Innovation in Education Sector During the Pandemic: The Contribution of Great Educators and Emerging Technology which made Students life easy

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Abstract : Innovation is the new age term for change, A change that keeps us going. In this fast-growing world we are always looking for something new, something that catches our attention and something which could be useful for us, which saves our time and we can work smartly. In this research we are going to see how innovation changed our lives and amidst that a pandemic which paved the way for innovation and made us learn how to survive in the most difficult conditions. The purpose of this study is to show the innovations in education sector during the pandemic. This research shows how education sector which evolved drastically during the pandemic where from a very traditional system where students go to school come back and go for tuitions, Students learnt how to help themselves during this pandemic without a school or a tuition. As the pandemic spread, educators developed a lot of materials to help students learn.

The research methodology used is both qualitative and quantitative where the data collected shows the applications and platforms that came in use during the pandemic and how useful it was for the parents, teachers and students. The Pandemic is a classic example of how the educators and students adapted to challenges and change. As the pandemic progressed, education leaders created responses quickly — and with specific circumstances in mind. The result of which was that learning never stopped though with all the adversities. This paper addresses the problems caused during covid for students and how the resources and innovation came up, it also shows a series of briefs that describe the findings of a comparative analysis of emerging educational requirements and responses as the pandemic spread around the globe**.**

Keywords: *Innovation, Education Sector, Pandemic, Students, Technology*

INTRODUCTION

As the COVID-19 pandemic spread, educators developed a growing body of materials to help students learn and stay healthy during school cancellations.

Countries all around the world enacted measures to reduce the amount of people congregating in public places as the COVID-19 Pandemic progressed. The usual operation of schools and universities had been affected as a result of such initiatives. Because the duration of such measures has been extensive – and is likely to continue in some countries for some time until a vaccine is available – leaders of public and private educational institutions have put in place alternative methods for students and teachers to continue with their lessons when attending school is not possible, and are working on methods to make schools safe to work in.

The COVID-19 has caused schools all across the world to close. Over 1.2 billion youngsters were out of school worldwide. *(Alasoluyi1, 2021)* As a result, education has experienced substantial changes, with the emergence of e-learning, which allows students to receive instruction remotely and through digital platforms.

According to studies, online learning improves information retention and saves time, signaling that the coronavirus's changes are here to stay. Despite the fact that COVID-19 infection rates differ by country, the pandemic has caused school closures in over 1.2 billion students in 186 countries. Children up to the age of 11 in Denmark are returning to nurseries and schools after being closed on March 12th, but children in South Korea are using the internet to respond to roll calls from their instructors. According to studies, online learning improves information retention and saves time, signaling that the coronavirus's changes are here to stay. Despite the fact that COVID-19 infection rates differ by country, the pandemic has caused school closures in over 1.2 billion students in 186 countries. *(Geniies.2022, February 2).* Children up to the age of 11 in Denmark are returning to nurseries and schools after being closed on March 12th, but children in South Korea are using the internet to respond to roll calls from their instructors. *(Shiragur, 2021)*

With the abrupt shift away from the classroom in many parts of the world, some are wondering if online learning adoption would continue post-pandemic, and how such a shift might affect the global education industry. While some believe that the haphazard and hasty transition to online learning – with no training, insufficient bandwidth, and little preparation – will result in a poor user experience that will hinder long-term growth, others believe that a new hybrid model of education will emerge, with significant

benefits. "I believe that the integration of information technology in education will speed even faster, and that online education will eventually become an intrinsic part of classroom instruction," says Wang Tao, Vice President of Tencent Cloud and Vice President of Tencent Education.

Pedagogy and learning should take precedence over technology. A teacher's skill, experience, and competence are still required for all of the tools. They could include methods and strategies that you wouldn't typically employ. Any school's safety policy should dictate the tools you use. (Desk, 2021)

Research Methodology

The research methodology used for this research is mostly qualitative and a bit quantitative, where the data has been accumulated by taking surveys, observation, interview, Statistical analysis of the data that has been accumulated. These methods helped me find about the difficulties in learning, how was student participation affected and how that was overcome with the innovations that came as the pandemic progressed.

The difficulties of online education

However, there are obstacles to overcome. Some students who do not have dependable internet access or technology find it difficult to engage in digital learning; this divide exists across countries and between income levels within countries. According to OECD data, *drinkapk. (2022, April 5)*. while 95 percent of students in Switzerland, Norway, and Austria have access to a computer for schooling, only 34% of students in Indonesia have. *(Shiragur, 2021)*

In the United States, there is a considerable divide between those from affluent and poor homes: although nearly all rich 15-year-olds indicated they had access to a computer, nearly 25% of those from underprivileged families did not. (*Switch to Online Training during the Pandemic Is Permanent - The European Business Review*, 2021)

 Is internet learning as successful as classroom learning?

There is evidence that learning online can be more effective in a number of ways for people who have access to the correct technology. According to several studies, students who learn online retain 25-60% more content than those who learn in a classroom retain only 8-10%. This is primarily due to students' ability to learn more quickly online; e-learning takes 40-60% less time to learn than traditional classroom learning since students may learn at their own pace, going back and re-reading, skipping, or accelerating through subjects as needed. Remote teaching and learning support tools. *drinkapk. (2022, April 5)*.

Outside of the classroom, remote teaching opens up a world of possibilities for effective learning and cooperation. Before you begin exploring the different internet resources accessible, keep the following in mind.

Interaction and participation

When the Pandemic started, teachers and educators all around the world were worried since the pandemic led to closing of all schools and colleges which led to no classes and then started online classes. When the online classes started the students were not very attentive in the beginning, some didn't respond, some didn't switch on their cameras so it was difficult to make out whether they were really listening attentively or not, but since it is said that teachers always find a way to educate their students, they really did with the help of innovation of different applications and platforms which came during the pandemic.

Students all around the world went through loneliness and a lack of interaction on the other hand the teachers too felt the same without being able to see the students face to face, these are some serious issues of online learning, which effects the mental wellbeing of the students and teachers both as well. It's critical to find a way to keep everyone in touch. This could be accomplished by hosting a discussion forum or a chat room. We can use this if the schools have a learning platform or learning management solution, which was later invented and till date it is being used in many ways. We should try to look for ways to create routines that will help everyone become more organized and engaged. We should always remember to motivate the students. We should find out video tools which can make their learning funIs there a way to use video tools instead of written feedback because written input can come across as tougher criticism than spoken feedback. *(Switch to Online Training during the Pandemic Is Permanent - The European Business Review, 2021)*

Innovations that changed lives for students and teachers

It is rightfully said that "if we fall behind, we should not give up, we should not surrender, rather we should rise up against the all odds", this is what happened and though in the beginning of the pandemic we struggled and suffered, but we hit back with better and more useful technology with time, the pandemic couldn't stop the students from learning and it didn't stop the teachers to impart knowledge to their students.

Let's first see the best learning apps of 2022, *(The 4 Best Free Online Learning Apps 2022 - COOL Platform, 2022)* which has made life easier for students in different ways. Some of them which I found in my research are:

1.Kahoot: It is a game-based learning tool for the children of age 5-18. It helps in creating easy quizzes and games related to learning which develops a child's learning and enhances their knowledge. It allows you to introduce new topics, teach interactive lessons, review, recap, reward, and collect data for formative assessment in creative and engaging ways. From my research I found out that a lot of students and teachers are using this app for personalized learning, high engagement and better resources. The best part about this app is that it include4d self-directed learning and collaboration, the teachers create their own games based on the books and the students can participate and compete in groups which is very interesting.

2.Scratch: It is a coding and programming app which helps the students to solve problems and enhance their logic and sense. Free, non-profit coding software called Scratch accomplishes just that. Young programmers may practice their reasoning and math abilities by developing their own games and solving issues. Because of no access to school's computer labs and some students didn't have access to a laptop so they had a benefit that they could use this to learn coding at a young age, especially during pandemic students had a lot of idle time at home which makes it fun and easy for them to learn programming and coding.

3.Flipgrid:Due to lack of communication between the students, teachers and parents ,this app is very useful as it lets them discuss during the video conferencing sessions, which is a creative digital environment where personalities and ideas shine. In order to start a discussion, teachers can post subjects and questions, and students can answer with short films that are insightful. When students use their voices in public, they are able to demonstrate their comprehension in a way that is more effective than simply writing or typing. Flipgrid is a user-friendly, multimodal tool that can be used to a wide range of topics due to its simplicity and ease of use.

4.Calm: The pandemic affected the mental health of the students and made them anxious and stressful thinking about the future. Calm is a app which helps the students reduce anxiety and stress, it focuses on the mental and social wellbeing of the students. It offers different ways of meditation and exercise for helping the students cope with their stress and anxiety.

These are some of the award-winning apps which were very useful for the students during the pandemic and were really innovative, but there are many more which were very useful like:

As a preventative measure owing to a pandemic, most of the world's work, such as teaching via mobile/online classes and working from home, is still taking place as people remain confined to their four walls. Because of technological progress, the pandemic had no effect on students' and learners' ability to study. Online teaching applications allow students to participate in class. Even those who wish to acquire a new skill can do so through online classes and courses that are now widely available.

Some of the useful platforms that were used during covid are:

1.Digital Classes: it is a platform where the course sellers and buyers meet, which is a E-Learning marketplace. It aims to provide all the resources at one place which is very useful for the students and teachers, since all shops were closed during the pandemic and no one was supposed to be out at that time due to lockdown.

2.Zoom: This app was already there and was used for corporate meetings but once the pandemic came all online classes were mostly taken in this platform, this platform helps us in sharing screen, chatting in chat box, has breakout rooms and many more advanced features which made life really easier for students and teachers. I think zoom is the most useful application that was used during the pandemic and made life really easier for the students and teachers.

3.Google meet: Google meet gained popularity during the pandemic and became the number one app to be used in schools and colleges since its user friendly and has advanced features. Most of the parents, students and teachers prefer this app for using at schools and institutions.

4.Seesaw: It is an app which helps in accessing the student's comprehension skills, which is useful for learning application-based questions.

5.TeacherKit: Many teachers struggle as they move their classes online, and this is largely due to the changes that come with the transition. Teacherkit is a software program that enables teachers to automate repetitive tasks such as taking attendance, documenting grades, and so on.
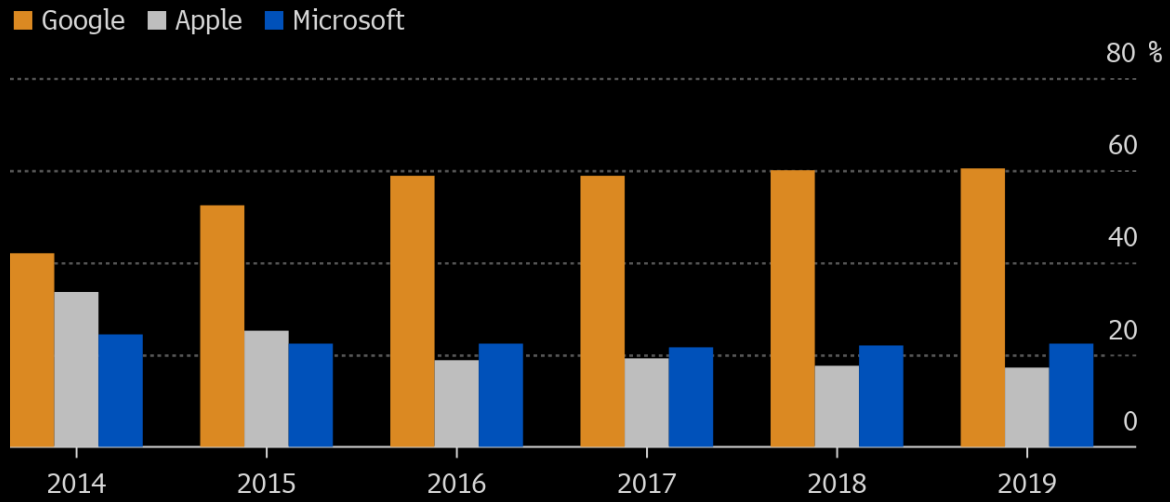
Apart from these there were many other innovations which were really useful for the teachers and students and which helped the education go on though with all the adversities going on all around the world. Education is something which is very important in today's world, where knowledge and learning has the utmost power in making our lives better. When we were at our homes during the pandemic with nothing to do and the world's market were shut down, people were losing lives, they were anxious about the future we should always remember that education and spreading of knowledge never stopped, innovations went on and helped us cope with the situation going on, it helped us to hold on ,to keep hope and to go on, for one day we shall be out of this, one day we will all come together and celebrate the end of this, where we could hug each other without any worries.

Table and charts

Below we can see the results and findings of the data that has been analysed and collected in this research for which table, bar graph and equations have been used. (UNESCO,2020).In this data is collected and analyzed and data has been also shown which has been collected from other sources to show the results and findings in this research.

Top of the Classroom
Google had 60% of the market for education computers in the U.S. last year

Source: Futuresource Note: K-12 education. Apple Includes iOS and MacOS, Google includes Chrome and Android.

Bloomberg

This data which is collected from a secondary source shows the use of Google, Apple, Microsoft in the world during last year. This shows the number of innovations that these platforms brought which made it user friendly and easy to use for online classes.
And after this the data that is collected in this research is shown. This data was collected from a population of 200 people, where survey was conducted and a questionnaire was given to the participants, some of the questions were:

1.Do you think the Importance of education changed after the pandemic?

2.Do you think online education is useful?

3.How did the pandemic change your life as a teacher/student?

4.What do you think about the applications that came during the pandemic? Were they innovative and useful?

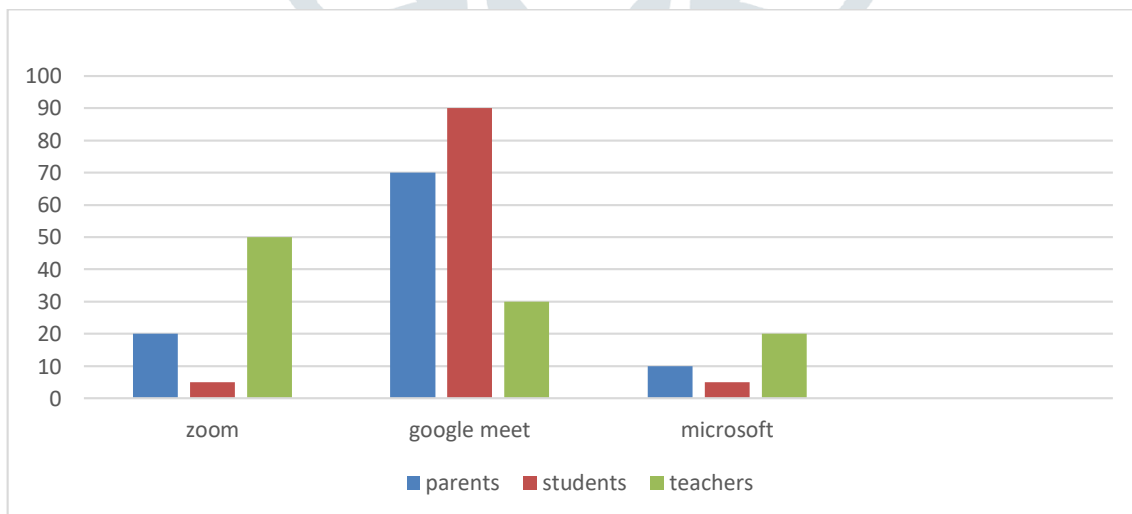5.What applications and websites did you use during the pandemic for information and studies?

Figure1: percentage of parents/students/teachers who like zoom, google meet or Microsoft

Tables

The Table below shows the data collected through interview and survey, to show the percentage of parents, students and teachers who like online or who like offline classes.

Table 1: A sample table

Percentage of parents, students and teachers in support of online classes		
	Online classes	**Offline classes**
Parents	48%	52%
Teachers	62%	38%
Students	80%	20%

Equation used:

This equation below shows the calculation of the above data calculated in the table.

-Total Population(parents/students/teachers) $= \sum N$

-Number of people who support online education=oc

-Number of people who support offline education=of

-Percentage of parents/students/teachers who support online/offline education

$$= oc/\sum n *100$$

Findings and Result of the study:

Most universities and colleges throughout the world turned to online instruction in response to the COVID-19 outbreak. The University of Washington was one of the first universities in the United States to transfer classes online. The University Management announced the suspension of face-to-face sessions in the first week of March and asked all students to leave the University, with the exception of overseas students who may not be able to return to their home countries. In the same month, Stanford University announced the conversion of all courses to an online format, as well as the suspension of any programs that require students and personnel to go overseas. New York University made a deliberate choice to move all large-classroom courses to an online platform, however it left the option of canceling laboratory and field-trip-based courses. The University's campuses in Italy, the United Arab Emirate, Florence, Shanghai, and Abu Dhabi have all been switched to an all-online platform (Blumenstyk,2020). Various online resources on remote teaching were accessed by faculty members in the institutions and colleges, according to reports. A few examples include the using of WhatsApp and Viber, as well as Slack for online teaching and learning at Some Prestigious Institutions. On-line training for faculty members on pre-recorded lectures and Zoom presentations was also given by technological institutes and departments at various institutions. While others taught the basics of video conferencing and how to make optimum use of learning materials on the Learning Management System (LMS) through webinars *(Blumenstyk,2020).*

As a result of this transformation, there are certain obstacles, such as questions of equality. The absence of internet connection or poor bandwidth in certain students' off-campus settings, particularly those from rural towns, may have made them feel handicapped. Another difficulty was the unavailability of support services and facilities for online learning and teaching. Because most schools had not anticipated a scenario in which all courses would be shifted online, as it did under the COVID-19, this was the case. With the advent of online education came the difficulty of making sure teachers and students were adequately prepared to handle it.

The Library, the Information and Communication Technologies Department, and the Center for Academic Technologies of the University gave significant support to both staff and students. Additionally, the library made all required textbooks available to students online so they could use them at their convenience. Staff and students could also get assistance from the department's Information and Communication Technologies (ICT) division during this time period through the internet. The Center for Academic Technologies, on the other hand, offers online teaching and learning assistance training. Students who earned their bachelor's, master's, or doctorate degrees via distance learning attended virtual convocations held by the

university. After the virtual graduation, digital diplomas were given to the graduates. This pandemic's successes may be built upon by the education industry as a whole, but universities in particular can take use of new technology for teaching and learning. However, despite the existence of several educational innovations that have been developed and effectively used to deal with such crises.In conclusion we can see how many new innovations came during the pandemic and how useful it was for the students

Conclusion

The Pandemic taught us a lot, we lost a few people, our mental health and physical health came to an all-time low because of the after effects of covid. The amount of stress, anxiety, breathlessness that we feel till date shows us how life is so tender and it's not easy to face all that we have faced in the past years, but as it is said that life goes on and so does learning and education. What I learnt during this research is that though we faced a massive shutdown all around the world ,but the learning process didn't stop as we have such talented software engineer minds all over the world who came up with innovative applications, we have such talented teacher and educators who didn't stop making lessons interesting though everyone was at home, we have such talented doctors who

passed on their remedies so that we could be safe and secure and protected against this disease and finally we have so talented students

around the world who didn't stop learning and being curious for knowledge. These all things

paved the way for development of resources though with a lot of limitations all around. The innovations that have been shown in this research are showing how online classes were taken through zoom, google meet, Microsoft, it has been also shown that the number of parents, teachers and students who are in support of these platforms and who are in support of offline classes. Some of the best applications that came during the pandemic have also been shown through the research and what is their use. The research shows how students all around the globe have become really smart and have gained so much of knowledge during the pandemic. This research proves that how life was made easier for the students with the number of resources that came during that time. All these resources that have been mentioned here have been used for more than 2 years during the pandemic and have create a great impact. I enjoyed thoroughly being a part of this research, since I am myself a student and a teacher so that was really useful for me, there were many new things that I learnt during this research which shall help me ahead in life. I hope this research helps other students and future generations find out about the innovations that has been made during the pandemic

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