**Blockers, Barriers, and Boundaries: A Look At The Past**

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**Abstract**

Understanding the history and evolution of technologies in the classroom brings on the questions of what comes next? What is the next trend in assisting in delivering instruction? Education and Technologies have come a long way from the days of handwriting papers to typewriters to writing a paperless report for class, researching through books in a library, and exploring through electronic databases for peer-reviewed information in half the time. Yet, the evolving technologies leave the question of "how far can we take it?"

*Keywords:* Distance Learning, e-learning, Information Age, Technologies

**Blockers, Barriers, and Boundaries**

Technology has become imprinted into just about every human being's routine. As technology continuously improves and evolves, older technologies will either improve with new research and specific components or become obsolete and become a distant memory. For example, using technologies to conduct a board room meeting in a classroom was not even considered when the first modern computer was invented and operational in the early 1930s (Computer Hope, 2021). With technology, understanding the basic timeline of that evolution and the implications of the improved technologies could cause barriers moving forward beyond the information age.

**History**

Going from the first "modern" computer in the 1930s to what we have now has been a long-standing evolution of technology. Using the technologies in the classroom has begun integration in the school in the last two decades. However, some education systems have difficulty ensuring all students gain what they need to be successful, which has been a symptom of a long-standing socio-economical divide. Carr-Chellman and Rowland (2017) featured writing from Charles Reigeluth discussing the classroom history and how the education system was designed to separate the slower learners from the faster learners to feed them into the adult labor force during the Industrial Age (p. 112). Now in the Information Age, we still have the same systems that continuously feed into the cycle, despite technological advances, improved socio-economical status, and improved access to information.

Ornstein et al. (2017) discuss the history of technologies introduced in the schools. For example, in the 1920s, radio and early motion pictures introduced educational programming to the schools' curriculum, which eventually integrated music appreciation programming by the 1930s and 1940s (p.142). In the 1960s, lessons were being televised to schools and developing videos in the 1970s. By the 1990s, e-learning started becoming more popular when the internet provided access to information for students to broaden their learning (Ornstein et al., 2017, p. 143).

**Information Age in Education**

When we looked at the transition from the Industrial Age to the Information Age, access to education through technologies has become more popular, especially in the Post-Secondary education demographics with the implementation of Massive Open Online Courses (MOOC). These lessons can deliver engaging content through video, electronic readings, and interactive lessons through learning management systems. Those programs provided a blueprint for what was to come during the COVID-19 pandemic, where instructors and learners had experienced a paradigm shift from traditional face-to-face learning to full-time e-Learning in the PK-12 environments.

With the transition from face-to-face to virtual learning, many educators, students, and parents had to adjust their mindsets about how the curriculum is delivered. In addition, the end of the 2019-2020 school year was the time to develop a contingency plan should the pandemic continue into the next school year. While some schools proceeded to open schools on time with face-to-face only, some decided to offer a hybrid or full-time online instruction. In some cases, schools had successfully implemented a distance learning environment for students to thrive. Yet, due to lack of knowledge, planning, or shift in mindsets, others implemented poor designs to force guardians to choose their children's academic success over concerns for health and safety.

The COVID-19 pandemic also reinforced Roger Schank's view that having children in the traditional classroom is part of why the education system was broken. To improve, we need to redesign the modern-day classroom. His primary argument was to utilize MOOCs and encourage students to learn based on their interests and not focus heavily on curricula that the student would not need in their professional lives (Carr-Chellman and Rowland, 2017, pp. 103-105).

**Potential Barriers to Distance Learning and Technologies**

With access to the World Wide Web, Distance Education became more prevalent in recent years by delivering instruction through multimedia tools. Simonson et al. (2014) describe digital media as a "vehicle to deliver content." However, Simonson et al. (2014) describe a survey conducted to identify multiple barriers to distance education. The students and faculty surveyed with the results show they believe that barriers include student and faculty buy-in, funds allocated for the successful implementation, time commitment from student and teacher, lack of infrastructure, and lack of planning. However, those surveyed found local, state, and federal laws along with ethical issues, union contracts, and lack of parental involvement were considered minimal barriers (Simonson et al., 2014, pp.68-69).

**Instant Access To Information**

One of the barriers of being in the Information Age is how having almost unrestricted access to information can make us intellectually lazy (Birkinshaw, 2014). With information at a person's fingertips, they may not have the critical thinking skills that would allow them to decipher what is a legitimate claim to truth. Often, this would be seen a lot in evidence-based science groups for vaccines, as an example. Birkinshaw (2014) also discusses how decision-making is stalled when analysts have to analyze data before making significant decisions in their work. In addition, according to Bryan (2019), having access to general medical information to the general public can undermine the delivery of quality medical care when patients refer to "Dr. Google" to self-diagnose, which can lead to consequences of health in some cases. Similar arguments can be validated in the business sector when too much or too little information can have effects (Birkinshaw, 2014).

**Boundaries of Understanding In The Information Age**

Establishing boundaries and the responsibility of ensuring accurate information that people have in the palm of their hands falls on the author and the reader. Unfortunately, the bombardment of information like Wikipedia can lead the reader or learner into a situation of migrating away from the truth. In addition, ensuring the reader uses critical thinking skills to decipher legitimate research versus illegitimate sources can be a gray area when instructors are not present to guide the learner to reflect on those differences.

With technologies improving and evolving into their entities, the learner would find themselves questioning whether technologies would remove the human footprint of receiving, providing, and storing knowledge. Predicting where this may lead would look like paperless libraries, digitized records, expanded search engines, and social media evolving the way we read and transmit information. With the evolution of these technologies, will there be boundaries established before they become too much for humans to handle? Only time will tell.

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