technology assists lecturers in transforming dull

lectures into engaging sessions. It is not just about sharing information, but also about improving online presentations by eliminating the need to write manually.



Fig.4: Concept of Smart Education

Enhanced Learning Experience

Information may be displayed using images, maps, graphs, flowcharts, and animated films utilising smart classroom technologies and interactive whiteboards. This makes learning more appealing, fascinating, and simple to grasp. It improves pupils' capacity to study and recall material for an extended length of time. It is a universal reality that when we learn via images, we retain more information than just staring at the chalkboard and hearing.

Interactive Learning Experience

According to a Gallup poll, using smart technology in schools and universities increased student engagement by 55%. The use of smart boards enables lecturers to provide more effective lectures by using various projections in their presentations to illustrate the subject. With certain unique effects and visual presentations, teachers may simply explain each and every component of the lesson. It facilitates a rapid Q&A session between professors and students, which creates a superb learning atmosphere in the classroom.

Easy Access to Online Resources

A smart class features synchronised digital display boards and projectors. A teacher may simply demonstrate some practical solutions found on the internet. While students may access a variety of online materials through the

internet. Smartboards and interactive whiteboards have been adopted at a rate of 70% in the education sector, comprising both the public and commercial sectors, during the last four and a half years. This is clear evidence that educational institutions are adopting sophisticated technologies.

Follows Go Green Concept

Smart classroom technology uses a dynamic information sharing strategy and eliminates the need for paper, pen, pencil, and printouts, thereby including the "Go Green Concept." This is one of the key advantages of smart classroom technology for keeping nature clean and green.

Time Saving Technology

In contrast to the old learning approach, which required pupils to take extensive written notes. Smart classroom technology enables students to create online presentations and get feedback from their lecturers in less time. The same is true for professors, who do not need to instruct pupils to take rough notes since the presentation may be shared with everyone immediately. This saves instructors and students a lot of time that might be spent on another engaging activity.

Increased Productivity

Data delivered via intelligent classroom technology is displayed in a visual way that is more likely to interest pupils. Not only can kids participate, but they also learn things more quickly. This pushes students and instructors to achieve excellent achievements, which leads to increased production.

Conclusion

The interior structure and all configurations of conventional and classroom space do not correspond to computerised changes in the educational system, methodology, and present social environment. Smart classrooms rethink and examine learning space, and learner expectations, as well as teaching-learning materials and approaches. Students that are interested in research, technology, or reading

and writing academic work will benefit from the Smart Classroom. This new technology's use and application must be fostered in the present educational system, from elementary to higher education courses. The Smart classroom allows students and teachers to learn using innovative ways uniquely and excitingly. It is a reasonable assumption that both pupils and instructors have grown more technology savvy and digitised for the forthcoming age. Students must adapt swiftly to new technology, as they will be required to do in the working world. Cameras, remote controls, and wireless devices are all typical technologies that result in more engaged learning and adaption to a range of learning styles for students. Not just classrooms, but also students and instructors, will need to adapt and update in the near future.

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