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Video Conferencing Application

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Abstract - Video conferencing apps (VCA) have grown in popularity and reliability during the past two years of covid -19 as a tool for bridging the distance gap when travel is not an option, prohibitive, or undesirable. Audio and video telecommunications are used in video conferencing to bring individuals from different locations together. Understanding the requirements for videoconferencing and how to use it has become a key research area for numerous educational institutions and business people.

An introduction to video conferencing is offered in this paper, with a focus on its use in remote learning.

Keywords : *Video Conference Apps.*

1.INTRODUCTION

Video conferencing apps use a combination of high-quality audio and video via IP networks to promote conversation and interaction between two or more users. These are beneficial because they replicate real-world communication. Individual user accounts, logins, and passcodes are supported in the apps to help limit access and verify participation. Users can also exert some control over specific capabilities, such as whether or not to record the conversation, or whether or not to mute or switch off the video or audio at any time (Zoom.us).

It is only recently that technology has reached a level of stability, usability and affordability which permits its use in real teaching scenarios rather than research projects. The use of video is being hailed as the next advance in electronic communication. Many companies are developing systems to support such concepts as virtual teams, telecommuting, and remote conferencing.

Video conferencing has recently become increasingly popular and disperse in the wake of faster and cheaper internet connections and better technologies. Modern standalone video conferencing units provide advanced video and audio quality due to more efficient compression and can function over normal broadband internet connections. Growing processing power and cheaper accessories, such as webcams, have also made it possible to participate in a video conference using dedicated software on a normal personal computer without any expensive special hardware. With the budget stretched to the

available to provide more interaction in the virtual classroom via video conferencing (Dr. Lynne, 2007). Using the various technologies available for

video conferencing, educators can provide a more interactive distance learning experience by delivering

real-time, bidirectional video, voice, and data communications to their distance students, rather than just the standard electronic media

Figure 1: Session via video conferencing apps.

breaking point, a number of business premises and institutions are settling aside their travel plans and turning to web conferencing in order to save money and time (Roberts, 2009). Video conference participants use either VC system, web based application or on premise software to interactively communicate with co-workers, students and others in virtual meetings or classrooms. This approach is easier, cheaper and much more convenient to use while also providing easy access to file sharing and variety of others collaborative services.

With the explosion of bandwidth, the resources are now

2.COMPONENTS OF VIDEO CONFERENCE

Video conferencing has three essential components:

2.1.The Hardware

2.2.The intervening network that carries the signals between sites.

2.3.The Conference environment or room.

2.1THE HARDWARE

A camera, microphone, video conferencing unit, display unit, and audio system are all required for a video conference session.

Camera – A camera to capture images and convert them into an electrical signal. Location of the camera must be ideal to allow for realistic eye-contact. Also, good quality and functionality of the cameras should be able to provide a sharper, more colourful image, with less visual noise.

Microphone – Microphones used in VC are usually very sensitive and should be placed away from equipments like projectors which can produce some background noise.

Video Conferencing Unit – The VC unit usually referred as the codec (Coder/Decoder) accepts the vision and sound signals (video and audio) and processes them into a suitable format for transmission through the network to the remote site. To receive information the Decoder does the reverse: it accepts the digital signals from the remote site over the network and decodes or converts these into video and audio. Finally this video and audio are fed to a display unit and speaker to display the pictures and reproduce the sound from the remote site respectively

Display Unit – A display unit can be either a TV unit or a projector projecting onto a surface. The display unit is connected onto the codec.

Audio System – A good audio system is ideal for video conferencing. In some instances, TV speakers are used but in most instances (i.e. classroom, boardrooms, etc.), a good audio system with mixer, amplifier and speakers might be required.

2.2 THE NETWORK

Video conferencing technology works across internet protocol (IP) networks and integrated system digital network (ISDN). Through these vast networks, videoconferencing has the capabilities for connectivity to worldwide audiences. With IP transmission, the results can be variable as the video conference data has to compete with other computing data. ISDN guarantees connections at the selected quality, giving more reliable conferences, but as call charges are levied it is also more expensive than IP . A simple video conference can be initiated with as low as 384 kbps with 30 frames of video per second real-time.

2.3 THE CONFERENCE ENVIOURMENT

Lighting is an easy way to improve picture quality. If the room is not specially built or equipped for video conferencing, it is probable that there are not enough lights to provide the optimum quality for the video conference cameras. The result is a flickering visual noise seen especially when the cameras are zoomed in (Sami, 2008). Another result is a lack of colour saturation. Thus proper lightning is an easy way to improve video quality. Also, the room should be well acoustically designed to avoid the echo.

3.BENIFITS OF VIDEO CONFERENCING APPS.

- Sharing of presentations
- It allows immediate, full two way communication of content; verbal, pictorial objects etc.
- Greater access to experts/specialists (nationally and internationally).
- More productive use of time (eliminates wasted travel time) and significant travel cost savings.
- Reduced environmental impact through less travel and reduced pressure, stress and fatigue from travel. Facilitating short notice meetings between individuals in distant locations thus decisions can be made more quickly.
- Increased meeting attendance by participants who would otherwise be unable to join in
- Greater accessibility and allows geographical reach even to rural or remote locations.
- A conference session can be saved for future reference e.g. class notes can be saved and distributed via network for references by students

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4.DISADVANTAGES OF VIDEO COFERENCING APPS

- It may lead to laziness with some students as they can have their classes while at home thus lacking self discipline.
- Lack of interpersonal relationship between students and teachers or between students themselves.
- The technology may degrade the received images and sound. Body language can be lost if image movement is jerky. There can be a delay on the sound too.
- The atmosphere of a face-to-face meeting is lost.
- For meetings, videoconferences are more effective if the participants already know each other.
- The security may be compromised as one can hack onto a private VC session (Alan, 2009).

5. APPLICATIONS OF VIDEO CONFERENCING

Teaching : VC allows easy access to remote expertise. When the number of expertise is small, one lecture can teach various virtual classes at a go thus, travelling to various campuses is significantly reduced.

Meetings : Using VC leads to cost savings on travel, accommodation and staff time. Several sites can be linked together. Having a set time and duration for a meeting encourages punctuality and focused discussion.

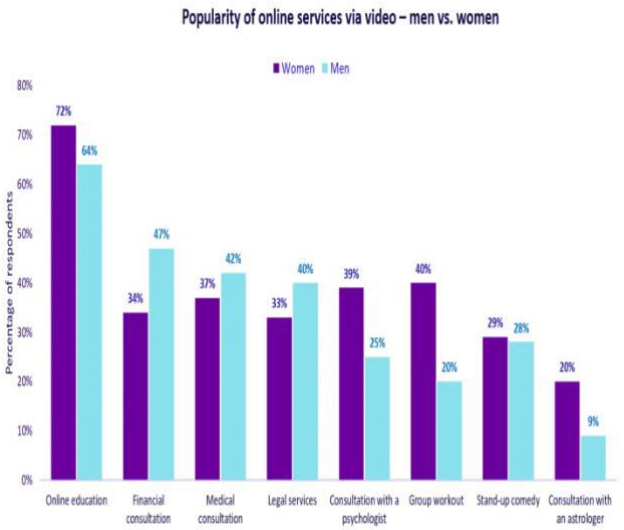

Figure 2: Teaching via video conferencing

Interview : Cost savings can allow more candidates to be interviewed from remote locations. With data sharing, CVs can be viewed and discussed online.


Figure 3: Interview on a video conference.

Telemedicine : In rural areas, specialist medical help may not be available on hand. By linking to a regional centre, cottage hospitals and clinics can receive help in diagnosing patients' disorders.

isolated areas.

A conference session can be recorded and saved for future use. Class notes, for example, can be saved and sent over network for student reference (Alan, 2009).


Figure 4:Medical talks via video conferencing

Other Benefits of Video Conferencing is:

Presentation sharing:
It enables for immediate, two-way content transmission; spoken, graphical items, and so on.

Enhanced access to professionals and specialists (nationally and internationally)
More efficient use of time (no wasted trip time) and huge savings on travel costs.

Less environmental effect through reduced travel, as well as reduced pressure, stress, and exhaustion from travel;

facilitation of short-notice meetings between persons in remote locations, allowing for faster decision-making.

Figure 5: Popularity of VCA in Services.

Participants who would otherwise be unable to attend the meeting have increased their attendance.

Greater accessibility and geographic reach, including rural and

3. CONCLUSIONS

Video conferencing could lead the way for a dual approach, giving students more responsibility for their learning, working in groups, and doing educational tasks; all of which would benefit conventional teaching, but video conferencing provides an opportunity to implement them. It does not replace the use of print or other methods used in the conceptualization process. It can be used to encourage construction and its true use lies in encouraging dialogue and increasing the scope for dialogue. With the advancement and ease of availability of high speed and cheap internet connections, it is expected that video conferencing will increasingly become popular thus, leading to more interest and use of distance learning.

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