

STUDY OF EDTECH BUSINESS

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ABSTRACT

One of the major features of technology in Education sector is to increase the level of education delivery in educational institute. Technology in education sector can be powerful tool for enhancing the relationship between educators and student, reconsider traditional ways of learning and shrinking the long established educational gaps and create a long lasting learning experience. Ours Schools, Universities or tuition centers or any educational institute should be hub of exploring new methods and technologies to enhance the quality of education .Educators or teachers should constantly be learning new skills to enhance their quality of education. Educators should be creating learning environment that provide students right tools and support for all learners to grow. In order to do that the stakeholders of educational institutes should join hands with technology. These stakeholders are leaders, teachers,

faculty, Investors, researchers, policymakers, organization and Ed-tech startups. Implementing technology in education system which will we have the quality of education in India should be major goal of the stakeholders special leaders. A global pandemic made digitization a necessity for almost every organization out there which made them realize how technology can be beneficial in education delivery. Almost every education institute is currently using have adopted for some online technologies. This research work is specially focused on benefits of innovation in education, various Ed-tech start-ups that grew in recent years and its necessity of Ed-tech in education system.

Keywords : EdTech – Educational Technology, K-5 To K-12 – Class – 5 To Class – 12, IoT – Internet of Things, AI – Artificial Intelligence, FY – Financial Year, App – Application, B2B – Business to Business, B2C – Business to Customer or Business to Consumer, C2C – Customer to Customer or Consumer to Consumer, UGC – University Grant Commission

INTRODUCTION

To be successful in life students need a pathway that bridge the gap created by traditional education system. Due to technology advances students have new opportunity to learn and grow furthermore technology can be a powerful tool to reimagine the education system in around the world. Ed-tech has several benefits to Educators and students which are as following:-

- ✓ A student interested in learning computer science can take the course online in a school that lacks the funds or a faculty member with the requisite expertise to teach the course if they have high-speed internet access.
- ✓ Learners who are having trouble planning for college and jobs can take use of high-quality online mentoring and advising programmer where resources or geography make face-to-face mentoring difficult to come by.
- ✓ Students in a remote geographic location investigating local phenomena can collaborate with classmates doing similar work anywhere in the world using mobile data collection equipment and online collaboration platforms.

- ✓ Students who participate in creative writing, music, or media production can share their work with a worldwide audience regardless of where they attend school.
- ✓ Less experienced learners can access and participate in specialized communities of practice using technology-enabled learning environments, progressing to more complicated activities and deeper participation as they gain the expertise needed to become expert members of the community.
- ✓ These options provide growth chances for all students while providing historically disadvantaged kids with more access to high-quality learning materials, knowledge, personalized learning, and tools for future education planning. Such chances can also help instructors build their capacity to offer blended learning to their students, rethinking when, where, and how students engage in completely diverse aspects of a learning experience. The application of modern and scientific teaching-learning methods and instructional strategies in the educational system is at the heart of innovation and educational innovative technology.



Figure 1.1

The Industry

The Situation in the Industry

The increasing internet penetration in various regions around the world is a major driver driving market expansion. The growing popularity of cloud-based solutions, together with significant expenditures by leading market players in improving the security and stability of cloud-based education platforms, is driving up end-user adoption. The market's abundance of service and content providers is bringing massive amounts of instructional content online.

The use of this technology is being boosted by lower hosting costs and a growing demand for instructional content. The rapid rise of the Internet of Things (IoT) and advancements in artificial intelligence will continue to improve the user experience on these online education platforms, fueling market growth during the forecast period. Other elements leading to the expansion of online education by academic institutions include increased efficacy of animation learning as well as flexibility in learning. Students are increasingly opting for online education as a result of a lack of qualified staff in various schools and universities across developing countries. Another important driver of expansion is government support and financing.

Government support and funding helps organizations to grow their industry. With an expanding number of students enrolled in academic institutions and a constant need to up skill and give industry-relevant training to employees, academic institutions and corporations must devise solutions that allow individuals to learn at any time and from any location. Many educational institutes are mixing face-to-face and online learning at all levels of education due to the growing number of students and the cost effectiveness of online Study.

Key Players in Indian ED-Tech Market

In India, a lopsided pupil-to-teacher ratio is on the rise, jeopardizing a holistic learning experience for pupils in schools. As a result, these technology-driven learning apps use gaming features like point-scoring and social interaction, personalization, and data driven insights to assist students improve their learning process and strengthen their fundamentals in numerous topics.

LIST OF ED-TECH COMPANIES OF INDIA

- ❖ Byju's

- ❖ Classroom.live

- ❖ Toppr

- ❖ Vedantu

- ❖ Skolaro

- ❖ Blackboard

- ❖ Unacademy

- ❖ UpGrad



Figure 2.1

Classroom.live is a complete education delivery platform developed by unthinkable solutions sister concern of Daffodil softwares. There are various platforms available for web conferencing like zoom, WebEx Classroom.live is a virtual classroom platform which is a collaborative web conferencing classroom with interactive whiteboard. We strive for seamless collaboration and easy content creation for teachers.

- Attendance
- Single virtual classroom
- 100% assured class controlled by management
- Simple and easy to use

Instant report and actionable insights. It has three panels depending on the different user perspective. The admin panel, student panel and the teacher panel. We call this platform simple secure and powerful as:

- Single virtual classroom platform for students and teachers
- Digitally secure login
- Real time management reports for deep insight actions



Figure 2.2

Vedantu is India's leading online learning platform, allowing students to learn LIVE from some of the country's best-curated experts. It's a rapidly growing EdTech company with a student base of over 1 million students spread over 1000+ cities in 30+ countries. Vedantu was founded by IITian friends who had worked as teachers for over a decade. Students in grades 6 through 12 are served, and they are prepared for school boards, competitive tests, and co-curricular activities.



Figure 2.2

Heemash Singh, Sachin Gupta, and Gaurav Munjal launched Unacademy, an EdTech company in Bangalore that provides an online learning marketplace for courses. In 2015, the YouTube channel was converted to an online learning platform. Even so, their YouTube channel still has a lot of educational films.

Unacademy began as a YouTube channel by Hemaash Singh in 2010, and has since grown to become a household name in India's education technology business. Unacademy is an Indian e-learning start-up. Unacademy's mission is to provide free education to everyone in the world, and it has expanded into industries such as banking, CA, CAPF, UPSC, CLAT, CAT, JEE, PreMedical, and more.



Figure 2.4

UpGrad is a Virtual platform that facilitates higher education. They offer a fully immersive learning experience through the use of cutting-edge technology and well-designed courses. Ronnie Screwvala, Mayank Kumar, Phalgum Komapalli, and Ravijot Chugh created UpGrad in 2015. UpGrad was founded in 2015 on the belief that in order to stay relevant in an ever-changing market, professionals must constantly up skill themselves. Since then, we've always focused on cooperating with the best universities and industry partners to create a fantastic online learning experience. After that, we gradually built a strong support system for our pupils. India's largest online programme to help millions of professionals achieve their career goals in data technology and management.

OBJECTIVES AND SCOPE OF STUDY

When we talk about technology in education, we think about the usefulness of technologies such as audio-visual aids, machines, and equipment such as TV, overhead projectors, educational computers, and so on. Technology is a component of development that pervades almost every aspect of our culture, influencing how we live, play, work, and learn. With the invention of mobile and wireless devices, technological advancement in the world. The importance of incorporating this technology into the teaching-learning process has made it critical for the education sector. This FRP report will assist you in becoming acquainted with the list of essential educational technology objectives.

STUDY OF ED-TECH

Educational technology, also known as EduTech or EdTech, is the concept of teaching and learning through the use of a technologically efficient medium. It enables a thorough understanding of the fundamentals of technology and how it works. Educational technology has a variety of goals in order to help the teaching-learning process produce the best possible results in the most efficient and cost-effective manner.

Technology is a broad term that encompasses all systematic applications of scientific knowledge to a practical task. Similarly, educational technology is concerned with two issues:

- ★ **Theoretical knowledge** derived from academic disciplines such as psychology, education, communication, philosophy, sociology, computer science, artificial intelligence, and so on.
- ★ **Experiential knowledge** gained through educational practise and training.



Figure 3.1: ESSENTIAL OBJECTIVE OF EDUCATION TECHNOLOGY.

Educational Technology Facilitators' Responsibilities

Facilitators of an educational technology plan, design, and develop a productive learning environment and range of experience through the use of assisted technology.

Their responsibilities include the following:

- Planning learning environments and experiences using technology to create efficient teaching and learning environments.
- Create appropriate technology-driven learning opportunities to meet the diverse needs of different learners.
- Examine the precision and applicability of technological resources.
- Manage technology resources in relation to learning activities and pedagogy.
- Create management strategies for students who are learning in a technologically enhanced environment.
- Determine instructional design principles in order to create technological resources.

OBJECTIVES OF EDUCATIONAL TECHNOLOGY

MACRO LEVEL MICRO LEVEL

Macro-Level Educational Technology Objectives

- ✧ Because of the growing importance of technology in education, this phenomenon achieves a plethora of macro-level goals, some of these include: identifying the community's educational needs and desires.
- ✧ To comprehend the educational structure, board strategies, and goals.
- ✧ To support the mission's strategies, human resources, and material assets in order to achieve predetermined goals.
- ✧ To develop appropriate aids and instruments to aid in educational purposes.
- ✧ To create educational technology models that will help to improve the current teaching and learning process.
- ✧ To identify and develop solutions to major environmental constraints.
- ✧ To broaden and support educational opportunities for people all over the world, particularly the underserved segments of society.
- ✧ To manage the entire educational system, beginning with planning and progressing through execution, implementation, and evaluation.

MICRO-LEVEL EDUCATIONAL TECHNOLOGY OBJECTIVES

- ✧ Discovering and analyzing the characteristics and educational needs of each student; determining and stating specific behavioral classroom objectives .
- ✧ To comprehend and organize the contents of instruction in a logical order.
- ✧ Recognize and utilize existing teaching and learning resources and materials.
- ✧ To determine the nature of the interaction of subsystems such as teachers, students, instructional content, teaching-learning materials, and various methodologies.
- ✧ To plan teaching strategies and use human resources and material assets to achieve specific classroom goals.
- ✧ To determine the effectiveness of classroom instruction, evaluate each student's behavioral change and performance.
- ✧ To provide critical feedback to teachers and students regarding any changes to the teaching-learning operation

SCOPE

Process-oriented goals guide educational technology. The application of educational technology is not limited to teaching and learning methodologies and theories, but also to providing comprehensive assistance in the development of an individual's nature.

The following is a comprehensive list of educational technology:

- Educational technology improves the efficiency and process-orientation of the teaching-learning process.
- With the help of teaching aids and pre-programmed instructional material, educational technology has improved the learning process for students.
- Distance and correspondence education can be provided through traditional mediums such as television, radio, tape-recorder, V.C.R., and computers.
- The advancement of the internet has greatly facilitated education dissemination all over the world.
- The use of technology to improve feedback mechanisms improves the quality of teacher training in academic institutions.
- Innovative analytical tools and instruments powered by technology can aid in the resolution of educational administrative issues.
- Educational technology aids in the development and comprehension of the structure and nature of teaching.
- The best use of educational technology strengthens the scientific foundation and leads to new discoveries.

Literature Review

The following literature review will provide information that can be collected and used for a discussion on how technology is changing education and what types of technology schools and students are using today.

Technology has altered the way students learn and interact with their professors for assistance and clarification. This literature review discusses the changes in educational technology, as well as the main events that have influenced students' learning styles. It provides statistics on how much time students spend on technology and how much progress they make. It recognizes both positive and negative perspectives on the topic, as well as how teachers are receiving assistance with this technology.

The Benefits of Technology on Education: A review of the Literature

With the passage of time, technology has become an integral part of our lives, to the point where most people will begin to rely on it. One of the most noticeable changes is in the classroom. Students observe a variety of common tools in order to identify the major types of technology based on the human desires that most of them satisfy. Students and teachers have witnessed the advancements, noting how technology has increased the number of opportunities to study.

In what ways are technologies used in schools?

- ✓ How frequently do students use technology at school and at home?
- ✓ What are the positive and negative effects on students' academic performance and experience?
- ✓ Is adequate technology being provided to teachers in order to prepare students for the future?
- ✓ The following literature review will focus on these questions, including information about positive and negative effects, the use of this technology, and the different types of technology.

WHAT KINDS OF TECHNOLOGY ARE USED IN THE EDUCATION FIELD?

Adapting to technology is not an option; technology is constantly changing, and people will learn something new every day. Technology in schools has advanced in a variety of ways, beginning with

the invention of writing on stone, progressing to metal sheets. Finally, we arrive at paper and the use of a pen. This occurred 30,000 years ago, and people are still and will continue to use the invention of paper and pen for many years to come. Technology has had a significant impact on all schools, jobs, and hospitals, providing the opportunity for a better education and more accurate results. The role of schools in the development of young people's skills and abilities, schools should be the place where technology can be introduced to the young generation so that they can learn and control their advantage to this. According to Steven Hack Barth's book *The Educational Technology Handbook*, educational technology is a systematic process of developing solutions to problems in teaching and learning. (Hack Barth, 1996) How technology has transformed education by providing sophisticated tools that have changed the entire educational system. The only way of teaching the public was for the professor to speak, with no way of seeing a visual example from the teacher, as students used paper and ink. One of the most significant inventions of all time was the creation of the first modern library by John Dury in 1651, with the benefit of books believed to have been invented by the Sumerians around 1300 BC. Having chalkboards for teachers and slates for chalkboards for students until the 1700s and introducing the modern pencil Nicolas Jacques Conte until 1795. Audio-visuals. The overhead projector was invented after 1940, changing the way of teaching and students learning. It was introduced in schools in the 1930s, giving students the opportunity to watch educational videos. Technology was not always available for students to use; they progressed from the bottom to where we are now. Keeping in mind the enormous changes in technology, all of these changes were made due to the needs of the people and their education. Having a better understanding of technology will show people what else can be invented that will necessitate a better understanding. Smart-boards, or interactive whiteboards, were introduced in 1991 to replace traditional chalkboards. Smart-boards are the new way students and professors interact. This new technology allows them to keep their normal whiteboard and add a device that converts their normal whiteboard to smart boards, where students can go to the front and touch or write the answer on the board with their finger, taking physical ink from the whiteboard without the use of the projector, making the classroom environment friendlier to students. According to Chris Dede (2009), the number of computers in the classroom is increasing, making the computer the most important tool in school and the internet a big part of students' living? Programs have been developed through the internet to make submitting work easier and faster. Blackboard is one of the numerous programmes that the internet can provide to schools. It may be simple for some people to use this technology, but it may take longer for others to understand how a programme works. The ability to finish your work on a computer and turn it in immediately on the same device can be useful. Teachers post their lessons and future assignments in these programmes or

send them to students' email addresses, but it is important to remember that students are on a tight budget and cannot afford a computer. They must visit their local library and borrow a computer. Students used to have to write down their notes, do their homework with a pen or pencil, go to teacher's office hours for tutoring, and so on before they had access to all of this technology. Students did not have all of their assignments saved on a computer or a USB drive. They would do double the work that students do now, but that is because the work that students do in this century is double that of previous centuries. Some high schools have programmes where students can borrow computers, laptops, and the most recent technology that the school can afford. In 1868, Christopher Sholes invented the first typewriter with a QWERTY keyboard; as a result, shorthand classes were introduced in schools, allowing students to learn how to write twice as many words in half the time. The first personal computers were introduced to schools in 1977, when 18 percent of United States public schools had one computer for instruction only. By 1991, computers were in all schools, with one computer for every 18 students, and the number of computers continued to rise until the year 2000, when one computer was available for every 5 students in school. Adding to the evolution of computers, Texas Instruments invented the first handheld calculator in 1967; since that year, instead of making the long process of getting an answer, a machine would do it. Technology requires education to function, and it is through education that people invent the new tools that most people have in their hands today. "Educational technology is not, and will never be, transformative on its own. "It requires the help of instructors who integrate technology into the curriculum, link it with student learning objectives, and use it for engaged learning."

■ **What are the positive and negative impacts on students.**

Every change must have both positive and negative outcomes; students must be aware of these outcomes in order to determine whether the changes are effective or if they are not improving their learning. By paying attention to the improvement of the students and how they use this technology, it gives the impression that it is worthwhile to spend thousands of dollars to increase the number of computers in colleges and local schools. Don Knesek explains the effects of incorporating technology into education:

- ✓ The findings given in this brief show that technology is being effectively integrated into teaching and learning, and that it is having a beneficial influence on student achievement as measured by test scores

and the acquisition of 21st century skills. Providing a foundation of technology-based skills for today's generation that fits into the bigger picture of global competitiveness.

- ✓ Teachers will be able to see how their kids use technology by gauging their knowledge. Technology may not always assist kids in improving; in fact, it may serve as a tool to divert students' attention away from their homework and other responsibilities. In cases where students do not show any improvement, they will take advantage of these benefits and allow pupils to work in the usual manner, where they will be required to travel.
- ✓ Teachers must learn how technology works and how to teach the importance of this advantage to their students in order to reap the benefits of technology. Teachers will not know how much information students have access to if they are unfamiliar with the content to which they are exposed.
- ✓ Teachers can now communicate with their students outside of the classroom; if students have questions or thoughts, they can easily send an email, and their professors will most likely respond. Students and teachers must improve and withdraw from this subject.

Is adequate technology being provided to teachers in order to prepare students for the future?

The goal of a teacher's education programme is to prepare students to handle the demands that their courses will face in the future. Teachers that have access to technology can make a significant difference in their teaching methods, resulting in a better learning experience for students. Teachers may be unsure if students will use personal devices in class as a means of cheating or as a means of retaliating against the same teachers who are allowing it.

Technology advancements have always changed the way people are educated and how education is affecting technology, and students are in charge of how they will progress. Technology has changed everyone, including teachers and children, but some teachers may face challenges in figuring out how to use it. Although programmers can provide all of the technology that teachers require, technology can be a nightmare for some.

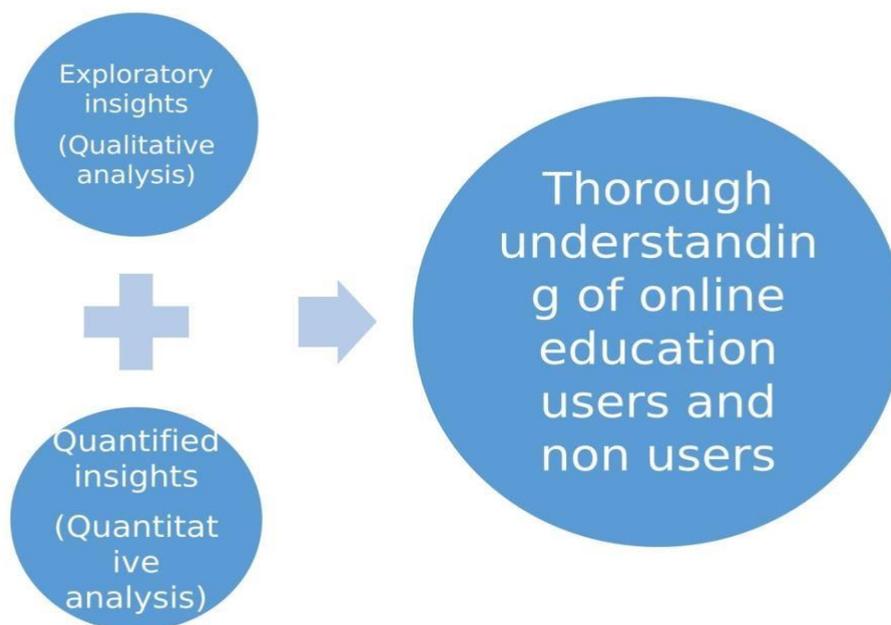
Some teachers are not used to all of this technology, but as many people say, "you can never get used to technology," so some may simply lose interest in having all of these benefits to learn these technology skills. "The reality is that students of the twenty-first century need a technology-based education to survive in a technological world." A student's future can be jeopardized if he or she does not have access to the necessary technology to receive an adequate education. Most have produced a better environment inside the classroom with this technology, where students will like to interact in class and others will have the ability to interact but from a distance, because some students are not as social as others and prefer to remain that way.

RESEARCH METHODOLOGY

OBJECTIVE OF THE RESEAERCH

The study's goal was to learn about the public's perceptions and awareness of online education. To understand preference towards online or offline education based on the following factors: drivers, hurdles, preferred teaching approach, payment alternatives, and so on.

Research Methodology: This research was carried out in stages:



Primary research

Primary research is explained as a methodology used by researchers to collect data directly, rather than depending on data collected from previously done research. Technically, they “own” the data. Primary research is carried out primarily to address a specific problem that requires in-depth investigation.

Methods of analysis

Based on the feedback from the group meetings on Ed-tech with my supervisor during my 6 months internship this project has undertaken one-to-one interviews to gather existing user requirements in terms of technology. In the process it adopted literature review, reviewing application websites, and application testing. It also invited a participant to review the current existing Ed-tech platform available in the market.

Sampling

The sampling method used in our research project is convenience sampling where we interviewed people who are easily accessible to us including my managers and school educators I dealt with during my internship.

Sample Size - Sample size for the primary research taken here is of 25 participants including of industrial experts, educators.

Data collection

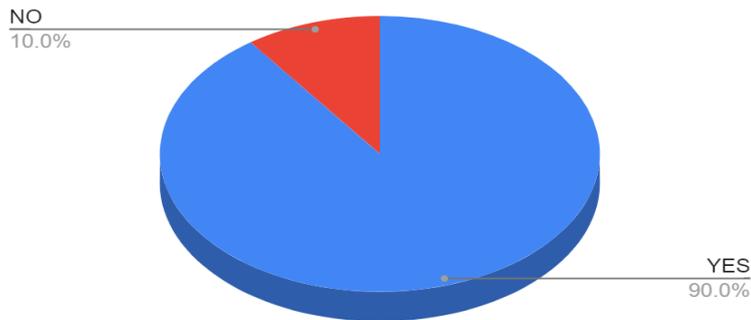
A survey was conducted among various industry experts, educators. All the volunteers participated in an one-to-one interview. The review of available all the technology provider in the market was through three groups:

- 1) Tools that have been mentioned by the VLE group;
- 2) Tools recommended by the VLE or e-learning professional interest groups and organizations.
- 3) Tools recommended in research papers and academic journal articles in education settings, and reliable awards for learning technology products.

For better understanding kindly refer to the Questionnaire along with their responses .

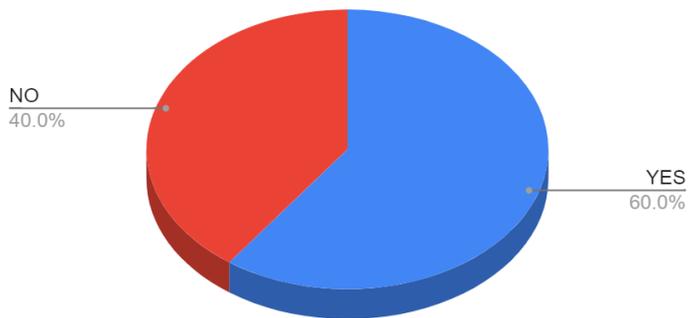
1. Due to the current circumstances created by the COVID-19 virus, when schools fully reopen, will online teaching remain part of school practice?

| OPTIONS | YES | NO |
|-----------|-----|----|
| RESPONSE% | 90 | 10 |



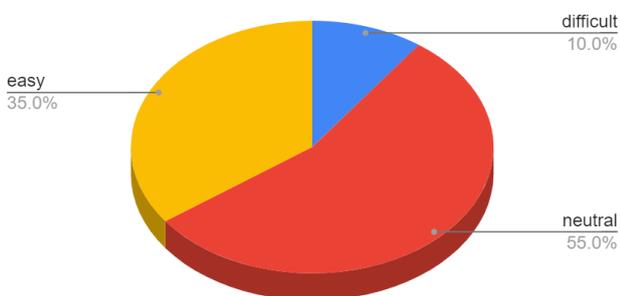
2. Do you use EdTech application after school hours also?

| OPTIONS | YES | NO |
|-----------|-----|----|
| RESPONSE% | 60 | 40 |



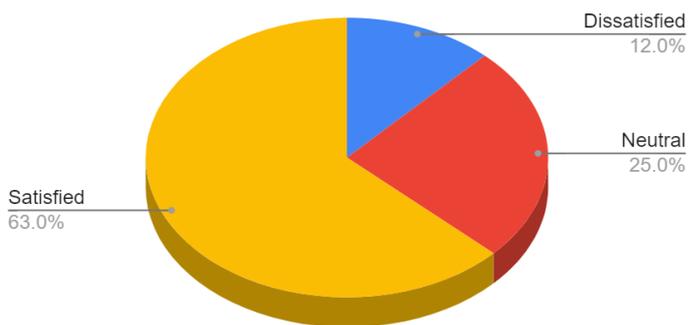
3. How difficult was the online curriculum for you?

| OPTIONS | Difficult | Neutral | Easy |
|-----------|-----------|---------|------|
| RESPONSE% | 10 | 55 | 35 |



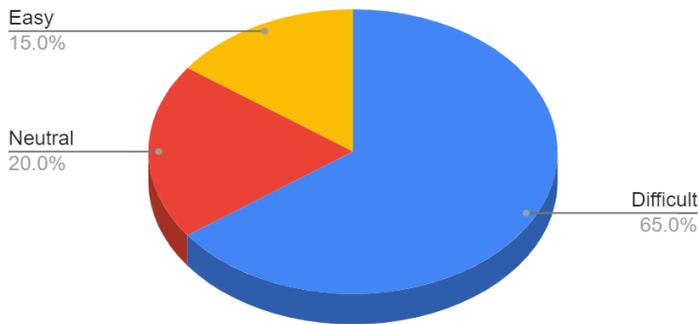
4. Please set your level of satisfaction for the hybrid learning?

| OPTIONS | Dissatisfied | Neutral | Satisfied |
|------------------|---------------------|----------------|------------------|
| RESPONSE% | 12 | 25 | 63 |



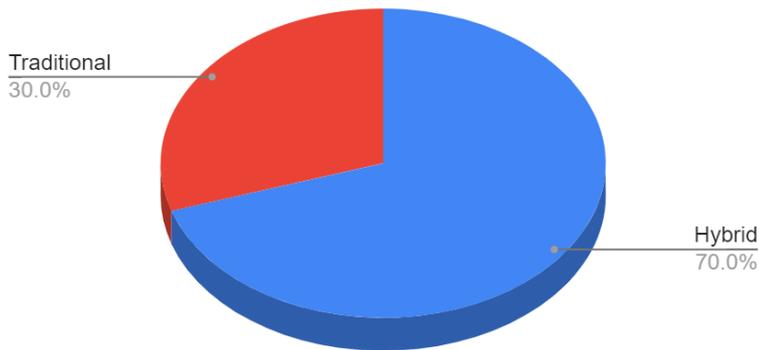
5. How difficult was it for educators to switch from offline mode to online mode of education

| OPTIONS | Difficult | Neutral | Easy |
|------------------|------------------|----------------|-------------|
| RESPONSE% | 65 | 20 | 15 |



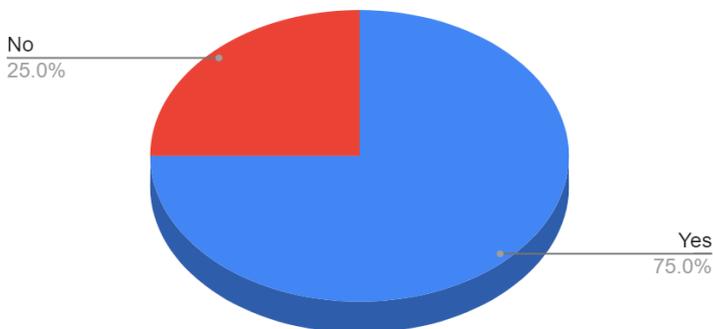
6. Do you prefer hybrid learning or traditional methods?

| OPTIONS | Hybrid | Traditional |
|-----------|--------|-------------|
| RESPONSE% | 70 | 30 |



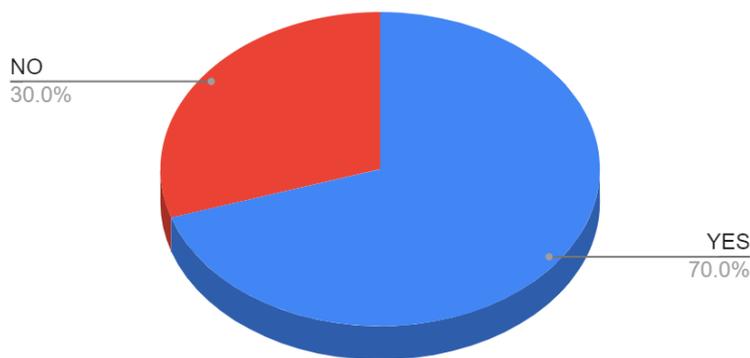
7. Would you need any help with adapting in online learning?

| OPTIONS | YES | NO |
|------------------|-----------|-----------|
| RESPONSE% | 75 | 25 |



8.How would you rate your overall skill in using technology

| OPTIONS | Below Basic | Basic | Advanced |
|-----------|-------------|-------|----------|
| RESPONSE% | 35 | 50 | 15 |



9.What are your thoughts on usage of E-Learning in Education?

10.What are the key features that you look for in any EdTech platform

RESULT

The data showed that the participants have a positive view about the use of technology in education delivery. There are three distinct requirements particularly in relation to the use of the technology-

- 1- Providing assistance with online training and tutoring (the most urgent requirement) Features like facilitating interaction and a range of ways to engage users, recording, chat, video/audio, and screen/application sharing are critical for online training and tutoring.
- 2- Providing assistance with online lecture presentations (fairly urgent requirement) Features such as supporting a large number of simultaneously linked participants, recording, and playing high-quality presentations are required for the use of online lecture presentations. This user group is made up of people who work in schools that offer e-learning courses and deliver lectures to big groups of students.
- 3- Assisting with virtual meetings support for file transferring, recording, hosting meetings, chat, video/audio, and screen sharing are all crucial capabilities for virtual meetings. Almost everyone agreed that the VCCS could help anyone, anywhere share and communicate quickly. This application is not as critical as the other two.

SECONDARY DATA

Secondary research entails a thorough investigation of secondary sources of information available in both the public domain and paid sources. Each research study is based on more than 500 hours of secondary research, supplemented by primary research. The information collected from secondary sources is validated by cross-referencing it with other data sources. Secondary data sources are commonly used for:

1. Reports and publications from the company
2. Publications from the government/institutions

3. Databases such as the World Trade Organization, the OECD, and the World Bank, among others.
4. Websites and publications by research organizations Segment Covered

The global EdTech market is divided into three segments: sector, kind, and end user.

- 1.
2. Sectoral Analysis of the Global EdTech Market
3. Preschool, K-12, and Higher Education
4. End-User Market for Global EdTech
5. Consumers in Business
6. Profiles of Businesses

DATA ANALYSIS AND INTERPRETATION

Education Landscape in India

With 260 million kids enrolled in more than 1.5 million schools and 39,000 colleges catering to 27.5 million undergraduate and four million postgraduate students, India has a multi-layered formal education system. Primary and secondary schools, as well as graduation, post-graduate, and diploma programmes, are all part of formal education. State and central bodies, such as CBSE, ICSE, state and foreign boards, govern schools. India boasts one of the world's largest higher education systems, which is dominated by the private sector. Though India's higher education is overseen by the UGC, it is organized into three levels: university, college, and course.

The Medical Council of India (MCI), the All India Council for Technical Education (AICTE), and the Bar Council of India (BCI) are just a few of the regulatory agencies in India.

Pre-primary, coaching classes, vocational education, and multimedia/technology based educational courses are examples of informal education that can be used to enhance or replace official education. India has one of the world's largest informal education markets. In recent years, the pre-primary sector

has seen a considerable number of participants due to low entry hurdles. The presence of a large working population, as well as an increasing demand for trained workers, has aided the rapid rise of vocational education in India. In India, test preparation accounts for a large portion of informal education. In India, the online education channel comprises everything from primary and secondary school to hobbies and language learning in both formal and informal settings. Customers' needs have prompted online players to create B2C, B2B, and C2C solutions

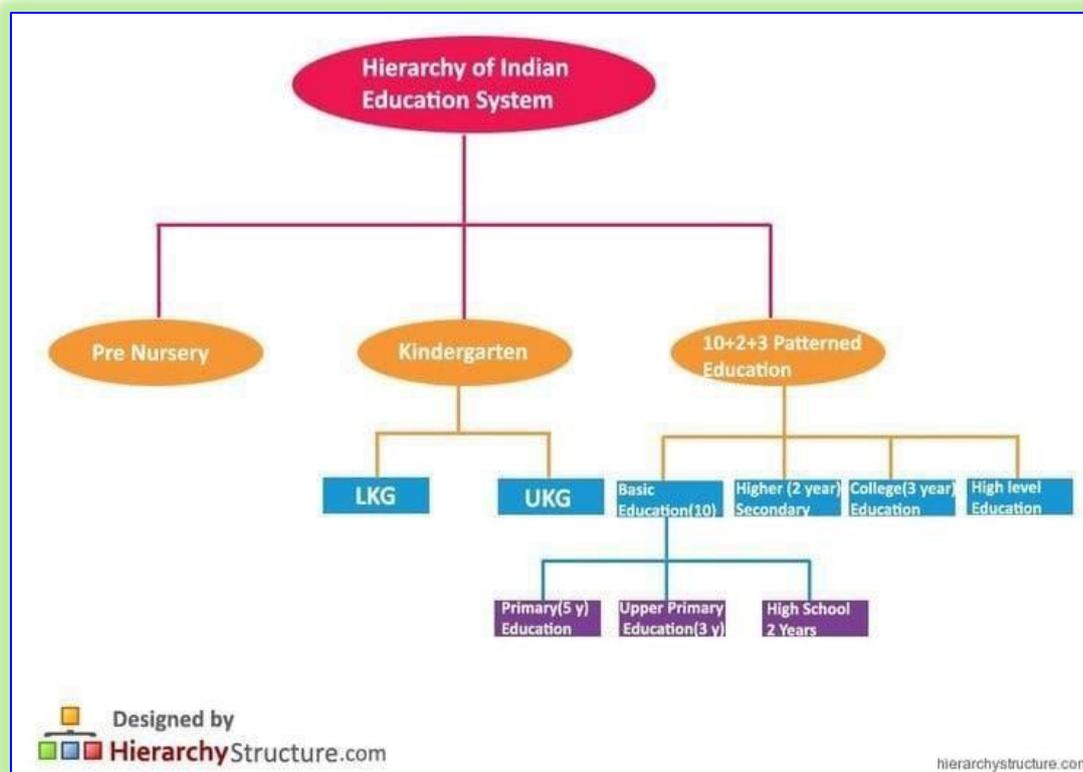


Figure: 5.1

How much time do students spend using technology at school and at home?

Teachers who utilize technology in their classrooms regularly in the twenty-first century report greater benefits to students' learning than teachers who use it less frequently. Researchers just revealed one of the main findings from a K-12 technology study. According to Nagel (2010), the increased use of technology can be explained as follows:

- 22% of those polled deemed themselves frequent users of technology, spending 31% or more of class time utilizing it to aid learning.
- Moderate users, defined as those who spend 21 percent to 30 percent of class time using technology, accounted for 17% of the total.
- 26 percent of students are intermittent users who spend 11 percent to 20% of class time utilizing technology.
- 34 percent of infrequent visitors reported spending 10% or less of their time on the site.

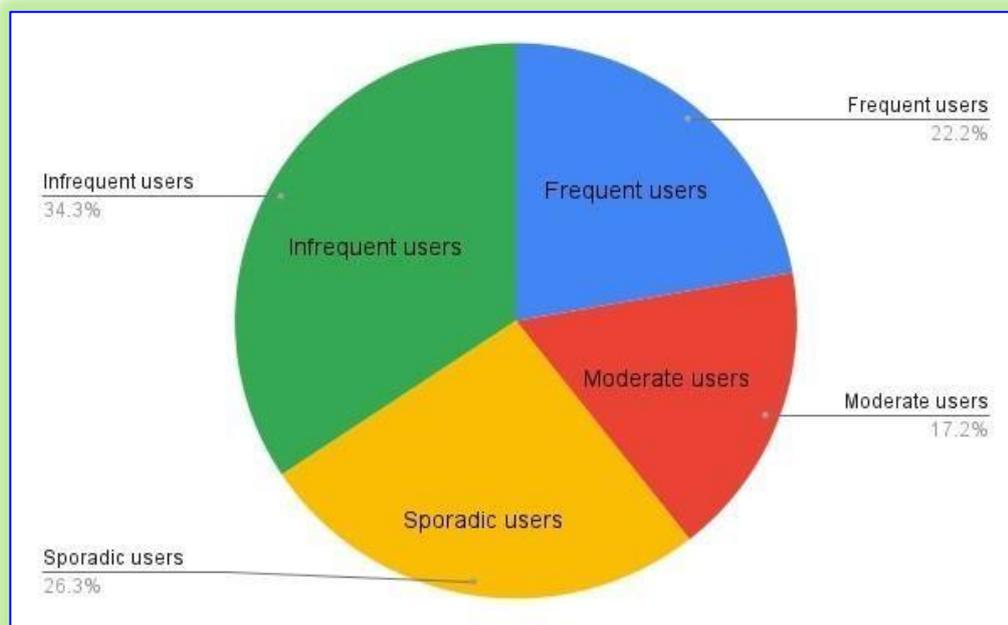


Figure:5.2 Usage of technology during class time by students.

The findings of the K-12 study show that most students use technology more at school than at home, with more access to technology at school due to computers, clickers, tablets, and cell phones, among other things. Most of their material at school nowadays involves more technology than just reading a book. Frequent, moderate, and infrequent users spend the most of their time at school using technology, although parents can limit their children's access to technology and have a moderate use of technology at home.

According to various surveys, approximately 77 percent of preteens (ages 10-13) and 86 percent of teens (ages 14-17) use the Internet for schoolwork. While children do not use technology in the same way that adults do, children still have a large percentage of technology use and spend more time playing games online, whereas teens and adult teens spend more time on e-mail (probably talking to professors, getting grades, etc.) and schoolwork.

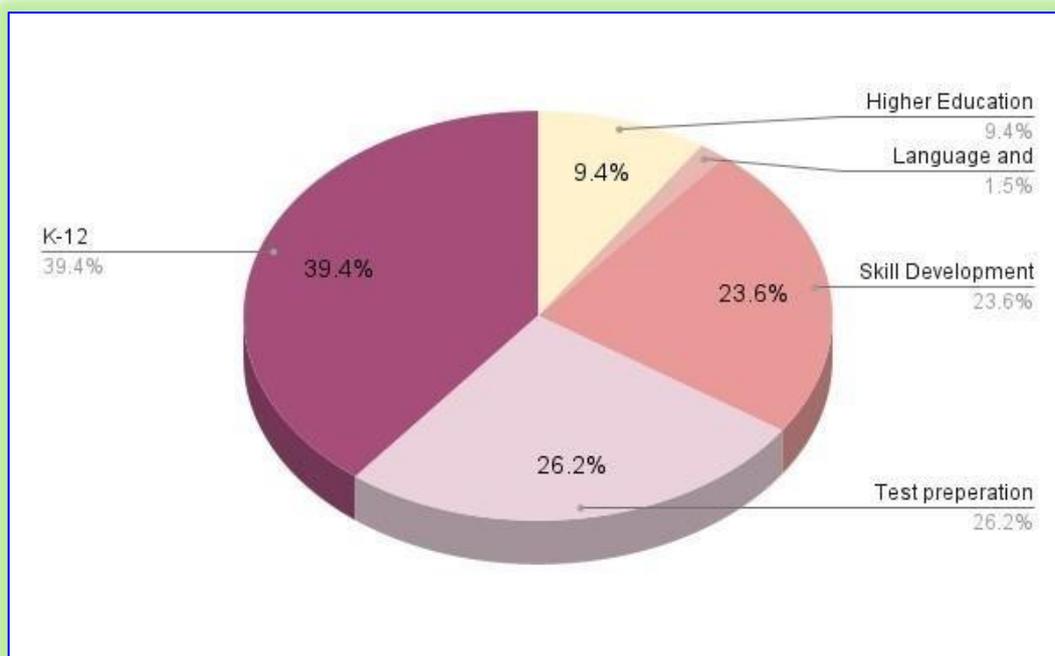
Some schools can provide the most up-to-date technology to their pupils, and with this technology, students and teachers can better comprehend why the use of technology in the classroom is increasing. Others on their newest tablets can find wonderful sources for their study on their projects by spending time on their laptops. Calculators and smart-boards can be used to arrive at these percentages on technology usage. "Students are frequently looking for a site where they may get the most information in the shortest amount of time with the least amount of work." When it comes to researching their assigned topics, some teachers will provide a list of trustworthy websites where students can conduct their research and find excellent results.

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POPULAR SEGMENTS : Segments Test preparation (from K-1 2 through entrance examinations) and online certification are the two categories that are seeing more takers than others, given that Indian education is still predominantly a marks-based system. Test prep and online certification start-ups received a massive 88 percent (\$1.6 billion) of total capital inflow in EdTech from 2014 to 2019. Investor interest in test prep and online certification start-ups is projected to rise as marks and certification remain the key focus in educational institutions and the market pursues the great American dream mindset. Test preparation, online certification, skill development, online discovery, and STEAM kit and enterprise solutions are all part of the EdTech market today. For

example, Lido Learning allows kids in grades 5 through 9 to connect online with real teachers who provide math and science tutorials. Parents pay a membership fee for their children to participate in small group lessons with teachers in real time. Students can also access offline content to practice classroom courses through the site. Lido plans to introduce English tutorials in the first quarter of 2020, in addition to math and science. "Students in smaller communities were ecstatic to receive the same product and the same level of teacher quality as students in larger cities." That's when Lido's mission shifted: "It wasn't just about making tuition classes more comfortable. "It was about democratizing education for everyone," stated Lido Learning founder Sahil Sheath.. The Indian educational system is heavily weighted toward grades and teaching for test scores. However, unlike other countries' educational systems, this method of instruction does not prepare pupils for real-life situations. The majority of EdTech start-ups are attempting to solve this problem. In an earlier interview with Inc42, Zishaan Hayath, CEO and cofounder of Toppr, a popular online learning app, said, "The problem with the traditional Indian education system is its 'one-size-fits-all' approach, which fails to take into account the varied abilities of the students they're trying to educate." This, combined with the uncertain quality of teaching in schools, leaves students stranded after graduation, as they lack the skills necessary to obtain good jobs." More than 15 million students in India study for competitive exams, creating a large market for online test preparation start-ups, aided by the internet's expansion into Tier 2 and Tier three cities. This provides a large market for start-ups such as institution management solutions like Class Plus. The majority of coaching sessions have an offline infrastructure, showing scaling issues as well as a difficulty to maintain a consistent post-classroom relationship with students and parents. As a result, they are looking forward to using technology to help them with their everyday work and administration. Start-ups like Pesto, an EdTech business based in Gurugram, are also attempting to bridge the talent gap between engineers and multinational corporations. . The lasting goal of EdTech, according to Ankur Aggarwal, creator of VR-based EdTech start-up Veative, is to boost the desire to study, and AR/VR can help with that in a stunning way. Beginning of A New Era of Learning? According to Data Labs, the total value of test prep and K-12 EdTech startups is expected to be \$1.3 billion by 2021, indicating that the hottest sectors in the Indian EdTech market will remain the same. More forecasts like this can be found in Data Labs' latest research, The Future of India's \$2 Bn EdTech Opportunity Report 2020. "It's safe to say that the characteristics of the Chinese economy that helped its EdTech industry boom find parallels in India," said Akhil Shahani, Managing Director of The Shahani Group. Furthermore, regulations appear to be in place in government and private institutions for improved adoption of technology in education, such as online learning platforms, "However, according to a new market prediction from ABI Research, price points for equipment are fast lowering."

Another analysis, "Augmented and Virtual Reality in Education," predicts that the market for augmented reality in education would reach \$5.3 billion by 2023, with the market for virtual reality head-mounted displays trailing at \$640 million. Additionally, favourable market conditions combined with rising demand make the talent development sub-sector a viable prospect for high-value returns for Indian startup shareholders. In addition, Inc42 has compiled a list of EdTech startups that are predicted to have the most market impact in 2020. White Hat Jr, Playshifu, Lido Learning, Pesto, Kings Learning, Cuemath, and Classplus are among the companies on the list. As a result of the closure of schools and other educational institutions due to the coronavirus, more EdTech start-ups are predicted to thrive, as observed in China.



IMPACT OF COVID-19 PANDEMIC

In this crisis, digital technology have emerged as a positive enabler, supporting business continuity, connecting individuals more than ever before, and assisting them in maintaining good mental health. Inequality in broadband connectivity and the inaccessibility of ICTs, on the other hand, prevents effective remote participation and access to remote schooling arrangements, health information, and telemedicine for all. According to the International Telecommunication Union, 3.6 billion people worldwide still lack internet connection, with the majority of these people living in poor countries

FINDING

The incorporation of innovations and educational technology has proven to be beneficial to persons in carrying out the proper functioning of educational institutions. The following are the key advantages of innovation and educational technologies-

1. **Activities become less time-consuming** — By utilizing technology, individuals are able to carry out their tasks and functions in a more time-efficient manner. They can finish their assignments, reports, and projects in a less time-consuming manner when they are well-versed in the usage of computers. According to research, when people used pens and paper, it was laborious, and they had difficulties finishing their work on time. As a result, the use of technology has enabled them to make a significant contribution to finishing their projects on time. When students take tests in higher education institutions, they use laptop computers. Because they believe they will be able to accomplish their assignment on time.
2. **Allow for Editing and Modifications** — when people are using computers to prepare reports or projects, they can make changes." As a result, people usually write quickly but take their time recognizing faults and making adjustments. They can quickly make modifications to technologies before final submission when they read their assignments and need to make adjustments. Making presentations is an essential teaching-learning strategy. Lesson plans are also presented by the instructors. Students, on the other hand, are forced to deliver presentations as part of their assessment strategies. As a result, modifications may be made easily in presentations as well, which is regarded as one of the most significant advantages of technology
3. **Communication** - According to research, students pursuing doctoral programs or participating in remote learning may not always meet with their supervisors on a regular basis. As a result, they employ technology to communicate with them. Emailing and communicating information, as well as preparing assignments and projects, all make use of technology. In order to complete their homework properly, the other students must engage with one another and exchange ideas. As a result, the employment of technologies has made a substantial contribution to the facilitation of interpersonal communication. Technologies have made it easier to communicate short messages, ideas, and opinions, as well as extensive assignments, reports, and project plans.

4. **Leading to Fundamental Changes in the Educational System** – It is vital to bring about changes in the current educational system. When changes are implemented, it is critical to ensure that they are desirable and beneficial in terms of boosting the well-being of the members and the entire educational system. Individuals that use 2.0 technologies learn from breakthroughs in cognitive sciences and pay attention to effective learning models. Effective learning models contribute significantly to the reinforcement of relationships between instructors and students. The implementation of job obligations is doable for the teachers, and the students can also get an effective knowledge of academic subjects.
5. **Improving Productivity and Effectiveness** - New ideas and new technology must be used to improve productivity and effectiveness. There is a need to develop technology tools in order to increase production and effectiveness. Real-time resources for data-driven instructional decision making, student diagnoses and prescription, professional development, and performance management must be provided through innovation. Technological advancements should occur in such a way that they can adapt to new needs and users can benefit from current and inventive approaches.
6. **Idea generation to provide solutions to problems** – The development of ideas is required to propose answers to problems and obstacles that may arise during the performance of job activities. Individuals can provide solutions to challenges by utilizing technology and modern and inventive techniques. Those who see the facts from a different perspective or with new insights are often the ones that come up with the most innovative answers.
7. **Developing Data Standards and Reliable Information Platforms** – The development of data standards and strong information platforms are viewed as critical, especially when utilizing technologies and new ways. This topic can be better explained with the help of an example. When working on their research in doctoral programs, research scholars are obliged to undertake an analysis of the data acquired using the statistical software known as the Statistical Package of Social Science (SPSS). They must create information and improve their computer abilities in order to apply SPSS. They are even enrolled in short-term training programs for this aim. As a result, it can be argued that individuals employ technology and new approaches to develop data standards and strong information platforms.

CONCLUSION

To summarize, the majority of options for possessing technology and understanding how to use it are increasing on a daily basis. Most classrooms throughout the world are incorporating technology into their teaching methods, and technology has both positively and negatively altered education. Adding programme where students may reach their goals regardless of where they live, with the internet playing a major role in this development. Giving children work chances by teaching them how to use the most popular computer programs.

Technology and the internet have been used extensively not only in educational institutions but also in other organizations. Individuals are increasingly relying on the internet to supplement their knowledge and comprehension, as well as for other purposes. The main advantages of innovation and educational technologies are that tasks become less time consuming, editing and changes become easier, communication improves, leading to fundamental changes in the educational system, the generation of ideas to provide solutions to problems, the support of the learning cycle, the promotion of aligned and effective assessments, the creation of data standards and strong information platforms, the improvement of productivity and effectiveness, and the development of technology.

Another idea that has been considered is that educational impediments to creativity. These include a lack of clarity on the problem to be solved, a lack of clear and common metrics, policy that is opaque to most innovators, a lack of research, a lack of technology and innovation, a lack of competencies, a weak knowledge base, a lack of infrastructure, a lack of financial resources, and ineffective dissemination. Human resources must improve their skills and talents in order to make efficient use of technologies and implement new approaches in the execution of various jobs.

RECOMMENDATION

- Allow access to the design and implementation processes. When many various stakeholders contribute to the design and delivery of products and services, they effectively answer a real user demand.
- Keep in mind that users must understand and feel at ease with privacy regulations. Privacy is a significant concern in a technologically advanced world, particularly in educational technologies. User privacy policies should be explicit, thorough, and easy to understand.
- Ensure that there is an effective method for gathering user feedback and that feedback is used to drive iterative design. The top education technology firms address particular user-identified needs, value user feedback, and prioritize customer support in order to address reported issues.
- Manage, repackage, and disseminate data to educators and administrators in a clear and actionable format. Data that is ambiguous and overpowering is less useful in the classroom, but data that tracks student performance or gaps in knowledge can be useful when given in a way that educators can use, without misunderstanding or extra effort.
- Last but not least, include relevant academic research into the creation and refinement of a product.

LIMITATIONS

Tasks and actions in the sphere of education must be carried out at the educator, student, educational institution, and system levels. Members of educational institutions strive to perform their responsibilities and roles to the best of their abilities and produce appropriate results. To reach their goals and objectives, businesses must employ new and inventive ways and approaches. Certain hurdles arise with the implementation of modern and creative ideas, which have been listed below:

- **Insufficient Clarity on the Problem to be Solved** – There are some issues that arise during the process of acquiring education. Individuals must be clear in their provision of answers to such difficulties. When things are not obvious, in other words, one of the primary impediments that may occur is a lack of clarity. Significant ideological conflicts regarding the aim and role of public education, state rights,

parental rights, and so on produce confusion in the descriptions of the problems to be tackled. As a result, this is one of the key variables that contribute to confusion and a lack of clarity on the part of individuals in terms of problems to be handled.

- **Inadequate Financial Resources** – Financial resources are viewed as critical in bringing about improvements in the overall educational system. Other aspects of environmental situations must be addressed, money resources are deemed to be the most important. A lack of financial resources is seen as one of the most significant hurdles to the growth of the overall educational system in rural communities in India. As a result, members of educational institutions must practice efficient financial planning.
- **Lack of Infrastructural Facilities** - In educational institutions, it is vital to pay attention to the development of infrastructure in order to lead to the evolution of the whole educational system. The improvement of infrastructural amenities improves the overall learning environment within educational institutions and classrooms. The main infrastructural facilities include laboratories, library facilities, computer centers, playgrounds, civic amenities, and the provision of adequate furniture, equipment, and teaching learning materials within classrooms and other facilities, which may lead to the development of interest and motivation and enable individuals to carry out their job duties in an organized manner. On the other hand, the absence of these facilities is viewed as a severe impediment to the completion of tasks and activities. As a result, it is critical for educators to improve infrastructure
- **Weak Knowledge Base** - It is critical for individuals to improve their knowledge and talents, especially in terms of their job responsibilities. In some circumstances, educators are unaware of acceptable teaching-learning approaches, lack adequate knowledge of their subjects and concepts, and lack expertise. As a result of these factors, they are unable to assist students in achieving their academic goals and objectives, they are unable to provide adequate answers to questions posed by students, and they face impediments in the course of achieving academic goals and progressing the overall educational system. As a result, it is critical for employees not only in teaching roles but also in other professions, to be able to carry out their job obligations effectively.
- **Lack of Competencies** — The professions of teaching, school leadership, and educational administration not only provide an effective contribution to boosting student learning and enriching the overall educational system, but they also make an active contribution to fostering community well-being. Individuals must have the necessary educational qualifications, competencies, aptitude, and experience to pursue these occupations. Individuals' lack of competencies is viewed as the most

significant hurdle to task and activity implementation. When it comes to bringing about innovations, they must ensure that their competencies and aptitude are enhanced. They must perform to the best of their skills in order to achieve the required results.

- **Inadequate Research** - Market dynamics and incentives do not encourage innovation. To bring about innovation in the educational system, fragmentation and oligopoly must be reduced. The educators often visit other educational institutions to raise awareness about the usage of current and creative methods. They must undertake a study to see how innovative ways are making a major contribution to improving the educational system. Lack of research and ignorance are key impediments to the use of current and creative methods in the educational system. What kinds of innovative methods must be used is also an important consideration.
- **Lack of Technology and Innovation** - The technology infrastructure in rural communities is mostly lacking in schools and adult education and training facilities. There are significant discrepancies in the school system between urban and rural communities. Technology and new methods are used in educational institutions at all levels in metropolitan regions. On the other side, there is a shortage of technology and new and innovative methods in rural educational institutions. . On the other hand, kids' learning is being hampered by the usage of traditional methods. As a result, it is critical to improve technology and innovation in teaching-learning methods in educational institutions in rural areas as well.

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