

Analysis of Video Conferencing Platforms for Online Teaching During the Covid-19 Pandemic

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ABSTRACT

The global emergency due to the COVID-19 disease has forced educational systems around the world to move from a face-to-face pedagogical model to an online model which is developed in virtual learning environments. In this sense, this research aims to perform an analysis of the main video conference platforms such as Microsoft Teams, Zoom, Google Meet and WhatsApp that are used for teaching in order to understand the characteristics and usefulness that can be given to them in the teaching-learning process as well as the review of previous studies that validate its application and effects in the educational process.

Keywords: Distance learning, Disruptive technology, E-learning platform, Virtual learning, Video conferencing

INTRODUCTION

In the context of the COVID-19 pandemic, a shift to online education has become possible (C3ndor-Herrera, 2020) teaching has required many educators, teachers, students, parents, and administrators to rely on video conferencing systems to perform synchronous communication and continue with the teaching process. Schools, colleges and universities which used to provide online educational support to small groups of students could not respond to the full demand of students in a period of 1 to 2 weeks generating stress and anxiety among teachers who were not familiar with teaching to distance online before the pandemic (Correia, Liu, & Xu, 2020). The lasting impact of COVID-19 forced governments to continue distance learning. Due to the absence of a formal digital learning management system (DLMS), public universities in many countries have adopted social media sites (SNS), for example, Facebook and WhatsApp, and / or digital communication platforms, for example, Microsoft Teams, Zoompara (Sobaih., 2021) among others. According to recent studies of the platforms mentioned above, WhatsApp in one of the largest online platforms during the pandemic was

because it was the easiest to access and operate, in the same way, among the difficulties encountered, an unstable signal is mentioned, especially in mountainous areas (Pramana et al., 2020). On the other hand, platforms such as Microsoft Equipos, Zoom, Google Meet and WebEx are the most used online platforms for conducting classes, since they have virtual whiteboard software tools complementing with learning applications such as Vedantu, Udemy, Byju's and Whitehat Junior which have been major market players in the education system during the year of the pandemic. especially in India (Kansal et al., 2021) (Lee & Chan, 2021). Teachers and students agree that online education is useful during the current pandemic, however, at the same time it is less effective than face-to-face teaching and learning (Almahasees, Mohsen, & Amin, 2021), so it will be necessary to adapt to this new way of teaching to be able to overcome the limitations that are found today.

VIDEO CONFERENCE PLATFORMS

Here is an analysis of the main video conferencing platforms.

MICROSOFT TEAMS

Microsoft Teams is a proprietary business communication platform developed by Microsoft, as part of the Microsoft 365 family of products (Correia, Liu, & Xu, 2020). Key features include the following: Chat Teams allows users to communicate through chats. Teams allows users to format text, use emojis, during chats. Users can choose to mark a message as urgent or important. Important messages appear with a red side border and exclamation point, urgent messages notify the receiver at regular intervals until they are seen (Microsoft, 2021).

EQUIPMENT

Teams allows communities, groups, or teams to join via a specific URL or an invitation sent by an administrator or team owner. Teams for Education allows administrators and teachers to configure specific teams for classes, professional learning communities (PLCs), staff members, and everyone (Microsoft, 2021).

CHANNELS

Within a team, members can configure channels. Channels are talking points that allow team members to communicate without the use of email or group SMS (text messages). Users can reply to posts with text, images, GIFs, and custom image macros. Direct messages allow users to send private messages to a specific user instead of a group of people.

CALLS

Calls are provided using instant messaging, voice over IP (VoIP), and video conferencing within the client software. Teams also supports public switched telephone network (PSTN) conferencing, allowing users to call phone numbers from the client.

MEETING

Meetings can be scheduled or created ad hoc and users visiting the channel will be able to see that a meeting is in progress. Teams also has a Microsoft Outlook add-in for inviting others to a Teams meeting. This supports thousands of users who can connect through a meeting link.

EDUCATION

Microsoft Teams enables teachers to distribute, provide feedback, and grade student assignments submitted through Teams using the Assignments tab, available to Office 365 for education subscribers. Questionnaires can also be assigned to students through an integration with Office Forms.

ZOOM

Zoom is a cloud-based video conferencing system that has developed rapidly, the use of the platform is free for video conferences of up to 100 participants at a time, with a time limit of 40 minutes if there are more than two participants. For longer or larger conferences with more features, paid subscriptions are available, costing \$ 15-20 per month (ZOOM, 2021) Zoom provides the ability to generate a unique meeting identity (ID) that is more convenient for small group meetings regularly, recording a meeting locally or cloud storage (paid plans) can be shared with people who were unable to attend, a option so that everyone can enable or disable their video at any time, chat rooms for group or individual conversations, dual screen support, ability to link to the calendar application such as Google Calendar and Outlook are some of its features (Dash et al., 2021) (Camilleri & Camilleri, 2021)

GOOGLE MEET

Google Meet is a video communication service developed by Google previously known as Hangouts Meet, the characteristics are detailed below. It allows two-way and multi-directional audio and video calls with a resolution of up to 720p. The calls are encrypted between all users. ability to join meetings via web browser or via Android or iOS apps, integrates with Google Calendar and Google Contacts for one-click meeting calls. For the development of the class allows screen sharing to present documents, spreadsheets, presentations and other browser tabs, meeting attendees have the ability to raise and lower their hands, use video filters, effects and masks augmented reality (Google, 2021).

WHATSAPP

WhatsApp is an efficient system with high navigability and minimal actions to set up a video conference. The system's user interface is simple and consistent, visually self-describing, and offers text assistants as well as guidance for the user when errors occur. Even beginners to this system will learn it quickly (WhatsApp, 2021).

Table 1. Previous studies of interactive whiteboards.

Title	Authors	Investigation	Findings
The Acceptance of Learning Management Systems and Video Conferencing Technologies: Lessons Learned from COVID-19	(Camilleri & Camilleri, 2021)	Investigate student perceptions of remote learning through asynchronous learning management systems (LMS) and through synchronous video conferencing technologies such as Google Meet, Microsoft Teams or Zoom, among others.	The findings suggest that the research participants accessed asynchronous content and interacted with users online, including their course instructor, in real time.
Students' Perceptions of Using Microsoft Teams Application in Online Learning during the Covid-19 Pandemic	(Wea & Dua Kuki, 2021)	This study aims to determine the perceptions of FKIP students on the use of Microsoft Teams application in online learning during the COVID-19 pandemic.	The benefits were primarily self-study, low costs, convenience, and flexibility. They showed that FKIP UNIPA students had a good perception of the use of Microsoft Equipment. Students hope this app will continue to be used during online learning.
Review of Online Teaching Platforms in the Current Period of COVID-19 Pandemic	(Dash, S. et all,2021)	Understand the usability and practicality perspective of audio and video conferencing platforms in the current situation. A review was made of various online platforms available, namely Zoom, Google Meet, Google Classroom, Microsoft Teams, Cisco Webex, Go ToMeet, and Say Namaste.	The number of similar platforms to drive online learning is numerous, and the features that each program can provide are somewhat limitless, but the response to a video conferencing service is good.
Analysis of the Use of Videoconferencing in the Learning Process During the Pandemic at a University in Lima	(Rio-Chillce, Jara-Monge, & Andrade-Arenas, 2021)	The objective of the research is to report on the impact of student learning through the use of the aforementioned videoconferencing tools.	Most of the students became familiar with the platforms; However, less than 24% described that their academic performance has improved, some teachers still have difficulties at a psychological level due to this new teaching modality.

The system allows up to four people to communicate for unlimited time around the world. free of charge. However, compared to Zoom, Skype and Teams, WhatsApp is inferior in creating and supporting teaching and learning in Because WhatsApp offers only file transfer, chat, video and audio functions, it may be suitable only for small group discussions and small-scale conferences. Additionally, poor privacy and security scores put WhatsApp at a disadvantage in supporting online learning and protecting students (Correia, Liu, & Xu, 2020).

PREVIOUS STUDIES ON THE USE OF VIDEO CONFERENCING PLATFORMS IN EDUCATION

Table 1 below shows a selection of recent studies on the usefulness of video conferencing platforms, detailing the results found in each investigation.

CONCLUSION

Adapting to new forms of teaching represent a joint challenge for teachers and students, especially those who have connectivity difficulties, in general, students have a good perception of the use of Microsoft Equipment and WhatsApp is one of the platforms most used by its easy access. Regarding the characteristics of the platforms analyzed, it can be mentioned that Zoom adapts to all types of communication methods that include a large number of participants. If you are looking for improved security and customer support, you can opt for Microsoft Teams. If instead a fast interface is prioritized and to reduce waiting or have small groups as a workshop, one can opt for Google Meet. It is in the interest of the work team for future research to analyze the perspective that teachers at different levels have when working with these videoconferencing platforms.

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