Miguel Rocha

University of Nebraska, Omaha

CIST 2100-850: Organizations, Applications, and Technology

December 05, 2020

How Education Has Been Affected by Technology

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Introduction

Technology has been integrated in most to every aspect of teaching in every education setting such as elementary schools, secondary schools, colleges, universities, private education, corporate training, and home schooling. The use of technology is an instructional tool or media for educators. "The term instructional technology draws attention to the instructional use of educational technology. This term represents both a process and the particular devices that teachers employ in their classrooms" (Mehlinger & Powers, n.d, para. 2). Instructional technology is used independently or in combination of internal/external electronic hardware and software. As you can see, IT Infrastructure is present in the daily operations of an instructor. The instructor interacts with the computer hardware, operating systems, Internet, software applications, networking, telecommunication, data management and storage. Technology has been a part of education for over a century. (Mehlinger & Powers, n.d,) pointed out that in 1905 the first school museum that used instructional technology was in St. Louis, Missouri. The author indicated that the museum provided portable museum exhibits, films, photographs, charts, stereographic slides, and other materials to instructors to use in the classrooms. With the authors' research they found that before audio was available educators used visual technology such as three-dimensional objects, photographs, and silent films. When audio became available educators used radio, audio recordings to combined both visual and audio as instructional technology. In the 1950's and 1960's audio and visual instructional technology was combined to create the Public Television Stations.

How Education was evolved with technology

The computer was used as instructional technology back in the 1950s and the 1960s. Not until the 1980s and the availability of microcomputers with the accessibility of the internet in the 2000s; the computer was widely used in the education setting (Mehlinger & Powers, n.d. In the 21 century computers and mobile devices are the most used technology in education from online learning, virtual learning, E-Learning, distance learning and blended learning. Mehlinger & Powers (n.d,) believe that instructional technology did not take over the traditional education back in history because instructors lacked the skill to use the equipment, the high cost of films, broadcasting, equipment and upkeeping as well as the inaccessibility of equipment and material when it was needed, the time involved in finding the right film or material for each class. Society in the 21st century is engrossed in and understanding advantages of technology. Educational technology is wider excepted through society because technology provides convenance, economic savings and productivity. Educational technology has greatly impacted education and will continue to impact the education industry.

Educational Institutions Business Process

The business process of educational Institutions has a complex process to deliver effective teaching through "collection of activities required to produce a product or service" (Laudon, 2019, p. 43). The instructors use four activities in an information system to produce the information that the education institutions "use to make decisions, control operations, analyze problems, and create new products or services. These activities are input, processing, output, and feedback" (Laudon, 2019, p. 16). The first activity the instructor performs is gathering data from

textbooks, research, conferences, meetings and academic work. Inputting this information into the process. In the process, the instructor organizes the data of these environments to produce meaningful information. The instructor outputs specific meaningful information for each course. The output is disseminating to students and parents. The output includes syllabus, course description, lectures, presentations, assignments, discussions, quizzes, and exams. The instructor provides the output to the department for evaluation and feedback for the final stage of the process.

The possibilities of instructors using technology are endless. Currently we live in a technology rich society where information is at your fingertips. A large majority of instructors use technology to "be used effectively to supplement instruction by providing instructional variety, by helping to make abstract concepts concrete, and by stimulating interest among students" (Mehlinger & Powers, n.d, para. 3). Educators can reduce their workload and time by using Education Management Information System (EMIS) to quickly analyze and gain access to students or group of students' personal, behavior and performance data in real time (Korde, 2018). Education Management Information System helps in developing plans, strategies, and policies to improve instructor's performance.

Educational and Instructional Technology

Instructors are able to use Learning Management Systems (LMS) to teach with positive and effeteness results. Digital classrooms such as Google Classroom, Schoology, Moodle, Edmodo, Blackboard and Canvas are hubs where instructors organize course materials, resources, discussions, assignments, and exams. Students are able to have access to all course materials through the digital classroom. Collaboration technologies such as Google Workspace, Office 365, Padelet and WIKIs provide the ability to synchronize, communicate and share material between students, parents, and instructors. Other characteristics that collaboration tools have are the ability to increase sharing of instructors' expertise internally in the educational industry and continue the upward learning of the instructor.

Telepresence, web, and video conferencing technology such as Zoom, TeamViewer and Skype have allowed instructors to communicate with students, parents and staff domestic and international. This technology can also be used for instructors to do a presentation or lecture from the actual field. In an interview with Melissa Post, a professor at Central Community College, she stated "Everyone has a cell phone, so now we can use those as our clickers for testing." Showing how Education has adapted and used IT to its advantage.Augmented and Virtual Reality has brought the student to create and engage with interactive media reality web-based applications such as CoSpaces, Merge and Adobe Aero. Merging allows students to touch and interact with 3D digital content (Kary, 2020). Kary (2020) mentioned that Google allows you to have a virtual classroom trip to any geographic place. Augmented and Virtual Reality will continue to develop into extortionary powerful technology.

One of the challenges that an instructor has is teaching at a level that achieves their students' needs (Kary, 2020). Kary (2020) provided Khan Academy, Stmath, Mobymax, Newsela and Freckle as an example of instructional web programs that personalize instruction and delivery

material at the student's skill level. Using different technologies, instructors are able teach students in different forms visual, auditory, tactile, logical, social, and solo. Teaching students, technology skills in the 21st century is important. Technology has made a huge impact on educational institutions and in the world. Students will need these skills to interact in education, work, and society. Kary (2020) believes that basic technology skills that a student should have been navigating the web, touch typing, composing email and collaboration programs.

Technology has opened up the ability for instructors to choose from different ways to have their students show comprehensiveness of course material. Some of the ways that Instructors have the option of having their students show comprehensiveness of course material are slide presentations, games, project activities, participation activities, podcast, digital comics, digital books, video, graphics, online essays, and online tests (Kary, 2020). Technology can improve instructor's performance. Instructors can watch YouTube interact in Twitter to learn new strategies that can improve their courses (Kary, 2020). TeachFX provides instructors with instructional feedback and analyzes the interaction of the instructors with the students.

Security and Privacy

Educational institutions should have policies and security technology in place for the instructors to follow and use the campus network policies. However, instructors do use external applications outside of the campus network and work off campus. Calvillo (2020) who is a professor at a university said, "I had to complete some online training for information security, FERPA regulations and data security." The instructors are required to use secure WIFI and network and proper firewalls, spam, and virus software. "Choosing the right tool also includes choosing software that respects student data privacy and takes sufficient security precautions to put parents and school officials at ease" (Antoine et al., 2018, para 5).

Instructors do need to follow educational institutions policies as well as privacy and legal regulation from the government. The legal privacy law that instructors do need to follow is the Family Educational Rights and Privacy Act of 1974 and Protection of Pupil Rights Amendment (PPRA) (Antoine et al., 2018). These laws protect the students' and parents' privacy. Providing multiple modalities for learning is vital to ensure students' success - people respond to different kinds of learning stimuli. Opportunities should be presented to students to learn in different ways, such as talking about their learning. If students talk and use their own language to make sense of learning, they are incorporating new information into prior knowledge. Another opportunity to learn in a different manner is to utilize new media, such as blogs, podcasts, or PowerPoint presentations instead of relying on books or newspaper articles.

How it affects Communities

Creating communities of online learners is also necessary for success. One suggestion for online instructors is to make yourself available. It is important for professors to establish the tone of the community through class correspondence, discussion board replies, and assessment feedback, as they are the touchstone of their online course community. When students are comfortable with their professors, they are more comfortable with learning, participating, and sharing within the online environment. Another suggestion is to create a social media page for the class where ideas can be shared. One way to do this would be to watch a virtual event together and discuss it

afterwards. Deliberately creating social moments acknowledges this fundamental aspect of education (Wehler, 2018).

"Effective online learning involves more than just moving a course syllabus and lectures online, just as a successful movie involves more than just filming a live play. It involves changing the culture of the school, with new types of responsibilities for teachers, students and families, and new forms of interactions among them and it requires providing professional development, time and technology resources to enable educators to optimize students' online learning experiences" (Kleiman, 2020). Kristen Broadbelt is the Principal at Eyestone Elementary School in Wellington, Colorado. When schools across the county shut down in March 2020, due to the COVID-19 pandemic, Mrs. Broadbelt explained the process that took place within her school district to shift to remote education: "We adapted as a school in a variety of ways. Some classes were more prepared to make this pivot than others in terms of our Spring learning. Over the summer all teachers made great strides in their comfort level teaching remotely. Everyone also took the opportunity to plan for what remote learning looks like for their grade level and their discipline. All staff had multiple optional opportunities to strengthen their craft over the summer and during the Launch Learning week through the district. I have given weekly mini-PDs since our return to campus on a variety of remote learning modules. I feel the only setback is trying to find time for additional opportunities. Teachers always want to perfect their practice, so they are eager to learn more" (K. Broadbelt, personal communication, September 21, 2020).

According to an article published on the website EdSource, "the potential of online learning will become widely recognized as a means of teaching and learning that has different advantages and disadvantages than face-to-face classes, leading to a commitment to support educators in developing the skills to effectively capitalize on this potential and prepare their students to be lifelong online learners. Only then, will schools go beyond addressing equity of access to achieve equity of high-quality online learning experiences" (Kleiman, 2020).

How Education uses IT during COVID

The effects of Covid-19 on the education system have been astronomical on a global scale. 1.4 billion people are out of class, 55 million of that being from the U.S. In an article by the Brookings Institution, their models have projected that the Covid will cost the United States citizens earnings by 2.5 trillion dollars for four months of lost education, that's 12.7 annual G.D.P, more formally known as the Global Domestic Product. Globally this will cost 10 trillion dollars. Luckily, the U.S has already invested 18.66 billion dollars into education technology making sure the country can continue its education, so the next generations aren't stalled for too long in the advancement of academic studies. That market is projected to reach 350 billion dollars by the year 2025. Students learn 25-60% more in E-learning compared to 8-10% in the classroom. The tradeoff for E-learning is that most privileged kids will have some sort of access to the internet while 25% of kids will not be able to access their homework or lectures. This can lead to mental breakdowns for both the children and the teacher because not every child can get the assistance they need, and a teacher's support can be only so much during this difficult time. According to a survey done by the University of Texas A&M, all participants have an 80% chance of having a mental breakdown. This can be changed by the support of families. Families play a big part of virtual learning because if a family were to allow their child to put less attention on their studies than they are less likely to succeed. With that being said, as long as the

family provides great guidance and support, during this difficult time, there's no reason why the scholar cannot be successful. Education is a part of life in every way. As time goes on and evolves, so does Education. As the pandemic progresses, the education field has proved it can withstand and continue to thrive in our world. It is a field that will never cease and can only be improved.

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