Chapter 1 - Looking In The Rearview Mirror

A Brief History of Education

Chapter Abstract

Chapter 1, titled "The Future of Educational Technology Integration," provides an insightful exploration into the evolving landscape of technology in education. The chapter offers a comprehensive overview of the current state of educational technology and provides foresight into its future implications. The chapter begins by examining the foundational concepts of educational technology, tracing its historical roots and evolution. It delves into the transformative impact technology has had on traditional teaching methodologies and how it continues to shape the learning experience for students and educators alike. Key themes addressed include the integration of emerging technologies, the influence of digital resources on pedagogy, and the role of technology in fostering collaboration and engagement. The author also explores challenges and considerations associated with the integration of technology in educational settings. Furthermore, the chapter outlines future trends and possibilities, considering the potential impact of artificial intelligence, virtual reality, and other cutting-edge technologies on education. The authors emphasize the importance of adaptability and a forward-thinking approach for educators to effectively leverage technology in the ever-changing landscape of education. The chapter sets the stage for subsequent discussions in the book, providing a comprehensive foundation for exploring the multifaceted dimensions of technology integration in education.

Photo by Stan: https://www.pexels.com/photo/car-side-mirror-showing-heavy-traffic-191842/

Learning Objectives

After reading this chapter, learners will be able to:

1. Explain key vocabulary terms, theories, and resources relating to literacies and learning.
2. Describe the connection between topics and personal practice.
3. Summarize the course content of the chapter.

In order to anticipate what the future might hold it is important to take a glance in the rearview mirror and see where we have been. Dr, Peter Gray is a research professor at Boston College and the author of *Free to Learn* (Basic Books) and *Psychology* (Worth Publishers, a college textbook now in its 8th edition). With his permission, I am including excerpts from his article, *A Brief History of Education*. If you wish to read the entire article, you will find it on the provided link to Psychology Today (Gray, 2008).

In the Beginning

In the beginning, for hundreds of thousands of years, children educated themselves through self-directed play and exploration.

In relation to the biological history of our species, schools are very recent institutions. For hundreds of thousands of years, before the advent of agriculture, we lived as hunter-gatherers. In my August 2 posting, I summarized the evidence from anthropology that children in hunter-gatherer cultures learned what they needed to know to become effective adults through their own play and exploration. The strong drives in children to play and explore presumably came about, during our evolution as hunter-gatherers, to serve the needs of education. Adults in hunter-gatherer cultures allowed

children almost unlimited freedom to play and explore on their own because they recognized that those activities are children's natural ways of learning.

With the rise of agriculture, and later of industry, children became forced laborers. Play and exploration were suppressed. Willfulness, which had been a virtue, became a vice that had to be beaten out of children.

The invention of agriculture, beginning 10,000 years ago in some parts of the world and later in other parts, set in motion a whirlwind of change in people's ways of living. The hunter-gatherer way of life had been skill-intensive and knowledge-intensive, but not labor-intensive. To be effective hunters and gatherers, people had to acquire a vast knowledge of the plants and animals on which they depended and of the landscapes within which they foraged. They also had to develop great skills in crafting and using the tools of hunting and gathering. They had to be able to take initiative and be creative in finding food and tracking game. However, they did not have to work long hours; and the work they did was exciting, not dreary. Anthropologists have reported that the hunter-gatherer groups they studied did not distinguish between work and play—essentially all of life was understood as play.

THEY ARE ALL IN THE BEETS.

he American Child, Vol. 1, No. 3, Nov, 1919.

Agriculture gradually changed all that. With agriculture, people could produce more food, which allowed them to have more children. Agriculture also allowed people (or forced people) to live in permanent dwellings, where their crops were planted, rather than live a nomadic life, and this in turn allowed people to accumulate property. But these changes occurred at a great cost in labor. While hunter-gatherers skillfully harvested what nature had grown, farmers had to plow, plant, cultivate, tend their flocks, and so on. Successful farming required long hours of relatively unskilled, repetitive labor, much of which could be done by children. With larger families, children had to work in the fields to help feed their younger siblings, or they had to work at home to help care for those siblings. Children's lives changed gradually from the free pursuit of their own interests to increasingly more time spent at work that was required to serve the rest of the family.

In the Middle Ages, lords and masters had no qualms about physically beating children into submission. For example, in one document from the late 14th or early 15th century, a French count advised that nobles' huntsmen should "choose a boy servant as young as seven or eight" and that "...this boy should be beaten until he has a proper dread of failing to carry out his master's orders."[1] The document went on to list a prodigious number of chores that the boy would perform daily and noted that he would sleep in a loft above the hounds at night in order to attend to the dogs' needs.

With the rise of industry and of a new bourgeoisie class, feudalism gradually subsided, but this did not immediately improve the lives of most children. Business owners, like landowners, needed laborers and could profit by extracting as much work from them as possible with as little compensation as possible. Everyone knows of the exploitation that followed and still exists in many parts of the world. People, including young children, worked most of their waking hours, seven days a week, in beastly conditions, just to survive. The labor of children was moved from fields, where there had at least been sunshine, fresh air, and some opportunities to play, into dark, crowded, dirty factories. In England, overseers of the poor commonly farmed out paupers' children to factories, where they were treated as slaves. Many thousands of them died each year of diseases, starvation, and exhaustion. Not until the 19th century did England pass laws limiting child labor.

In sum, for several thousand years after the advent of agriculture, the education of children was, to a considerable degree, a matter of squashing their willfulness in order to make them good laborers. A good child was an obedient child, who suppressed his or her urge to play and explore and dutifully carried out the orders of adult masters.

For various reasons, some religious and some secular, the idea of universal, compulsory education arose and gradually spread. Education was understood as inculcation.

As industry progressed and became somewhat more automated, the need for child labor declined in some parts of the world. The idea began to spread that childhood should be a time for learning, and schools for children were developed as places of learning. The idea and practice of universal, compulsory public education developed gradually in Europe, from the early 16th century on into the 19th. It was an idea that had many supporters, who all had their own agendas concerning the lessons that children should learn.

"Woman teaches classroom, while the students in the right background write on the chalkboard" by Boston Public Library is licensed under CC BY 2.0.

Employers in industry saw schooling as a way to create better workers. To them, the most crucial lessons were punctuality, following directions, tolerance for long hours of tedious work, and a minimal ability to read and write. From their point of view (though they may not have put it this way), the duller the subjects taught in schools the better.

So, everyone involved in the founding and support of schools had a clear view of what lessons children should learn in school. Quite correctly, nobody believed that children left to their own devices, even in a rich setting for learning, would all learn just exactly the lessons that they (the adults) deemed to be so important. All of them saw schooling as inculcation, the implanting of certain truths and ways of thinking into children's minds. The only known method of inculcation, then as well as now, is forced repetition and testing for the memory of what was repeated.

With the rise of schooling, people began to think of learning as children's work. The same power-assertive methods that had been used to make children work in fields and factories were quite naturally transferred to the classroom.

Photo by Stephen Paris: https://www.pexels.com/photo/brown-wooden-desk-table-752395/

Repetition and memorization of lessons is tedious work for children, whose instincts urge them constantly to play freely and explore the world on their own. Just as children did not adapt readily to laboring in fields and factories, they did not adapt readily to schooling. This was no surprise to the adults involved. By this point in history, the idea that children's own willfulness had any value was pretty well forgotten. Everyone assumed that to make children learn in school the children's willfulness would have to be beaten out of them. Punishments of all sorts were understood as intrinsic to the educational process. In some schools children were permitted certain periods of play (recess), to allow them to let off steam; but play was not considered to be a vehicle of learning. In the classroom, play was the enemy of learning.

In his book, *A History of Education: a social interpretation*, James Mulhern writes:

Angry Teacher and Boy by j4p4n

"The brute force methods long used to keep children on task on the farm or in the factory were transported into schools to make children learn. Some of the underpaid, ill-prepared schoolmasters were clearly sadistic. One master in Germany kept records of the punishments he meted out in 51 years of teaching, a partial list of which included: "911,527 blows with a rod, 124,010 blows with a cane, 20,989 taps with a ruler, 136,715 blows with the hand, 10,235 blows to the mouth, 7,905 boxes on the ear, and 1,118,800 blows on the head"[6]. Clearly, that master was proud of all the educating he had done (p. 383).

In recent times, the methods of schooling have become less harsh, but basic assumptions have not changed. Learning continues to be defined as children's work, and power-assertive means are used to make children do that work.

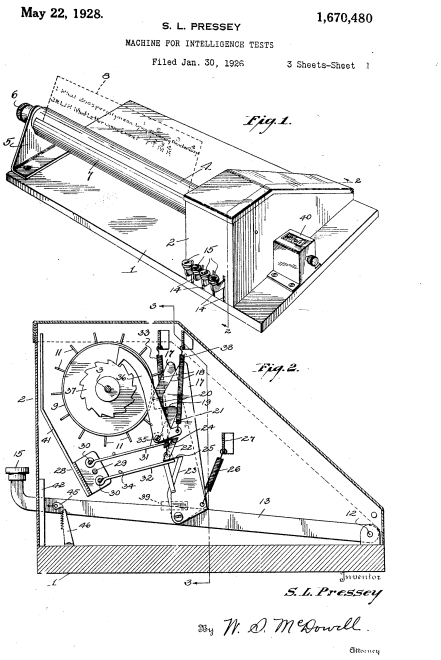
In the 19th and 20th centuries, public schooling gradually evolved toward what we all recognize today as conventional schooling. The methods of discipline became more humane, or at least less corporal; the lessons became more secular; the curriculum expanded, as knowledge expanded, to include an ever-growing list of subjects; and the number of hours, days, and years of compulsory schooling increased continuously. School gradually replaced fieldwork, factory work, and domestic chores as the child's primary job. Just as adults put in their eight-hour day at their place of employment, children today put in their six-hour day at school, plus another hour or more of homework, and often more hours of lessons outside of school. Over time, children's lives have become increasingly defined and structured by the school curriculum. Children now are almost universally identified by their grade in school, much as adults are identified by their job or career.

Schools today are much less harsh than they were, but certain premises about the nature of learning remain unchanged: Learning is hard work; it is something that children must be forced to do, not something that will happen naturally through children's self-chosen activities.

Enter Technology

Between 1910 and 1912 Thomas Edison was working to expand his motion picture industry into education. He envisioned an end to textbooks, with instruction provided through video. Edison said, “If I were a school teacher, I would put lazy pupils to studying bees and ants. They would soon learn to be diligent” (Edison Foundation, 2019). While Edison may have been on the right track regarding the power of visual and nonlinguistic learning, his passive learning approach never caught on.

In his “History of Teaching Machines” (1988), historian of psychology Ludy Benjamin writes, "A teaching machine is an automatic or self-controlling device that (a) presents a unit of information, (b) provides some means for the learner to r


May 22, 1928. 1,670,480

S. L. PRESSEY

MACHINE FOR INTELLIGENCE TESTS

Filed Jan. 30, 1926 3 Sheets-Sheet 1

Fig. 1.

Fig. 2.

S. L. Pressey

By M. D. McDowell.

Attorney

respond to the information, and (c) provides feedback about the correctness of the learner’s responses."

As such some scholars have credited Ohio State University psychology professor Sidney Pressey, who displayed a "machine for intelligence testing" at the 1924 meeting of the American Psychological Association, as "the first" to build a teaching machine.

Looking through early patents in this area we see a variety of devices. Some were teaching machines like Pressey's, some were specifically testing machines, and some were toys.

Apple Changes Everything

The education technology landscape changed dramatically in the early 1980s with the Apple IIe. Steve Jobs, the co-founder

"Old Apple Logo Web 2.0" by Alistair Israel is licensed under CC BY-NC 2.0.

of Apple Computers, didn't have very much formal education beyond high school, but he saw his first computer at Hewlett-Packard he immediately saw its potential. “I thought if there was just one computer in every school, some of the kids would find it. It will change their lives,” he said in a 1995 interview at the Computerworld Smithsonian Awards Program (Marrow, 1995). In May, 1983, Apple Computer, Inc. announced a program called Kids Can't Wait (KCW). The idea behind KCW was to donate a computer to every school in America. Political leaders in California were the first to work with Apple to make this happen. They agreed to give Apple (and any other company) a tax break for the donations. Soon after that, computers began arriving in schools throughout the state.

John Couch, Apple, Inc's First Vice President of Education reflects on Apple's journey in his book, *Rewiring Education: How Technology Can Unlock Every Student's Potential* (Couch, 2018). While getting computers into classrooms was a huge initiative in itself, Steve Jobs and the leadership at Apple knew they needed to do more if they wanted to make the impact they envisioned. They didn't just want to give students computers, they wanted to help teachers and students to transform teaching and learning. In order to do that, they needed data. In 1985 Apple launched the Apple Classroom of Tomorrow (ACOT) research study. Over the next 10 years, they worked with school districts throughout the US and also the National Science Foundation (NSF) to study how the everyday use of technology might impact teaching and learning. They also established Apple Development Centers where they could test different technologies and curricula (Couch, 2018). The authors of the ACOT study wrote, “In ACOT classrooms, technology is viewed as a tool for learning and a medium for

"Little Karl with Apple II Plus" by bigboxcar is licensed under CC BY-NC-SA 2.0.

thinking, collaborating, and communicating." When technology was used in a variety of ways within a classroom, it significantly increased "the potential for learning, especially when it is used to support collaboration, information access, and the expression and representation of students' thoughts and ideas." Today we see this as just common sense, but back in 1985, this was a radical and innovative idea. This research was used as the foundation for technology integration over the next decade. In fact, when I started my first technology integration elementary school in 1988 I presented parts of the ACOT study to my school board as justification for the creation of Wichita's first technology magnet school.

The Internet Arrives

"First Internet Message Arpanet UCLA"
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By the early 2000s the world of technology in schools had changed. While the original KCW model provided free-standing and networked computers to classrooms, the Internet began to erode the very walls of the classrooms. Now teachers and students could collaborate in real-time with others throughout the world. My elementary students in Wichita, KS had made friends with a class in Israel in 1988. When the Palestinian Intifada began I remember some of my students hurrying to the classroom when they got off the buses to make sure their friends were ok. That's when I really understood the power of building relationships through technology.

With the advent of the internet and the rise in mobile devices and personal computing becoming more affordable Apple saw the need to update the ACOT research. They launched the "Apple Classrooms of Tomorrow - Today" ($ACOT^2$) research. While the original ACT study looked at the impact technology had on teaching and learning, the $ACOT^2$ research focused on what do to and how to do it. The $ACOT^2$ researchers were trying to create a "specific action plan that would ensure the new digital generation of students would receive the type of education they needed to learn and stay in school" (Couch, 2018, p.82). One of the findings of the research highlighted the importance of hands-on, constructivist learning. Rather than relying

"College of DuPage Engineering Club Hosts STEM Learning Event for Homeschoolers 2018 4" by COD Newsroom is licensed under CC BY 2.0.

on instruction manuals and scripted instruction, educators need to move to an active learning environment. Couch (2018) writes, "Thomas Edison's educational film invention failed over a hundred years ago because he didn't listen to John Dewey's constructivist views on the importance of hands-on learning. At Apple, we wanted to learn from that mistake and ensure that our innovations had the chance to make a real impact on kids" (p. 82-83).

That was a look in the rearview mirror. In the next chapter, we look the potential of all of these mobile devices and the possibilities and resources available to educators as they strive to meet the challenge laid out in the ACOT2 research - to "ensure the new digital generation of students would receive the type of education they needed to learn and stay in school" (Couch, 2018, p.82).

Application:

"AD at Student Voices Discussion 20 August 2012" by US Department of Education is licensed under CC BY 2.0.

In 7-10 sentences, discuss how you see some aspect of the readings already occurring (in your classroom, school, or district) and identify at least one area where you could improve in these areas. *Be sure to include what your primary stakeholders (students, staff, parents) would say about the current degree of technology integration in your