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Abstract

The decades of the 1960s, 1970s, and 1980s were an eventful time in the history of the United States. Not only did the events of these three decades influence the evolution of technology, but technology itself influenced some of the events that occurred. This paper analyzes key events in these three decades and the interrelationships between technology and those events. Business and corporate developments, educational theories of learning and instruction, society and culture, and the prevalent political climate from the beginning of the 1960s to the end of the 1980s are interrelated and resulted in many of the advances in technology visible today.

Events that occurred in the decades of 1960, 1970 and 1980 made significant contributions to the evolution of educational technology. Events of these three decades included several wars and antiwar protests; fluctuations in the economy; poverty and the fight for equality; political, cultural and societal unrest. All of these events were influenced by or had an influence on the development of technology for that era. Key technological advances in the 1960s included development of the computer programming language BASIC, invention of the first handheld calculator, launching of the first active communication satellite and innovations in the NASA space program. The decade of the 1970s introduced widespread use of instructional television (ITV) and such technological inventions as liquid crystal display (LCD) monitors, word processors, microprocessors, and the Ethernet. Technological advances in the 1980s included development of the personal computer, MS-DOS operating system, the Apple Macintosh computer, compact disc player, VCR and other electronic innovations.

**1960**

**The Effect of Technology on Business and Corporate Developments** One of the strongest influences emerging technology had on business and corporate developments during the 1960s was the NASA space program which flourished and led to the first successful spacecraft landing on the moon and the first successful spacewalk. Technological advances allowed viewers around the world to watch this historical occasion “as a television camera outside the craft transmitted his every move to an awed and excited audience of hundreds of millions of people on earth” (Wilford, 1969). Poverty levels were high during the 1960s and to counteract this problem programs such as Medicare and Food Stamps were initiated along with educational initiatives designed to provide “assistance to students as well as grants to schools and colleges” (Department of State, 2011). These initiatives encouraged students to attend college which ultimately led to more use of technology as well as the invention of new technologies in subsequent decades.

**The Effect of Technology on Educational Theories of Learning and Instruction**

In 1964, technology was the basis for Marshall McLuhan’s theory of how information is processed as described in his book *Understanding Media*. McLuhan defined media as “technological extensions of the body” (Gordon, 2002) and as such technology influences who we are and what we learn. According to McLuhan (1964) “The message of any medium or technology is the change of scale or pace or pattern that it introduces into human affairs.”

Instructional design theories continued to evolve in the 1960s such as Gagne’s Conditions of Learning theory. Gagne’s theory identified “Five major categories of learning: verbal information, intellectual skills, cognitive strategies, motor skills and attitudes” (Kearsley, 2011). Gagne collaborated with Leslie Briggs to develop “a prescriptive instructional model” (Saettler, 2004, P. 347) based on nine processes of instruction Gagne and Briggs concluded must occur for learning to take place.

**The Effect of 1960s Technology on Society and Culture**

The decade of the 1960s was one of turbulence and change and many events occurred that were shaped by or affected by the technology of that day. Millions watched funeral services for the President of the United States, Martin Luther King, Jr. and Robert Kennedy on television. The Civil Rights Movement that began in the mid-1950s continued into the 1960s with many events such as the March on Washington in August 1963 seen live around the world via satellites. “Americans in the 1960s became aware that the nation was suffering from a shortage of citizens whose education and training were sufficient to meet the technological challenges of modern society” (Encyclopedia.com, 2011). Desegregation of college campuses was ordered by the end of the decade and freshmen college enrollment grew as a result of both the government’s efforts to prepare students to compete technologically on a global scale and with World War II “baby boomers” entering college for the first time.

**The Effect of Technology on the Political Climate of the 1960s**

Technology played a role in the presidential election of 1960 when the first televised debate took place between Nixon and Kennedy. “By 1960, 88% of American households had televisions — up from just 11% the decade before. The number of viewers who tuned in to the debate has been estimated as high as 74 million” (Webley, 2010).

Protests of the Vietnam War were fueled in part by technology that allowed Americans to see the effects of the war firsthand via video transmissions from the battlefields that aired on national television. “Bombarded by horrific images of the war on their televisions, Americans on the home front turned against the war as well: In October 1967, some 35,000 demonstrators staged a mass antiwar protest outside the Pentagon” (History.com, 2011). Seeing those transmissions led to countless antiwar protests on college campuses and elsewhere throughout the United States during this turbulent time.

**The Effect of Other Events of the 1960s on Technology**

**Business and Corporate Developments**

In 1961 President Kennedy told Congress “This nation should commit itself to achieving the goal, before this decade is out, of landing a man on the Moon and returning him safely to Earth" (New York Times, 1998). The space race became a lucrative government-funded enterprise for NASA which developed technology that resulted in astronauts going into outer space for the first time, circling earth, landing and walking on the moon by the end of the 1960s.

Business and corporate development in the 1960s was aided by inventions such as the hand held calculator; BASIC (standing for Beginner's All Purpose Symbolic Instruction Code) which “was written (invented) in 1963, at Dartmouth College, by mathematicians John George Kemeny and Tom Kurtzas as a teaching tool for undergraduates” (Bellis, 2011); the compact disc used to store digital media; compact audio cassettes; the first computer video game; computer mouse, and random access memory (RAM) which became “the standard memory chip for personal computers replacing magnetic core memory” (Bellis, 2011). These and other technological advances in light of the Economic Opportunity Act signed by President Johnson in 1964 not only advanced the cause of innovative technology but also helped create jobs and stability during the unstable economic times of that decade.   
**Educational Theories of Learning and Instruction**

McLuhan’s theories affected the development of new technology throughout the 1960s and many of his predictions of the future of technology have come to fruition. He is credited with the terms global village and mass media as well as accurately predicting the advent of the worldwide web. Although McLuhan may never have envisioned the technology that would develop after his death, Gordon (2002) said “He pointed the way to understanding all of these, not in themselves, but in their relation to each other, to older technologies, and above all in relation to ourselves our bodies, our physical senses, our psychic balance.”

The nine steps in instructional design that Gagne submitted were instrumental in developing instructional methods especially in the subject area of mathematics. Saettler (2004) said “Gagne’s intellectual skills are difficult to identify outside of mathematics” (P. 347), yet despite that “gaining attention; informing learners of the objective; stimulating recall of prior learning; presenting the stimulus; providing learning guidance; eliciting performance; providing feedback; assessing performance; enhancing retention and transfer” (Kearsley, 2011) is an instructional model educators used and continue to use to enhance the learning experience.

**Society and Culture**

The World War II baby boomers entered college as freshmen during a turbulent time in American history. Our involvement in the Vietnam War, civil rights and women’s rights were some of the challenging issues at that time. Technology both helped and advanced the causes of that day with television providing satellite images of the war, protests, marches and demonstrations. The counterculture of the sixties mistrusted and defied authority yet out of that defiant generation came innovators like Bill Gates who “through technological innovation, keen business strategy, and aggressive competitive tactics built the world's largest software business” (Bio.com, 2011). In the late sixties Bill Gates was introduced to computers at school and “became entranced with what a computer could do… “He wrote a tic-tac-toe program in BASIC computer language that allowed users to play against the computer” (Bio.com, 2011). Other baby boomers went on to develop new computers, programming languages, software, video recording devices, computer games and the like throughout that decade and beyond.

**Political Climate of the 1960s**

American involvement in the Vietnam War was costly in many ways and had an adverse effect on business and industry in the United States as government spending shifted to the military during the conflict. Subsequently “The nation spent more than $120 billion on the conflict in Vietnam from 1965-73; this massive spending led to widespread inflation” (History.com, 2011). Other issues that affected politics and policy included the Civil Rights Movement as well as issues relating to women. Passage of both the Equal Pay Act (1963) and the Civil Rights Act (1964) resulted in more women and minorities entering the workforce during the sixties. “In 1960 over thirty percent of married women work, up from fifteen percent in 1940” and “By 1969 forty-three percent of women are in the workforce” (Discovery Education, 2011). As minorities and women entered the workforce, the need for continued development of new and improved technologies grew and were aided with inventions of electronics such as the hand held calculator, computer mouse and so forth. In 1965 Congress passed the Elementary and Secondary Education Act. This Act, “born as part of President Johnson's War on Poverty” (Department of Education, 2011), gave money to poor schools to improve the quality of education and sent “Mainframes and minicomputers to some schools” (Science and Technology Communications, 2011). In that same year, Congress passed the Higher Education Act that essentially did the same thing for needy students in postsecondary schools.

**1970**

**The Effect of Technology on Business and Corporate Developments**

During this decade the development of instructional television (ITV) allowed students to complete courses via television and/or videos. In the New York State school district Television stations that programmed ITV defrayed some of the cost by charging school districts a nominal fee for using the service. “This was supplemented by contracts with the Education Department to produce instructional series in a broad range of curriculum areas” (Halligan, 2009). The federally funded *Public Television Facilities Program* helped television stations around the country “establish state - of - the - art broadcast facilities to serve their publics” (Halligan, 2009). The computer-related business was a booming industry in the 1970s with the invention of LCD displays, word processors, the Ethernet, microprocessors and the like. When the Intel Corporation introduced the first microprocessor in 1971 it “started the evolution of the home computer” (Oxford, 2010) that was followed by microprocessors developed by Tandy, Atari and Apple Corporations by the end of the decade.

**The Effect of Technology on Educational Theories of Learning and Instruction**

Bandura’s social learning theory proposed that people learn by observing the attitudes, actions and reactions of others and emulating those same attitudes, actions and reactions. A technological example of this can be seen in television commercials, podcasts, or online videos. Kearsley (2011) said “Commercials suggest that drinking a certain beverage or using a particular hair shampoo will make us popular and win the admiration of attractive people.” The intent of the message whether it is televised or published online is to motivate the viewer to emulate the action and purchase the product or service.

M. D. Merrill’s Component Design Theory (CDT) asserted that learning is content and performance and that effective instruction includes both. Further “The theory suggests that for a given objective and learner, there is a unique combination of presentation forms that results in the most effective learning experience” (Kearsley, 2011). CDT instruction is individualized to the student which was one of the advantages and appeal of instructional television during the 1970s.

**The Effect of 1970s Technology on Society and Culture**

Advances in technology in 1978 led to the birth of the first test tube baby. This event was controversial by 1970’s societal norms, and thanks to modern media capabilities at the time, news of Louise Brown’s birth was broadcast around the world. “On television newscasts in Europe and the U.S., stories about an obscure British couple and the abstruse subject of embryology shouldered aside items about the Middle East, international trade balances and inflation” (Time, 1978). The invention of email in 1971 by Ray Tomlinson was a technological advance that continues to impact society, education and culture today. The new development of email as a communication medium “quickly went from being a convenience to becoming an essential tool” (Cavender, 1998). Society in the 1970s was fascinated by electronic devices and capabilities that emerging technology in that decade made possible. Crowds gathered to watch astronauts blast into outer space for some type of space exploration from the first launch in the 1960s through the Skylab missions of the 1970s. “From its launch on May 14, 1973, until the return of its third and final crew on February 8, 1974, the Skylab program proved that humans can live and work in outer space for extended periods of time” (Armstrong, 2007). NASA’s space program was one of the most influential technologies impacting the world of government, business and education during the decade of the seventies. The popularity of computers was just taking hold at the beginning of the decade and by the end of the decade Tandy, Atari, and Apple Corporation were “expanding and improving on computer technology to increase the income potential and by making personal home computers more accessible and fun to use for everybody” (The People History, 2011).

**The Effect of Technology on the Political Climate of the 1970s**

The political climate of the early1970s was influenced by such events as the continuing war in Vietnam; the resignation of the Vice President; the Watergate conspiracy which ultimately led to the resignation of the President of the United States. Four students were killed by Army Reserves at Kent State in 1970 during an antiwar protest and college-aged students had a general mistrust of the government and the establishment in general. In 1976, Jimmy Carter was elected President and during his administration developed the federal Department of Education. Legislation was passed during this decade to desegregate pre and postsecondary schools, and to ensure equal educational opportunities for women and the disabled. Technology played a key role in political developments of this decade. By the end of the decade, computer programs and technology once reserved for civilian and military government use had expanded into homes and schools when Steve Jobs and Steve Wozniak introduced the Apple II computer – the precursor to the personal computer “that could be used by anybody” (Trueman, 2011). Some of the technology money available to schools through Title IV and the Elementary and Secondary Education Act was used to place Apple computers on school campuses in the 1970s.

**The Effect of Other Events of the 1970s on Technology**

**Business and Corporate Developments**

During the 1970s microwave technology and the instructional television (ITV) form of distance education made it possible for people to attend college who may not normally have been able to such as working adults, people with disabilities or stay-at-home parents. ITV made individualized “work at your own pace” instruction possible and made getting a college education more affordable. Gerrity said “Trends such as escalating college costs, a renewed interest in nontraditional education by a more mobile population, and success of Britain's Open University paved the way for numerous experiments in higher education” (Jeffries, ND). “In November, 1971, a company called Intel publicly introduced the world's first single chip microprocessor” (Bellis, 2011). The technology that created microprocessors, word processors, LCD monitors, Ethernet and the like was instrumental in facilitating the migration of computers from huge mainframes only found in places of business to smaller electronic devices with huge storage capabilities available for home use.

**Educational Theories of Learning and Instruction**

Instructional television and computer developments in the 1970s were perfect platforms for cognitive and behavioral learning theories such as those espoused by Bandura and Merrill. With Bandura’s social learning theory, 1970s technology could provide a visual of the “behaviors, attitudes, and emotional reactions of others” (Kearsley, 2011) and allow for effective utilization of behavior modification outcomes. Kearsley (2011) said “Instruction designed according to CDT provides a high degree of individualization since students can adapt learning to meet their own preferences and styles.”

**Society and Culture**

Technology not only allowed the conception of the first test tube baby in 1978, but it also allowed this historical event to be broadcast “on television newscasts in Europe and the U.S.” (Time, 1978). Technology played a major role in the NASA space missions in the seventies as well. NASA’s technological advances not only benefited the space program but military and commercial flight as well such as the “sophisticated computer codes” NASA developed “that could accurately predict the flow of a fluid using complex simulations, such as air over an aircraft's wing or fuel through a space shuttle's main engine” (Curry, 2008) and satisfied man’s fascination with space travel. Technology has further influenced society and culture by the creation of email which has revolutionized the way people communicate with each other in business and their personal lives, and the development of more compact computers and electronics that people could conveniently use at home.

**Political Climate of the 1970s**

Technology affected the political climate by allowing people to see what was going on locally, nationally and internationally by advanced photography and satellite television capabilities. Public perception of the war in Vietnam, for instance, was greatly influenced when television viewers saw up close footage of battle action. Hallin (2011) said “Vietnam was the first television war” and it influenced sentiment about the war and the government in general. Technology gave a face to actions and activities locally as well, such as the shootings at Kent State in 1970 and other clashes between the government and protestors. The country in the 1970s witnessed the press conferences where both Agnew and Nixon resigned, and with the development of satellite television capabilities were better able to make informed decisions about politics and policy in the United States.

**1980**

**The Effect of Technology on Business and Corporate Developments**

The 1980s was a booming industry for the makers of computers, computer programs, hardware and software, operating systems and the like. By the end of the last decade, the invention of the microprocessor chip had resulted in downsizing of the huge mainframe-type computer that was used in businesses and made the home computer available for the everyday consumer for the first time. IBM Incorporated and Bill Gates collaborated to develop the MS-DOS operating system to go with the new IBM-PC. The PC (personal computer) with MS-DOS installed went to market in 1981. The IBM-PC with MS-DOS installed became an instant hit and “Less than four months after IBM introduced the PC, Time Magazine named the computer "Man of the Year” (Bellis, 2011) for 1981. Other popular technology that generated business and revenue for electronics manufacturers in the 1980s included compact disc payers, the VCR and Apple Macintosh computers. In 1983 Apple Corporation released the Apple Lisa computer and in 1984, the Apple Macintosh IBM’s closest competitors in the PC market at that time. Though both computers garnered a good market, IBM was the frontrunner at that time. Oxford (2010) said of the IBM-PC “The IBM 5150 brought computing power to the masses.”

**The Effect of Technology on Educational Theories of Learning and Instruction**

Lave argues that learning “is a function of the activity, context and culture in which it occurs” (Kearsley, 2011). Situated learning naturally occurs as part of a social community and has been used in technology-based programs. For situated learning to occur, Lave said “Knowledge needs to be presented in an authentic context, i.e., settings and applications that would normally involve that knowledge” and “Learning requires social interaction and collaboration” (Kearsley, 2011). Wenger elaborated on the situated learning theory when she said “Communities of practice are formed by people who engage in a process of collective learning in a shared domain of human endeavor” and “Communities of practice are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly” (Smith, 2009).

**The Effect of 1980s Technology on Society and Culture**

The family dynamics changed during the decade of the eighties. Whitley (1999) said “The eighties continued the trends of the sixties and seventies - more divorces, more unmarrieds living together, more single parent families.  The two-earner family was even more common than in previous decades, more women earned college and advanced degrees, married, and had fewer children.” This decade saw a lot of firsts for women as well such as Geraldine Ferraro being the first woman to run on a presidential ticket and Sandra Day O’Connor being the first woman appointed to the Supreme Court. AIDS was declared an epidemic during this decade; “Prisons overflowed and violent crime rates which, in 1980, had tripled since 1960, continued to climb with the appearance of crack in 1985.  From 1985 to 1990 the use of cocaine was up thirty-five percent, though the number of users had declined” (Whitley, 1999) and Ronald Reagan was the first actor elected to two terms as President of the United States. Thanks to the IBM-PC, there were more personal computers in homes in this decade.

**The Effect of Technology on the Political Climate of the 1980s**

One of the biggest roles technology played politically during this decade was centered on two events – live footage of President Reagan being shot and images of a gaunt Rock Hudson (actor) after it was announced that he had AIDS. Prior to the assassination attempt on President Reagan his economic plan (which included abolishing Carter’s Department of Education and made no mention of technology) was split along party lines. After the nation witnessed the shooting and Reagan’s return to the West Wing of the White House mere weeks later, Democrats provided the votes needed to pass his economic plan sans abolishment of the Department of Education. His plan, dubbed “Reaganomics” had no provision of education or technology when addressing economics and government spending. Under Reaganomics “From 1982 to 1990 the United States experienced 96 straight months of economic growth, the longest peacetime expansion in its history [at that point].  Almost 20 million brand-new jobs, most of them high-paying jobs, were created.  Inflation fell dramatically to low levels and stayed there as the American dollar once again became sound. Interest rates also fell dramatically and stayed down.  The stock market soared, nearly tripling in value” (Whitney, 2011).

AIDS was an unknown condition prior to 1981 when images of Rock Hudson ravaged by the disease were transmitted via satellite to televisions from his hospital bed in France. President Reagan was silent on this health epidemic until 1987. White (2004) said “His remarks came May 31, 1987 (near the end of his second term), at the Third International Conference on AIDS in Washington. When he spoke, 36,058 Americans had been diagnosed with AIDS and 20,849 had died. The disease had spread to 113 countries, with more than 50,000 cases.” Reagan’s silence on issues concerning education and technology reflects on the political climate of the 1980s which is the least active in those areas of any three decades analyzed in this paper.

**The Effect of Other Events of the 1980s on Technology**

**Business and Corporate Developments**

The computer technology was gaining in popularity with consumers by the mid to late seventies. This trend continued into the eighties and provided stimulus for Microsoft Corporation and Apple Computers to develop computers that consumers could use in their homes. The Apple/Macintosh (Mac) and IBM computer with Microsoft’s operating system installed were competitors in the 1980s, with Apple or Mac computers being placed in schools throughout the decade. “Apple II Computers found widespread acceptance in education in 1983, and Apple developed computer-based tutorials and learning games” (Hermes, 2011). In 1984 Apple developed a software suite for use on its computers. “This new software could be used by students in a variety of subjects, such as typing essays, organizing data and illustrating work” (Hermes, 2011).

**Educational Theories of Learning and Instruction**

Both Lave’s and Wenger’s theories of situated learning and communities of practice have a technological perspective. In both theories learning naturally occurs as a consequence of the situation or community the learner is in. During the 1980s that type of learning environment could have involved instructional television, working with newly developed electronics, computer programs and computer applications. “Communities of practice are formed by people who engage in a process of collective learning in a shared domain of human endeavor” (Kearsley, 2011) and the technology available in the eighties could very well have provided the backdrop for situated learning to occur in just such a community.

**Society and Culture**

In the 1980s the culture had progressively evolved from the sixties, through the seventies and into the eighties. One of the most significant changes was the increased number of women earning college degrees and entering the workforce. Working women also needed to be computer literate. IBM began hiring women as far back as the 1930s and boasts “At IBM women have been making contributions to the advancement of information technology for almost as long as the company has been in existence. Where many companies proudly date their affirmative action programs to the 1970s, IBM has been creating meaningful roles for female employees since the 1930s” (IBM, 2011). In 1989, Frances Allen became IBM’s first company Fellow and its first female Academy president. As in other decades, technology and culture worked in tandem to bring events to the forefront via television that may have otherwise gone unnoticed. By the 1980s cable television had introduced a whole new genre to entertainment and watching the news. “With the advent of cable, the three major networks -- ABC, CBS and NBC -- lost their monopoly on what Americans viewed in their living rooms” (The Eighties Club, ND).

**Political Climate of the 1980s**

As computers grew in popularity and expanded throughout the business world and in many homes, Hermes (2011) said “it became obvious that students needed to become computer literate, which meant learning computing languages such as LOGO and BASIC.” In response to this need, “the National Commission on Excellence in Education recommended computer science as one of five new requirements for high school graduation” (Hermes, 2011). Computer companies like IBM, Intel, Microsoft and Apple were motivated to continue developing new technologies to meet the demands of computer education in public and subsequently postsecondary schools nationwide.

The events of the 1960s, 1970s, and 1980s had an influence on the evolution of technology as well as technology influenced some of the events that occurred in those decades. The1960s influence ranged from the NASA space program and American involvement in the Vietnam War, to poverty, the Civil Rights Movement, political assassinations and the growing medium of televisions by which Americans were influenced by and participated in these events. Technological advances were made to meet the demands of the sixties to put a man on the moon by the end of the decade and to take advantage of legislation like the Economic Opportunity Act of 1964 or the Elementary and Secondary Education Act of 1965 to advance the cause of innovative technology and create jobs to alleviate poverty.

The decade of the 1970s saw technological advances in instructional television and microwave technology that allowed for satellite transmissions of events as they occurred around the world. The NASA space program continued to grow as did the popularity of computers by the end of the decade. Cognitive and behavioral learning theories were served well by the technology of the seventies because they provided for individualized instruction and visuals of the behavior modifications expected from the learning. Technology gave a face to the war in Vietnam and was instrumental in the antiwar protests that generated from what people saw from the battle lines.

The 1980s saw a rapid increase in computer and computer-related development. The PC was introduced and more homes and schools were equipped with computers by the end of the decade than any of the previous decades discussed in this paper The availability of computers was necessitated by an increase of workers using them in performance of the jobs, and also personal use at home. Computer developers responded to the demand with computers that were increasingly simpler, smaller with more memory storage capacity than the mainframe predecessors of the previous two decades. Demands of the PC age of the 1980s ultimately led to computer education as a basic skill in public schools and the continued generation of new and innovative computer technologies that continue to this day.

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