

# Impact of Video Conferencing Tools on Higher Education

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**ABSTRACT:** Video conferencing is a powerful medium of communication wherein students can communicate with teacher and other students or instructors online. Growing processing power and cheaper accessories, such as smart mobile phones, laptops, desktop, webcams, speakers, microphones have also made it possible to participate in a video conferencing using dedicated software. Higher educational institutions, schools, colleges and universities are encouraging teachers to use innovative teaching practices like using video conferencing tools and mobile apps for online courses for their professional development, examinations and viva-voce, research project presentations, thesis submissions and for other educational activities. The teachers assigned work to students via internet, delivered lectures through live video conferencing using different apps like Zoom, Google Meet, Cisco Webex and many more. Zoom can support video conferencing with 40 minute time limit and provides meet space for 100 participants. Initially Google Meet was used as a commercial service; in April 2020 Google started rolling it to free users as well. Webex platforms are being used worldwide to host everything from virtual classroom, academic and educational meetings as people stay at home to restrict the spread of the Corona-19 pandemic. Thousands of colleges have used video conferencing tools to teach the students during lockdown period.

**KEYWORDS:** Video conferencing, higher education, Zoom, Google Meet, Webex

## I. INTRODUCTION

Videoconferencing is a well-known facility, used in scientific research and now increasingly in education, for bringing together – synchronously, visually, live environment– parties separated geographically. Video conferencing is very important and disperse in the wake of faster and cheaper internet connections and better technologies. Growing processing power and cheaper accessories, such as smart mobile phones, laptops, desktop, webcams, speakers, microphones have also made it possible to participate in a video conferencing using dedicated software on a normal desktop computer, laptops, smart mobile phones without any expensive special hardware.

Video conferencing is a powerful medium of communication wherein students can communicate with teacher and other students or instructors online. Video Conferencing is a medium communication and learning tool which makes the learning live, real, factual, interesting and enjoyable. Video conferencing have audio and video simultaneously. It is used by internet services on student smart mobile phones, laptops, desktops, i-pads, i-phones, television, and other electronic gadgets. Video conferencing can be used for students by teachers, tutors, demonstrators, research guide, examinations, demonstrations, viva-voce, meetings, project presentations, colleges, universities, governments, decision makers, parents and other persons involved in higher education system. Higher educational institutions, schools, colleges and universities are encouraging teachers to use innovative teaching practices like using video conferencing tools and mobile apps for online courses for their professional development, examinations and viva-voce, research project presentations, thesis submissions and for other educational activities.

Most of the students, all teachers, examiners and research guides have their smart phones. Recently Mobile technology is considered an effective way to improve students' skills such as positive thinking, collaborative, communication, as well as it is considered the main part of major innovation in many e-learning research areas and now it is called as m-learning (mobile learning). In this knowledge age of 21<sup>st</sup> century requirements, skills are developed to address the rising needs in higher education which causes a shifting paradigm from the traditional methods of teaching to e-learning and m-learning. Many research explored the study on e-learning using mobile technology to identify higher education students' perceptions in the acceptance of mobile techniques and recognize the quality of mobile services for educational and research purposes to improve teaching strategy and learning performance in higher educational



organizations. Many research supports that the evolution of m-learning (mobile learning) at the university-level and cause shifting the traditional learning methods by merging m-learning methodologies as a learning management system that provides mobile learning services to students and teachers any time and from any geographical locations around the world.

The Covid-19 lockdown has given a ray of hope for teachers and students to continue their educational activities through online video conferencing. The teachers assigned work to students via internet, delivered lectures through live video conferencing using different apps like Zoom, Google Meet, Google Classroom, Cisco Webex, Whatsapp, Skype and many more. There are different groups of teachers, students, guides, examiners and research students for effective communication through video conferencing which they are always in touch to share their difficulties through these tools.

Video conferencing learning uses interactive virtual video conversations, videotaped lectures, and audio-taped lectures. It is a method of communicating between two or more locations in which sound, vision and data signals are conveyed electronically to enable simultaneous interactive communication. Much more personal and effective than audio conferencing, all parties involved can see the facial expressions and body language that are so vital to the way we communicate. Besides the audio and visual transmission of meeting activities, allied videoconferencing technologies can be used to share documents and display information on whiteboards. There are many tools and software for video conferencing applications. Zoom, Google Meet Cisco Webex, and Google Classroom are widely used as a video conferencing tools for higher educations for teaching, learning, education, lectures, chapters, assignment and examinations, and other activities.

## II. MATERIALS AND METHODS

For this study electronic gadgets namely smart mobile phones, laptops, desktops, and other electronic gadgets are used. Video conferencing can be used for students by teachers, tutors, demonstrators, research guide, colleges, universities, governments, decision makers, and other persons involved in education system. High speed internet facility were used namely, broadband internet, LAN, WiFi, Hotspots, Wireless networks, mobile internet and other networks for doing the video conferencing with students, professors, scientists, university, government authority. Internet browser software viz. Google chrome, Internet explorer, Mozilla Firefox were used for opening the video conferencing tools. Search engines like Google, scholar, and others have been used for searching the video tools and other data for learning process. Video conferencing tools Zoom, Google Meet, Cisco Webex were used for this study. These apps are downloaded from their websites and installed on mobile, laptop, desktop. After registering the apps, we used for hosting and joining the meeting for teaching higher educational students. Meeting data are recorded. Similarly, secondary data are collected from the authorised websites. All the collected data are analysed by using different statistical analysis software and tools. Results of data analysis have been presented in this paper.

## III. VIDEO CONFERENCING TOOLS

Video conferencing tools namely, Zoom, Google Meet, Cisco Webex are studied. The following table 1 shows, some video conferencing apps that are being used by global users during the month of April, 2020.

Table 1: Video conferencing tools and features of Apps in April, 2020

Sr. No.	Video conferencing tools	Daily meeting participants	Number of Participants in a meeting	Time Limit	Chat Features	Recording	Cost	Conference phone
1	Zoom Apps	300 million	100/300/500 /1000 participants	40 minutes/ 24 hours	Yes/ No	Yes	Free/ Paid	Yes
2	Google Meet Apps	100 million	100 participants	Unlimited	Yes	No	Free	Yes
3	Cisco WebEx Apps	324 million users	100 /1000 participants	24 hours	Yes	Yes	Free/ Paid	Yes

(Source: Infocus-It.com)

## 1. Zoom Video conferencing apps

Zoom is a video conferencing app, geared towards business usage. It was founded in 2011, by Eric Yuan, and launched in January 2013. Zoom cloud meetings is an American conferencing service company situated in San Jose, California. While gathering considerable popularity and coming to run profitably in the following years, Zoom truly entered the public consciousness during the coronavirus pandemic of 2020. It was to Zoom that users across the world turned to stay in touch during the lockdown effected to stop the spread of the virus. It is a service that combines online meetings, mobile collaboration, video conferencing and chat. Zoom can support video conferencing with 40 minute time limit and provides meet space for 100 participants. Zoom started supporting paid business meetings which can support up to 1000 participants. In April 2017, Telehealth used zoom which allowed doctors to diagnose their patients from remote areas through video conferencing. Usage of zoom rose 67% in 2020 due to COVID- 19 pandemic outbreak. Many institutions and schools switched to online classes. Zoom was even used by office and business professionals as many companies opted work from home for their workers. The average daily users during December 2019 were about 10 million whereas in April 2020 it rose to about 300 million. This shows that zoom has become one of the popular online sites used by people of all age groups. UK cabinet and 90,000 schools in 20 countries were among new users of the app.

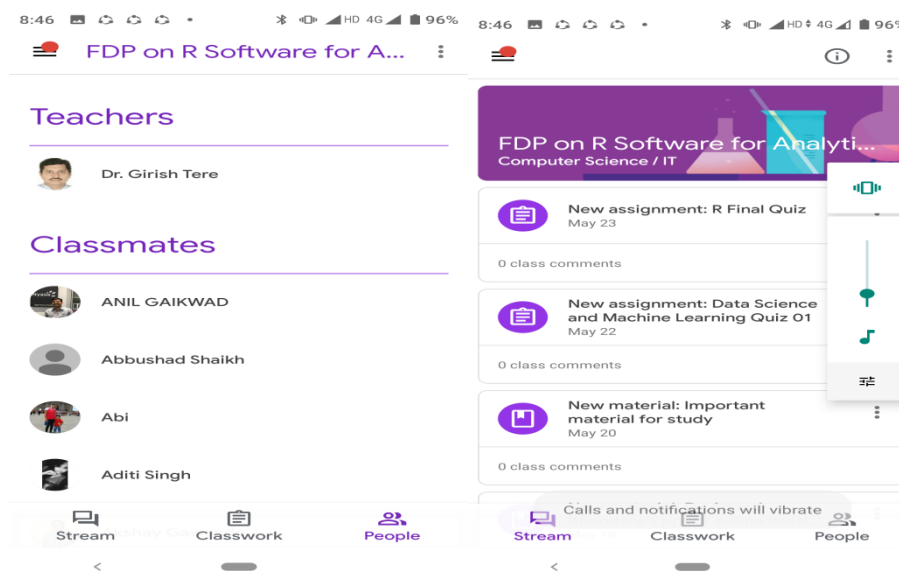


Fig.1: Training programme on Zoom video conferencing apps

### Zoom Usage Statistics

- Zoom is the number one video conferencing platform, at 40.49% market share
- 300 million daily participants in April, 2020.
- Approximately 81,900 Zoom customers with over 10 employees, as of Q4 2020 (Q4 2019 in real life), up 61% year-on-year
- Over 2020 financial year (2019), 641 Zoom business customers were worth \$100,000 or more, up 86%
- Zoom usage increased 67% between Jan and mid-March 2020, during the Covid-19 pandemic (Apptopia)
- Zoom used by 90,000 schools in 20 countries during the Covid-19 outbreak to teach remotely, with Zoom lifting the 40-minute time limit for free meetings for teachers (Zoom)
- As of the same point, 700,000 businesses used Zoom (Freshworks)
- Zoom was the second most installed (non-game) app worldwide in May 2020 with nearly 94.6 million installs. US had the largest number of Zoom installs at 17 percent, followed by India at 17 percent..
- Zoom has approximately 22,800 domains active.
- Adobe Connect is close to ON24 with its market share percentage and domain amount, at approx.1900.
- The next five platforms are GoToMeeting (3.17%), Tandberg Video Conferencing (2.62%), ClickMeeting (1.68%), TalkPoint Convey (1.38%), and Microsoft LiveMeeting coming in at number ten with 1.19% market share.

Zoom's growth has been impressive, but the company has not actually provided a daily active user count. Zoom usage has soared from 10 million daily meeting participants back in December to 300 million in April 2020. Microsoft said

recently it has 75 million daily active users of Teams, a jump from 70 percent in a month. Microsoft also recorded 200 million meeting participants in a single day this month. Google, Microsoft, Facebook, and others are still chasing Zoom with new features and free services. Google made its Meet service free in the month of April 2020 to the participants.

**Features of Zoom Apps**

- **Screen sharing** - For free accounts, screen sharing will be set to host only by default. As the host in a meeting, you can manage the participants. By default, any participant in a meeting can share their video, screen, and audio. If you want to limit who can share their screen, video, and audio, we recommend using the webinar platform.
- **Waiting Room** - Zoom is also enabling the Waiting Room feature by default for Personal Meeting rooms (PMI). Waiting Room allows the host to control when a participant joins the meeting. Waiting Room is one of the best ways to control who’s entering your Zoom meeting by giving you the option to admit participants individually or all at once.
- **Security features** - Meeting hosts can tap the security option while in a meeting to easily access the following features: lock meeting, enable waiting room, disable chat, disable participant renaming, disable screen sharing for others, remove participant, report a participant.
- **Report a participant** - Meeting hosts can tap the security option while in a meeting to report a participant to Zoom trust and safety for inappropriate behavior.
- **Host selection when leaving a meeting** - The host will be prompted to assign a new host before leaving the meeting
- **Meeting information** - Users can view the numeric password which is used for phone and H323/SIP call-in participants. The numeric password is displayed with the phone dial in number on the meeting information screen.
- **Starting a test meeting while not signed in** - Users must accept Zoom’s Terms of Service and Privacy Policy via pop-up message before starting a test meeting in a Zoom Room that is not signed in.
- **Recording consent customization** - Admins can customize the message that appears asking participants for their consent to be recorded.

**2. Google Meet Video conferencing apps**

Google Meet teleconferencing and video conferencing service developed by Google is now adding 3 million new users each day, and hit over 100 million daily Meet meeting users recently. Initially Google ran Meet as a commercial service; in April 2020 Google started rolling it to free users as well.

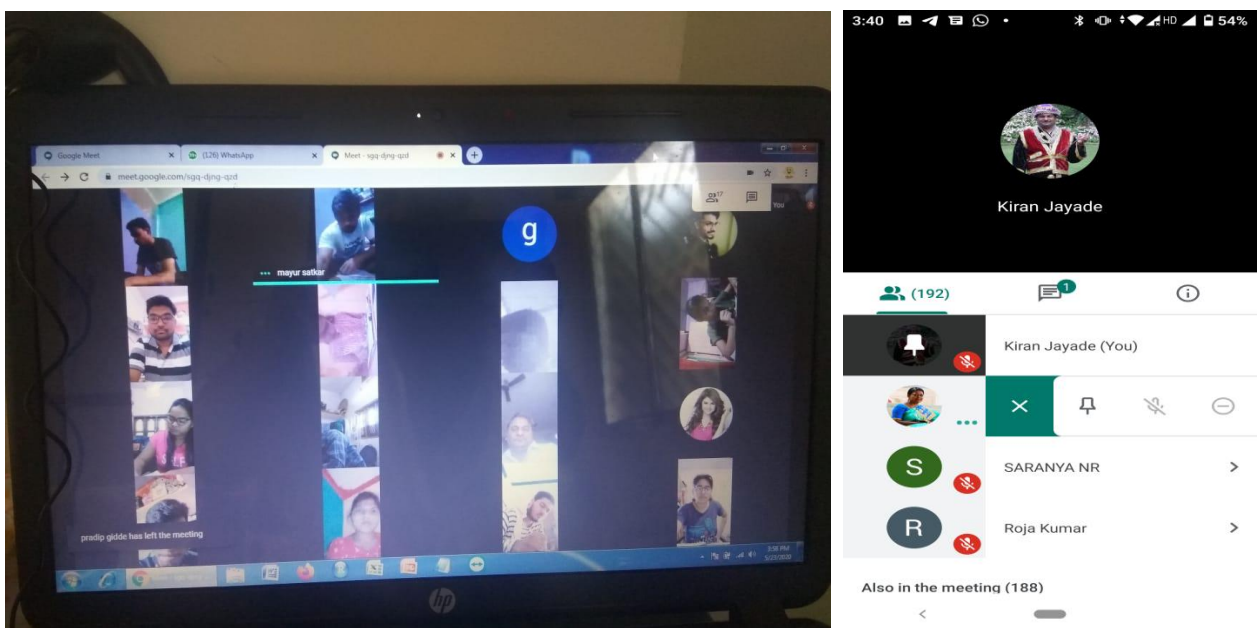


Fig.2: Google Meet video conferencing apps for PG theory examination and webinar

Features of Google Meet are -

- Upto 100 members per call
- Ability to join meetings from the web or through Android or IOS app on laptop/desktop/smart phones
- Ability to call into meetings with dial-in number
- Password protected
- Integration with Google Calendar for one click meeting calls
- Screen Sharing to present documents, spreadsheet, spreadsheets or presentations
- Encrypted calls between all users
- All participants must have Google account

### 3. Cisco Webex Video conferencing Apps

Cisco Systems Inc’s video conferencing app Webex registered a record 324 million attendee in March 2020 with usage more than doubling in America. Webex platforms are being used worldwide to host everything from virtual classroom, academic and educational meetings as people stay at home to restrict the spread of the Corona-19 pandemic. A Webex meeting is evolving every day to meet the needs of webex customers especially with the rise in remote working. It enables more live streaming capabilities to support virtual events. Webex has a better mobile meeting Cisco revealed earlier in March, 2020 that it has a total of 324 million Webex users, and saw sign-ups close to 240,000 in a 24-hours in March. Webex grew 3.5 times in Asia Pacific. Webex growth is from enterprise expansion, education and telehealth. About 20 billion meeting minutes webex hosted during April, 2020 as compared to 14 billion meeting minutes webex hosted in March, 2020. Webex took place in March and well over 22 million meetings per week in the last two weeks of March, 2020. Cisco Webex is third biggest platform by market share is Cisco Webex at 12.31%. Cisco Webex has approx. 7000 active domains. Figure 3 shows the use of Cisco Webex for education, training, webinar.

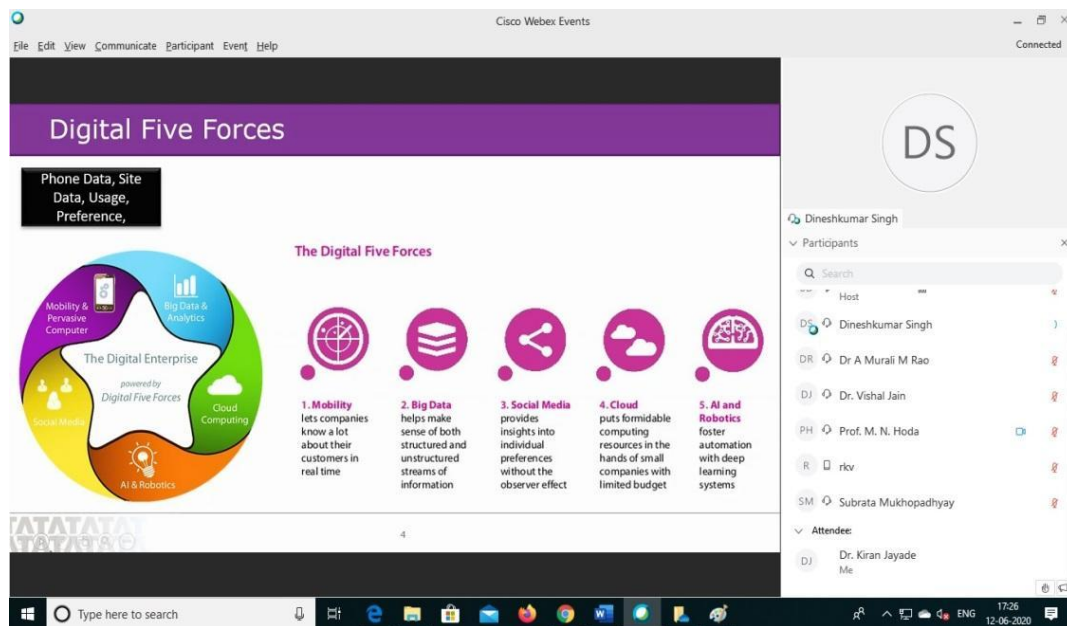


Fig.3: Cisco Webex video conferencing apps using for education, training and webinar

## IV. IMPACT OF VIDEO CONFERENCING ON HIGHER EDUCATION

During the Covid-19 lockdown period in the world, all the students of higher educational institutions were locked down to home. All colleges and schools were closed as a result of Covid-19 pandemic. All the students around the world were asked to stay home and stay safe. As a result of lockdown and educational loses to the students, educational institutions, colleges, universities and all governments asked the teachers to work from home. Teachers were asked to use the virtual learning system to the students using video conferencing and other online tools. Video conferencing tools were used by the teachers, examiners and students for online learning. Millions of higher educational students have studied their courses, appeared for examinations, conducted viva, presented their seminar, research project and

other educational activities. Thousands of colleges have used video conferencing tools to teach the students during lockdown. All the students have used their mobile phones, laptops or desktops for learning through video conferencing.

Video conferencing is most effective for higher educational students as it bring many of positive impact on their education.

- 1) Teacher can monitor the students individually for the performance of a student.
- 2) Learner will be motivating to accept to learn and to join in learning activities.
- 3) With the impact of Video conferencing, the quality of work of learners can be improved and given them the self-esteem or confidence to perform enhanced learning tasks.
- 4) With the utilization of video conferencing, learners are allow more flexible and more personalized learning which enabled more work to be finished.
- 5) Video conferencing enable collaborative learning with little indication of the isolated learner.

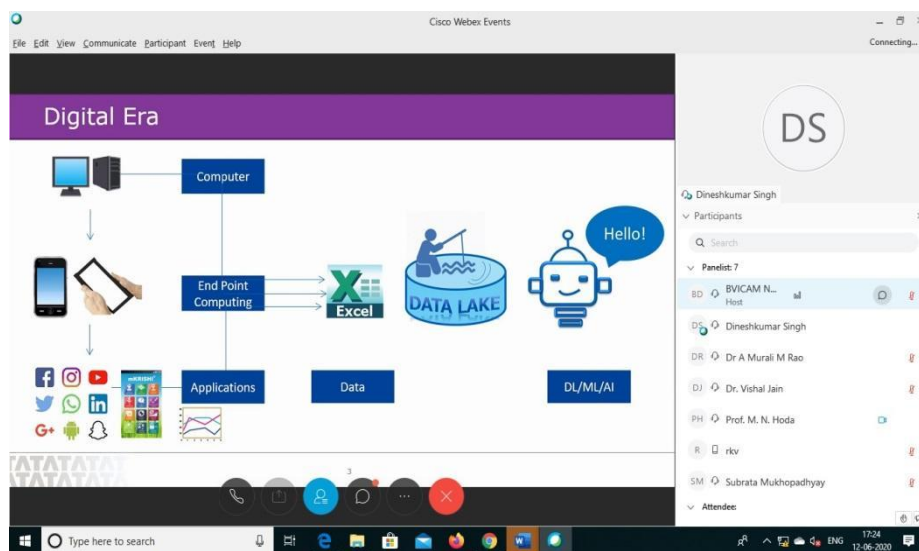


Fig.4: Cisco Webex video conferencing apps using for teaching to higher education

Video conferencing has recently become increasingly popular during the lockdown period of Covid-19. COVID-19 has affected more than 7.8 million peoples and 431,541 deaths worldwide (WHO on 16-6-2020). According to the UNESCO report, it had affected more than 90% of total world’s student population during mid April 2020 which is now reduced to nearly 70% during May 2020. Outbreak of COVI-19 has impacted more than 120 crores of students and youths across the planet. In India, more than 32 crores of students have been affected by the various restrictions and the nationwide lockdown for COVI-19. As per the UNESCO report, about 14 crores of primary and 13 crores of secondary students are affected which are two mostly affected levels in India. In India, all schools and colleges were closed on 25<sup>th</sup> March, 2020 and 100% educational activities including theory and practical classes, examinations, research projects and other activities were closed. Millions of students suffer due to lockdown. After observing the corona virus pandemic situation the WHO advised to maintain social distancing as the first prevention step. So, every country started the action of lockdown to separate the contaminated people. The education sectors including schools, colleges and universities became closed. Classes suspended and all examinations of schools, colleges and universities including entrance tests were postponed indefinitely. Thus, the lockdown destroyed the schedules of every student. Though it is an exceptional situation in the history of education, COVID-19 has created many opportunities to come out of the rigorous classroom teaching model to a new era of digital model. The lockdown has compelled many educational institutions to cancel their classes, examinations, etc. and to choose the online modes. During the lockdown, thousands of colleges, universities have used video conferencing tools to teach to the students. Millions of students have studied their courses through virtual video conferencing tools. Video conferencing apps namely Zoom, Google Meet, Cisco Webex and other apps were used for higher educations.

## V. CONCLUSION

Video conferencing can be used for students by teachers, tutors, demonstrators, research guide, examinations, demonstrations, viva-voce, meetings, project presentations, colleges, universities, governments, decision makers,

parents and other persons involved in higher education system. The Covid-19 lockdown has given a ray of hope for teachers and students to continue their educational activities through online video conferencing. The teachers assigned work to students via internet, delivered lectures through live video conferencing using different apps like Zoom, Google Meet, Google Classroom, Cisco Webex, Whatsapp, Skype and many more. Besides the audio and visual transmission of meeting activities, allied videoconferencing technologies can be used to share documents and display information on whiteboards. It is more personal and effective than audio conferencing, all parties involved can see the facial expressions and body language that are so vital to the way we communicate. Zoom, Google Meet Cisco Webex, and Google Classroom are widely used worldwide as a video conferencing tools for higher educations for teaching, learning, education, lectures, chapters, assignment and examinations, and other activities. Zoom is the number one video conferencing platform, at 40.49% market share and 300 million daily participants in April, 2020 globally. Google Meet teleconferencing and video conferencing service developed by Google is now adding 3 million new users each day, and hit over 100 million daily Meet meeting users recently. About 20 billion meeting minutes webex hosted during April, 2020 as compared to 14 billion meeting minutes webex hosted in March, 2020. Millions of higher educational students have studied their courses, appeared for examinations, conducted viva, presented their seminar, research project and other educational activities. Thousands of colleges have used video conferencing tools to teach their millions of students during lockdown period.

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