Online Versus Remote Learning: Past, Present, and Potential Future

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From Caleb Phillips' shorthand postcards of 1728 to phonographs, radio, television, intranets, and the internet, distance education and online education have a long history. However, sometimes the technology outpaced the methodology or the methodology just could not be successfully adapted to the technology that was available. Nevertheless, the appeal of online education for a relatively small groups of users has given way to the necessity for remote education or learning during the COVID-19 pandemic. The target audience has become nearly all university and college students and, thus, there is a need to adapt or create a suitable model that meets the needs of both students and faculty for 2020–2021 and beyond. From flipped classrooms to blended learning and flex or hybrid models, there are a number of viable options, but the best will successfully balance educator and student needs while incorporating as much of the traditional classroom experience as possible into a primarily online classroom.

Keywords: online education, distance education, remote education, university, technology, history, models

INTRODUCTION

In the necessary reading done in order to create online classes that cover the essential skills of their offline counterparts, there seems to be some confusion about the distinctions between the terms *online learning/education* and *remote learning*. According to Geneva College's website (2020), online education happens online, uses video lectures or self-paced courses, and may help towards certification or a degree. Others are intended for adult learners who want to update or gain a new skill (para. 3). However, remote learning strives to re-create the classroom

environment utilizing the computer to view lectures or participate in group learning activities (para. 8). Due to the coronavirus, remote emergency learning by universities involves students sitting at home watching lectures by faculty who are still expected to teach at the normal times (paras. 8–9).

While there are numerous issues to be addressed related to educating students during the COVID-19 pandemic, this paper will discuss briefly the history and evolution of these two terms, their applications to creating meaningful classes and learning experiences for our students through technological advances, and the implications for the next phase of remote (online) learning and whether it truly can replicate the classroom experience as the tools rapidly evolve.

THE PAST

The first recognized attempt at education through correspondence appeared on March 20, 1728, with an ad in the *Boston Gazette* placed by Caleb Phillips providing lessons in shorthand for any "Person in the Country desirous to Learn this Art, may be having several Lessons sent Weekly to them, be as perfectly as those that live in Boston" (Philipps, 1728, as cited in Kentnor, 2015, p. 23).

Isaac Pitman pioneered distance education for the same subject as Phillips by using postcards with transcriptions of Bible passages in shorthand in Bath, England, in the 1840s (Kentnor, 2015, p. 23). By 1843, the Phonographic Correspondence Society was founded as a predecessor to Sir Isaac Pitman's Correspondence College. In 1858, the University of London became the first university to offer distance learning degrees. According to their website (2020), they are the birthplace of long-distance learning, allowing students to study for degrees outside of London and around the world. They introduced university subjects, including modern languages and laboratory science, and were the first to give external students the opportunity to continue to earn a living while studying without coming to London (para. 4–5).

By 1873, Anna Eliot Ticknor founded the Society to Encourage Studies at Home in Boston, Massachusetts. Within a year, Wesleyan College was the first academic institution to offer degrees "in absentia" (Emmerson, 2004, as cited in Kentnor, 2015, p. 23). Starting in the mid-1800s, Oxford and Cambridge offered home-study correspondence

courses. In 1883, a Correspondence University was established in Ithaca, New York. Almost simultaneously, William Rainey Harper developed the Correspondence School, but the United Kingdom's Open University, which was the world's first university to teach only at a distance, perhaps holds the distinction of being the first true institute of higher education to foreshadow what is increasingly being done today (Fine, 2016). Finally, in 1892, the term "distance education" was first used in a pamphlet from the University of Wisconsin-Madison in the USA (Ferrer, 2019).

By 1906, the same university was sending course materials and lectures on phonograph records to distance learners, embracing new technology as a means of providing distance education. In 1922, the Pennsylvania State University was the first college or university to broadcast courses over the radio, increasing the speed and efficiency of contact between distance learners and course content, and the University of Iowa began offering course credit for five different radio correspondence courses in 1925 (Ferrer, 2019).

John Logie Baird invented the first television, called "the televisor," in England in 1928 (Staufenberg, 2016). On December 30, 1930, the National Committee on Education by Radio (NCER) was formed in the United States

> to protect radio for educational broadcasting by promoting and coordinating experimental use of radio in school and adult education, by maintaining a Service Bureau to help procure licenses, to share information through weekly bulletins, promoting research in education by radio, and as a research clearinghouse. (National Committee on Education by Radio, 1931, p. 1)

By 1934, the Federal Communications Commission (FCC) was formed. Under the influence of the Association of College and University Broadcasting**,** they helped to keep frequencies open for collegiate broadcasting (Ferrer, 2019).

During the early 1940s, both the German Z3 and the allies Colossus were built as programmable digital computers for code breaking during World War II, but since much of this technology was used for covert operations and purposes, it was destroyed (Ferrer, 2019). Meanwhile, television was finally making a place for itself as an educational platform by the 1950s when WOI-TV of Iowa State University went on

the air with the first non-experimental, educationally owned television station (1950) and the University of Houston began offering course credit for television correspondence courses in 1953 (Ferrer, 2019).

Television broadcasting for educational purposes was slow to catch on and evolve. Even though technology and the use of video as a teaching medium continued to develop, there were still many barriers in using television for distance education. In 1948, the Federal Communications Commission (FCC) imposed a moratorium on the awarding of new television licenses to address problems of conflict and distribution resulting from the flood of applications for licenses (Kentnor, 2015).

By 1950, educational institutions had begun to recognize the potential of television as a medium for teaching and learning, but they were "not organized as a unified educational body" and were unable to influence the FCC's decision regarding educational television frequencies (Koenig & Hill, 1967, p. 5). Finally, in 1952, the FCC answered the educators' requests to reserve television channels for the exclusive use of education in the *Sixth Report and Order* (Federal Communications Commission, 1952). Pursuant to the report, a total of 242 channels were reserved initially, with 632 channels reserved by 1966 (p. 27). In the late 1960s and 1970s, distance education television courses were poorly produced, and few watched them. They normally involved the instructor reading notes. But in the mid to late 1970s, the BBC set standards for American television course developers. Simultaneously, computers for delivering education were catching on, but educators were slow to accept them, as they had been for previous technologies (Kentnor, 2015, pp. 27−28).

The evolution of the internet started in 1958 when the Advanced Research Projects Agency (ARPA) was created by the U.S. government in response to Russia's Sputnik space program. The ARPA would later play a major role in establishing the groundwork for the internet (Ferrer, 2019). In the absence of the yet-to-be-imagined internet created by the Department of Defense in 1969 and called ARPANET, the University of Illinois created an intranet for its students in 1960. It was a system of linked computer terminals where students could access course materials and listen to recorded lectures (Tom, 2017). Even more significant was the development of

> PLATO (Programmed Logic for Automatic Teaching Operations) as the first computer-assisted instruction system. Begun in the early

1970s, it had over 1000 global terminals. Built by the University of Illinois, and running for 40 years, elementary through university coursework was provided to UIUC students, local schools, and universities. *PLATO pioneered key concepts such as online forums and message boards*, *online testing*, *email*, *chat rooms*, *picture languages*, *instant messaging*, *remote screen sharing*, *and multi-player online educational games* [emphasis added]. (Culatta, 2011, para. 1)

From 1970 to 1972, the Coordinating Commission for Higher Education in California funded Project Outreach to study the potential of telecourses. The study included the University of California, California State University, and the community colleges. According to the Project Outreach proposal (1973) by the California State Coordinating Council for Higher Education, Sacramento they

aimed to offer educational opportunities to a large segment of the community without access to continuing education, community service programs, or course work for college credit. Through televised programming, correspondence materials, individual tutoring, study center-based activity, and counseling, the plan enabled educators to offer such education. (p. 2)

This study led to coordinated instructional systems legislation allowing for the use of public funds to support non-classroom instruction and opened up a means for the emergence of telecourses as the precursor to the online courses and programs of today. The Coastline Community Colleges, the Dallas County Community College District, and Miami Dade Community College were the leaders in this endeavor. The Adult Learning Service of the U.S. Public Broadcasting Service came into being and the "wrapped" series, as well as individually produced telecourses for credit, became a significant part of the history of distance education and online learning. According to Walther (1981, p. 62), the

Public Broadcasting Service converted living rooms into classrooms for those stuck at home or studying part-time around their jobs. Nine courses were offered on 208 TV stations by universities and colleges who provided support and study materials; *students had to visit the campus at least three times for examinations and review of their progress* [emphasis added].

The increasingly ubiquitous nature of computers and the internet makes it a bit difficult for the modern-day student or teacher to understand why they have been so slow in finding their way into the typical classroom, never mind as an online or distance learning platform per se. By 1984, the Electronic University Network (EUN) was a leader in online education. It created an online educational network that would be highly accessible and attracted the attention of several large universities. As many as 1700 universities offered credit and degrees for courses taken through EUN. Again, the target audience were those not traditionally best served by colleges and universities (Etherington, 2018).

That same year, the University of Toronto offered the first fully online course for credit entitled "Women and Computers in Education" through its Graduate School of Education (previously the Ontario Institute for Studies in Education; Harasim, 2016). By 1994, access to the internet was truly taking off with companies like America Online (AOL), Delphi, and CompuServe among other local internet providers connecting desktop computers to the World Wide Web. The increasing number of such users allowed the small, offline adult learning center known as the Computer Assisted Language Center (CALC) to transform into the CAL Campus offering the first truly "online" courses involving real-time instruction and interaction over the internet (Tom, 2017).

In Barcelona, Spain that same year, the first new and entirely online university, the Open University of Catalonia, was founded. In 1997, two innovations occurred that would have far-reaching impacts on the evolution of online education. The first was the founding of the California Virtual University (CVU) as an online clearinghouse for students, providing information about online course offerings available from accredited colleges and universities in California. Despite folding after only two years, it inspired numerous others to offer similar services (Tom, 2017). Second, the *Journal of Asynchronous Learning Networks* was founded by the Sloan Consortium as a peer-reviewed publication focusing solely on online education (Tom, 2017). In 1999, Jones International University was launched as the first fully online university accredited by a regional accrediting association in the U.S.

In the early 2000s, the Open Education Resources (OER) movement was born in the United States. While others may have been involved earlier on in a less visible way, the Massachusetts Institute of Technology (MIT) is cited as the pioneer of making courses available on the internet (Rollins, 2018). In 2002, MIT's Open Courseware Project

started offering lectures and online materials virtually free of charge to anyone with online access with the goal of offering all of MIT's courses online. While the legal issues of intellectual property rights did slow the project down, the Creative Commons License system allowed the program to offer over 2000 graduate and undergraduate courses by 2010 and reached 2400 courses and 500 million visitors by January 2020.

With regard to Massive Open Online Courses (MOOCs), Rollins (2018) writes that the first MOOCs began in 2008 with online courses at a number of North American universities. Course content involved numerous online forums and tools with some students even discussing course material via the Second Life virtual world. By 2011, Google got involved with a course on AI that had 160,000 students and lead to familiar names like Coursera, Udacity, and EdX. Rollins goes on to say that MOOCs are available online, often free of charge, and provided by recognizable institutions. They meet the following four characteristics: They leverage web formats, are collaborative, contain evaluation modules, and are limited in time and utilize the various online tools together.

THE PRESENT

From postcards to radio to TV and the internet, the evolution of remote education has been clear but also perhaps slower than it should have been at times. Whether through FCC restrictions, intellectual property issues, or simple fear of something new and unknown, true online and remote education has been more of an alternative to traditional education than a mainstay, and perhaps with good reason when the majority of institutions of higher learning are predominantly brick and mortar. Empty classrooms and underemployed faculty and staff are not conducive to solid finances, and the COVID-19 situation has only made these issues more urgent and serious than they might have been otherwise.

During 2019 and 2020, higher education faces a crisis, but it also faces an opportunity. Dennis (2020) stated that "forecasts for the long-term implications of COVID-19 range from a five-year disruption to one of six month ... [and] anywhere from a 15% to 25% decline in enrolment" (paras. 7 & 12).

A 2019 survey of 1,500 online student respondents showed that the

top reasons why students choose online programs included the affordability of the course, the reputation of the school/program, and how a program offers the quickest path to acquiring a degree. As for the providers and faculty members, the top reasons they consider when offering a new online program include employment, demand for specific skills, and demand from students (Duffin, 2020). Inside Higher Ed's 2019 survey of faculty attitudes on technology, discussed in Lederman (2019), found that when asked about their comfort level with educational technology, 86% of digital learning leaders said they fully support it. Those opposed to the use of academic technology do so for a variety of reasons, including "instruction delivered without using technology most effectively serves my students" (65%), "there is too much corporate influence" (47%), "I don't believe the benefits to students justify the costs associated with adoption" (41%), and "faculty lose too much control over the course when they use technology" (35%), (para. 36).

Furthermore, school administrators from public and private institutions report that online education programs mostly target adult students who hope to return to school after an absence as well as transfer students (Duffin, 2020). Obviously, the target audiences must be reconsidered at this time, as the online classes may be the only way for colleges and universities to stay viable and competitive for the foreseeable future. McFall-Johnson (2020) reports that all undergraduate courses at Harvard University will be delivered online through the spring of 2021 and that they will allow up to 40 percent of the students to live on campus in the autumn if they agree to get tested for the coronavirus every three days. However, just 8% of colleges are taking the online approach according to *The Chronicle of Higher Education*. "*Most schools − 60% − are planning for in-person classes, while others are considering a hybrid approach, with some classes online and some in-person, or with blended classes*" [emphasis added] (para. 6).

THE FUTURE

The answer to the future of higher education is a mixture of remote and online education incorporating at least some aspects of the prevalent models, it would seem. Building on the successes of blended learning, for example, and moving through the flipped classroom to a flex or hybrid approach offer the best opportunities for success. To quickly

summarize the various educational models used up until the present, Caner (2012) offers the descriptions in Table 1.

TABLE 1. Classifications of Blended Learning Proportion of Content Delivered Online, Type of Course, and Typical Description

Content Delivered Online (%)	Course Type	Description
0	Traditional	Course with no online technology used. Content delivered in writing or orally.
1 to 29	Web-Facilitated	Course with web-based technology to facilitate what is essentially a face-to-face course. Uses a course management system (CMS) or web pages to post the syllabus and assignments, for example.
30 to 79	Blended	Course that blends online and face-to-face delivery. Substantial proportion of the content is delivered online, typically uses online discussions, and typically has some face-to-face meetings.
80+	Online	Course in which most or all of the content is delivered online. Typically has no face-to-face meetings.

Adapted from Caner, 2012, p. 27.

As can be seen in Table 1, in moving from traditional (0%) to online (80+%) education, there is less and less face-to-face interaction time between students and educators. This means that the face-to-face time has to be replaced by synchronous online interactions or that the actual face-to-face time has to be of the highest quality to ensure that truly meaningful education is occurring both online and off. The blended learning models discussed below offer some different ways of accomplishing this. Prasad (2020) offers four core blended-learning models (see Table 2).

TABLE 2. The Four Core Models of Blended Learning

1. Rotation Model	2. Flex Model	3. Enriched Virtual Model	4. À La Carte Model
The training program uses different learning modalities, one of which is online learning. Learners are required to follow a fixed schedule that alternates between different training methods such as classroom training, e-learning, and even collaborative group activities and discussions.	Unlike the rotation model, online training is the main component in the flex blended learning model. It also includes a certain amount of group instruction in the form of group activities, group projects, or individual tutoring by an instructor. The flex model offers a customized training schedule, unlike the rotation model, which follows a fixed schedule.	In this blended learning model, learners primarily learn online with a mandatory face-to-face component included. This could happen in a brick-and-mortar classroom or through virtual instructor-led training (VILT). *Courses are primarily completed online with only intermittent face-to-face interactions* [emphasis added].	In the à la carte blended learning model, learners complete part of the training through traditional classroom training, which is then supplemented by online training. *A major part of the training is completed through instructor-led training (ILT), supplemented by online resources* [emphasis added].

Within blended learning, there are a number of models based on the four models in Table 1, but the flipped classroom and hybrid models are probably the most promising. The flipped classroom is subsumed under the rotation model by Prasad (2020) and is described as

> a reverse (flip) of traditional classroom training where learners go through online training before they come to the classroom. This equips learners with the prerequisites for classroom training and familiarizes them with the needed concepts. The classroom is then used to deliver in-depth learning or facilitate learners to apply their knowledge. (para. 6)

While most of these models look promising, the rotation model is the most "traditional," and the flipped classroom is perhaps closest to what many had in mind for the utility and future of online education before COVID-19 came along. Nevertheless, the enriched and à la carte models come much closer to what educators are in need of − keeping the italicized points in mind. Many colleges and universities are using

blended learning models as the "best" approaches to dealing with the realities of the COVID-19 pandemic and its impact on higher education, but the obvious problem here is that every iteration of blended learning involves some form of brick and mortar, face-to-face option which − while preferable in theory − may not be practical or advisable when COVID-19 is still spreading, and no vaccine or other remedy is available.

The final model that comes to mind is the hybrid or flex model, but there appears to be some confusion about whether this is actually a different model from blended learning and how they differ. According to the Pennsylvania State University (2019) website, a "hybrid approach to course delivery combines face-to-face classroom instruction with online activities. This approach reduces the amount of seat time in a traditional face-to-face course and moves more of the course delivery online." ... "Hybrid learning, also referred to as blended learning..., may have varying definitions ... [such] that the percentage of classroom [contact may be] essential [or] not" (para. 1 & 2).

Finally, in terms of models, the needs of university administrators, faculty, and students can be best met by one or a combination of both the blended (or hybrid) course options and the fully online course option. In this vein, Sener (2015), echoing Caner (2012) for the most part, describes blended (a.k.a. hybrid) online courses as "most course activity is done online, but there are some required face-to-face instructional activities, such as lectures, discussions, labs, or other in-person learning activities (para. 12). Sener describes online courses as "all course activity is done online; there are no required face-to-face sessions within the course and no requirements for on-campus activity (para. 14 & 15).

CONCLUSIONS

While it could be argued that it has been the educators that have slowed the evolution of education and educational technologies, as appeared to happen with television in the 1960s and 1970s, it appears to more often be more a case of the technology and methodology not keeping up with each other. As an example, the EUN experience was less than seamless in the 1980s when, as Etherington (2018) notes,

this early online learning network was plagued by a few bugs. One user enrolled in three courses and reported that a few features of the

system remained onerous. In one case, the author noted that it took four days for a message to reach their instructor. Another complaint was the inability to compose an essay using a word-processing program and transfer it to the system's built-in text editor. (para. 4)

Nevertheless, the current educational environment, under pressure from the COVID-19 pandemic and its effects, make this effort a necessity rather than an option. A few conclusions will be offered here that seem inevitable based on the overview of the past and present circumstances of remote and online education offered in the above sections of this paper.

Firstly, the blended (or hybrid) learning models appear to offer well-researched and grounded approaches to allow for a flexible combination of online and offline interactions for faculty and students to ensure that everyone's needs can be met. The hybrid online and the fully online course models mentioned in the previous section, or some combination thereof, offer the best approaches for educators' current needs. As Caner's (2012) ideas summarized in Table 1 show, there is a graded progression or continuum of balance between offline and online content from traditional to online education that never quite reaches 100% online (but certainly could as implied by the "80+%" next to online education).

Secondly, if the offline component of higher education classes must be avoided due to health, safety, or other concerns, technology now offers other options for classes to be conducted online, including Zoom Meetings, Microsoft Teams, and Google Meet. As the Sevilla (2020) comparison of all of the available options suggests, while Zoom Meetings is superior in many ways, Google Meet is also well worth considering as an option in terms of price; ease of set up; and use, features, and functionality.

Thirdly, training will be required for those faculty and students who are less familiar with the technologies available and how best to use them to conduct quality online classes. It is unreasonable to assume that students are fully capable of making the most of learning technologies or that older faculty in particular can seamlessly transition to fully online or remote class models. Expecting them to provide the equipment and continue to learn on the job with little or no support from IT or other departments − not to mention footing the bill for paid versions of the services and tools mentioned in the previous section, when free or basic

memberships are not adequate − is also a lot to ask on top of all the usual tasks of grading, lesson design, course creation, and communicating regularly with students.

Fourthly, the distinction must be made between simply moving classes online or conducting them remotely and the emergency remote education that had to be created during the spring 2020 term and continues to be in effect for the fall 2020 term. Writing early in the pandemic, Hodges et al. (2020) describes this distinction:

> Online learning is supposedly lower quality than face-to-face learning, despite research showing otherwise. These hurried moves online by so many institutions could seal the perception of online learning as a weak option, when in truth nobody making the transition to online teaching under these circumstances will take full advantage of the possibilities of the online format. (para. 4)

> [E]mergency remote teaching (ERT) *involves the use of fully remote teaching solutions for instruction or education that would otherwise be delivered face-to-face or as blended or hybrid courses and that will return to that format once the crisis or emergency has abated* [emphasis added]. (para. 13)

Faculty and students are still recovering from the uncertainty that the pandemic has brought with it, and a few weeks or months of vacation are unlikely to allow them to fully recover or prepare, especially since some institutions have yet to fully commit to online or remote classes. Even those that have done so may reverse their decisions once the situation changes for better or worse.

Fifthly, the days when online education was simply a means for those unable to attend regular college or university classes due to work, family, or other commitments are over. Education has been forced to take cyber universities and online educational options more seriously and explore how best to incorporate them into a "normal" education at all levels. It can no longer be viewed as a lesser alternative or simply aimed at a small group of potential users. It needs to be treated and viewed as a valid and meaningful component of and tool for meeting the needs of students, instructors, faculty, and other stakeholders for the present and future. In order to achieve this goal, faculties need support and professional training to achieve this transition successfully. They are most likely to embrace this if their preferred tools and approaches are

the ones being utilized and supported by institutions of higher education and those who make short- and long-term decisions about curriculum, incentives, course design requirements, and the panacea of other choices that are often out of faculty and students' hands (see Nilson & Goodson, 2018, chapter 8 for more details on this).

Sixthly, no matter what happens in 2021 and beyond, higher education is not going back to the pre-COVID-19 "normal" any time soon or perhaps ever. While there have been many predictions about this, Taylor (2020) reported that the "coronavirus is likely to last between 18 and 24 months, scientists at the University of Minnesota have predicted" (para. 1). Administrators, staff, faculty, and students alike must come to terms with this and adjust their expectations for the curriculum, program, and class levels to these inevitable and long-term effects and find ways to move forward that will keep higher education viable for the foreseeable and unforeseeable future. Undoubtedly, most educators will adapt as Whitaker (2020) did and come up with a list of strategies to make them a better teacher and help their students learn more effectively, including using pre-existing material, learning more about educational technologies, collaborating more, creating more diverse and better organized curricula, supplementing more, allowing students to see more of the nuts and bolts of how assignments are graded and what the instructor is looking for in assignments, providing more guidance and various versions of the syllabus, offering more frequent assignments with opportunities to resubmit at least some of them, creating study groups and encouraging a sense of community, asking students to set up group discussions and chats, polling students for their input and feedback, using online classes for questions and discussions rather than lectures and presentations, and conducting online office hours for students who need more help.

As this overview of the evolution of distance, online, and remote education has attempted to demonstrate, much of what educators are wrestling with during the COVID-19 pandemic is neither new, untried, nor untested. Despite clear confusion over the scope and proper applications of terms like "distance learning," "online learning," "remote learning," and finally, "emergency remote learning," it is clear that many of the tools and approaches instructors are struggling to use and incorporate effectively into their classes have a proven track record of success prior to the current less-than-ideal situation that education at all levels finds itself in.

The questions are not if, when, or how to incorporate the best of online and remote learning principles and tools into the classroom experiences of ourselves and our students, but rather why it is such a challenge and obstacle for so many to do so. Understanding the history of these phases of education and how successful many have been in incorporating some or all of the technologies and tools discussed in this article into their classrooms will ideally give those who read and understand the roots of distance education and the modern iterations thereof a clearer idea of how best to do the seemingly impossible and meet the needs of our students to the best of our ability in a truly unprecedented time in higher education. While it may not be easy to go forward under these circumstances, it is quite clear that there is little chance of ever going back to the traditional brick-and-mortar classroom without some changes, based on what is being experienced by students, faculty, and administrators at a time like this one.

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