

Change and Adapt

by

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Many commencement speakers at this year's graduation ceremonies around the country were booed when they mentioned AI (artificial intelligence). The booing by the graduates was an expression of uncertainty of what their future holds. Eric Schmidt, Google CEO, put it succinctly when he [told graduates](#) at the University of Arizona:

"There is a fear in your generation that the future has already been written, that the machines are coming, that the jobs are evaporating. . ."

This fear is not unfounded. When we look back to the introduction of "new technology" into the US economy, workers in various industries were justifiably concerned with job loss. The table below illustrates some of the most notable examples:

Technology	Period	Jobs Feared Losing	What Happened
Textile machinery	Early 1800s	Weavers, spinners, artisans	Many skilled hand-production jobs declined.
Mechanical reaper	1830s–1850s	Farm laborers	Reduced labor needed per acre, but agriculture expanded and labor shifted elsewhere.
Assembly line	Early 1900s	Skilled craftsmen	Many tasks became simplified and standardized; demand for factory workers grew.
Tractors and farm machinery	1900s–1950s	Agricultural workers	Farm employment fell dramatically.
Elevators	Late 1800s–early 1900s	Elevator operators	Largely disappeared after automatic controls became common.
Automated telephone switching	Mid-1900s	Telephone operators	Operator jobs gradually vanished.
ATMs	1970s onward	Bank tellers	Teller jobs changed rather than disappearing immediately;

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			branch expansion offset some losses.
Industrial robots	1970s onward	Manufacturing workers	Some factory jobs were eliminated, especially repetitive assembly work.
Personal computers	1980s onward	Clerical workers, typists	Many administrative tasks became automated.
Internet and e-commerce	1990s onward	Retail workers, travel agents, newspaper staff	Some occupations shrank substantially while new digital jobs emerged.
AI and machine learning	2010s onward	Knowledge workers, customer service, analysts, programmers	Effects are still unfolding and remain heavily debated.

In his book, [The Fourth Industrial Revolution](#) (2016), Klaus Schwab discusses the concept of the next industrial revolution in which AI, robotics, and digital technologies play central roles. Unfortunately, colleges and universities did not really understand what this meant.

They thought that by teaching the technical aspects of each technological advancement that they were preparing students for their future. What the institutions did not do was to prepare in how to change and adapt to a changing employment environment. The concept of changing and adapting to an ever-transforming environment is not new. In fact, it dates back to the 6th century BC (roughly 2,500 years ago) when Sun Tzu wrote [The Art of War](#), the premier manual on strategy.

Throughout history, technology has transformed from science fiction to reality. Much like Dick Tracy's 1946 "watch communicator," people thought of Tracy's watch as something found only in science fiction books and movies until Seiko released the first "smartwatch" in 1983. Similarly, AI was viewed as fiction until a few years ago when it started being introduced into our lives. However, we need to put this transformation process into perspective.

In 1975, the introduction of the Altair 8800 marked the beginning of the personal computer era.

Between 1975 and 1979, the personal computer (PC) was introduced and treated a novelty by the American public. During this time, PC manufacturers developed their own

operating systems until 1981 when Microsoft released the first version of DOS (**Disk Operating System**).

By the early 1990s, personal computers were commonplace in homes and offices. As the novelty of PC ownership waned, the need for personal and business applications increased. While it took about 3–7 years after the introduction of DOS for most colleges and universities to significantly adapt their programs to the growing demand for DOS-related programming and personal-computer skills, the introduction of graphical user interface systems (GUI), such as Microsoft's Windows 3.0 in 1990, turned the educational curricula topsy-turvy.

It took colleges and universities about 3-10 years to integrate GUI curricula into computer science, information systems and software engineering programs.

With each major computing shift, personal computers, GUIs, the web, mobile apps, and cloud computing, there exists a similar delay between industry demand and widespread curricular change. Colleges tend to adapt their curricula, but only after a technology has demonstrated lasting importance rather than during its earliest stages.

Consequently, AI has become the latest major educational shift, not only in computing but also social interaction, and is following a similar pattern. Not only is it influencing changes in computer curricula but is also impacting other areas such as business, medical, law, communications, and the social sciences.

While AI is rapidly changing the job market in ways that are difficult to predict, there is a perception that tasks, once considered entry-level opportunities, are increasingly being automated, raising concerns about fewer available positions and greater competition for the jobs that remain. However, AI is creating new opportunities and industries in which employees are expected to leverage AI technologies.

While many graduates are anxious about entering a workforce undergoing such significant, unprecedented, rapid changes. They worry that the skills they developed may become outdated, forcing them to continually learn and adapt to new technologies and skill sets.

The reality is that graduates entering the workforce must be flexible and responsive to changing technologies and workplace expectations. They must embrace lifelong learning and adapt to ongoing technological change.

Colleges and universities must be responsive to technological advancements by providing current resources, innovative learning environments, and relevant educational opportunities. Equally important is the requirement to prepare students with the knowledge, skills, and adaptability needed to navigate rapid technological change and shifting workforce expectations. By emphasizing critical thinking, lifelong learning, and technological proficiency, colleges can better prepare graduates for success in a ever-changing workplace.