Quadrivium Networking Topic
How Has The Pandemic Affected Educational Technology Options And Adoption?

Dauna Kiser
Peggy Daniels Lee

Introduction of Quadrivium topic

This paper is a summary of the Quadrivium discussion, "How Has the Pandemic Affected Educational Technology Options and Adoption?" for the Virtual Worlds Best Practices in Education Conference of 2021. This discussion centered on the exploration of new and existing options in educational technologies as well as the adoption, increase, decrease, and evaluation of the success of those technologies.

The Covid-19 Pandemic forced major changes in education that affected teachers and students in basic classroom interactions. In this Quadrivium, we focused on the immediate and most vital changes that faced teachers in 2020. There was agreement that educators would continue to teach a greater number of online courses, and Learning Management Systems would become stronger, more secure, and more user-friendly over time. At the same time, the substantial increase in video conferencing has resulted in something called "Zoom Fatigue", a state of exhaustion accompanied by a new resistance to be ever in a video conference for meetings, discussions, or similar replacements for face-to-face group communications.

Overview of the Main Topics

The discussion was at the same time wide-ranging and focused. Several sub-topics addressed the two main topics: Technology Options and Adoption. Several examples of each sub-topic maintained a focused sharing of successes and pitfalls. Some observations about technology use (or resistance to it) were surprising.

The discussion revolved around four related topics:

- The vast increase in video conferencing
- Security Issues
- Accessibility Issues
- Age of hardware, access to fast (enough) internet, mobile applications

Video Conferencing

Most the discussion revolved around the increase in video conferencing. A major topic addressed Zoom (and Zoom fatigue) as well as MS Teams and similar tools. Most participants used either Zoom or Teams, with fewer group members using Skype, Discord, and Adobe Connect, among others. (See resources below under Video Conferencing).

The reasons for the explosion in specific tools seemed to be ease of use and availability. Zoom was easiest and free or low-cost, although not the most powerful. It was easy to use on mobile devices, security measures have improved, and it was one of the most simple to learn. Zoom was a fast way to keep classes going when face-to-face learning definitely (and suddenly) had to end. MS Teams was more expensive but much more powerful. Unlike Zoom, the meeting group using MS Teams remained connected and could use other tools to continue the discussion in text chat, such as file and calendar sharing. Zoom does integrate within Moodle and Canvas, two LMS platforms popular for education. A great deal of the discussion revolved around which specific tools were effective and which were lacking, and major developers like Google were not as heavily adopted. This was due to worry over the permanency of the apps – Google tools may or may not remain available for use over the long term. Skype was still popular but much less so as it seemed more intrusive and less stable than in previous years.

Security Issues

Educational needs, particularly in the K-12 sector, have been somewhat different from those of corporate training. Protections for children were lacking in many video conferencing tools, which resulted in teachers, administrations, parents, and developers to adopt

reactionary policies as each security problem presented itself. Both teachers and students might be at risk if the student attended the virtual class from the privacy of their bedroom, even if this was the only viable location for the student to use. Teachers were faced with difficult decisions because they may have seen inappropriate or abusive behavior of others in the student's household. There was debate over the appropriateness or invasiveness of recording discussions or sessions with students.

Accessibility Issues

No less important was the third topic of accessibility. In spite of the progress made in technology across the board, educators feel that many developers still give short shrift to accessibility tools. In our discussion, the audience mostly agreed that clear, accurate text chats needed to accompany voice communication - which some of the most widespread conferencing tools still lacked. Both voice and text are necessary for the majority of users to communicate. Institutions of higher education are on the leading edge of awareness of the need for accessibility tools, and the group agreed that developers still needed to be pushed to add those tools to new technologies.

Hardware and Internet Access

Finally, there was the ever-present issue surrounding hardware age and (lack of) internet access. Part of the reason for the explosion in the use of video conferencing tools had to do with the age or availability of hardware for students (and many teachers). Zoom was low-cost and easy to use in spite of the security issues. It has proven to run on most computers, tablets, or smart phones. At the same time, there were differences of opinion regarding the hardware we have been trying to pair with *all* software we want to use. We ended with as many new questions as answers (and as many new opinions):

- How far should (or could) developers stretch in their efforts to make new applications backward compatible for older computers and devices?
- Should schools purchase laptops that are less limiting than Chromebooks, or should all developers make sure their platforms are Chromebook friendly?
- Smart phones and tablets are more convenient, but has it been more successful to learn on a tiny screen?
- Does owning a smart phone automatically mean having excess funds for high-speed internet?
- What kind of internet access would actually be sufficient for the device the user wants or has on hand?

One topic the group did agree on was that there is still a major hurdle in overcoming the disparity between those who can afford new hardware and sufficient (or any) internet and those who cannot. This includes families, rural communities, disadvantaged groups, and many school districts.

Best Practices

One recommendation provided was to relax expectations for the increased use of technologies for the immediate future. The pandemic forced a type of change that created increased reliance on distance technology, yet teachers (and some students) remain overwhelmed and possibly resistant because they felt forced.

Another recommendation was to develop policies for protecting students and teachers while using webcams. Background images or screens could be used to hide the student's surroundings.

When virtual worlds are adopted, teachers should use both a common auditorium-style room and break-out rooms. Usernames other than those in real life should be allowed, so long as the teachers and administrators know who the username refers to.

While it is tempting to seek the *better* and the *best* when possible, it is equally important to seek to ensure all students and teachers have a minimum of G*ood*. Good internet, good computers, good software, good training.

Potential Pitfalls

It seemed difficult to find a place in the current pandemic that was not a potential pitfall. Equally, so many of the same situations and ideas could be a resounding success. So little is yet known about the long-term effects (and direction) of the pandemic that we could only agree pitfalls might be *the status quo*.

Conclusions

The group agreed that the pandemic increased awareness of technological applications for education and that we will use them increasingly in the future. There was also agreement that access to (fast) internet

with sufficient data caps and quality hardware needed to be top priorities for all schools. Built-in accessibility tools were a necessity for any educational application. Educators need to continue advocating for a voice in determining which tools they are required to adopt so they can focus on their priorities (the content) without needing to focus on the technology.

The expected increase in the use of virtual worlds did take place, but much less so for education than had been predicted in 2020. Instead, there was increased use of video conferencing tools that included text chat, file sharing, and persistent group communications rather than the replacement of the physical person on camera with an avatar representation. Suggested reasons for the continued slowness in virtual world adoption included the continued difficulty with onboarding new users in many virtual world platforms, the ease and familiarity of video conferencing and LMS tools, and the daunting learning curve for teachers already overwhelmed by the shift to online courses. A majority of the group agreed that easy log-in using a browser (especially for Chromebooks), and tablets would help those platform adoptions increase in educational use. For these reasons, it is unclear which types of technology adoption will become permanent. As we continue to see which changes persist, we can make educated suggestions for new best practices.

Resources Discussed

Video conferencing, Recording, Streaming Applications

- Discord: https://discord.com/
- Microsoft Teams: https://teams.microsoft.com/edustart
- Skype: https://www.skype.com/
- Twitch: https://www.twitch.tv/
- Webex: https://www.webex.com/
- YouTube: https://www.youtube.com/
- Zoom: https://www.zoom.us/
- Open Broadcaster Software: https://obsproject.com/

Learning Management Systems

- Canvas: https://www.instructure.com/canvas
- Moodle: https://moodle.org/

Virtual Worlds Platforms

- Second Life: https://www.secondlife.com/
- 3D Webworldz: www.3dwebworldz.com
- Kitely: https://www.kitely.com/
- Frame VR: https://framevr.io/
- Virbela: https://www.virbela.com/
- Minecraft: https://www.minecraft.net/
- SineSpace: https://sine.space/