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**The Evolution of the American Education System : Key Transformations  
From the Late 20th Century to the Digital Age**

**Dissertation Submitted in Partial Fulfilment of the Requirements for  
Master's Degree in Literature and Civilization**

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## Dedication

We dedicate this work  
to the smile of life and the secret of existence,  
to the jewel and to who was the first supporter,  
to the great ones to our parents. To our small family and everyone who supported us,  
to the souls of the martyrs of beloved Palestine, to ourselves who struggled and  
persevered to reach.

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## Abstract

This study investigates the complicated relationship between technology, culture, politics, and equity and access in the American educational system in the late 20th and early 21st centuries. It critically reviews the impact of historical reforms and emerging digital innovations on educational inclusivity, with special attention to marginalized communities such as low-income, immigrant, Indigenous, and minority students. The research was conducted through historical and descriptive methods, employing primary and secondary sources in the form of policy documents, academic articles, and case studies in an attempt to map out the development of education models, policies, and technological application. The results suggest that, despite a significant portion of transformative policies and the widespread use of artificial intelligence, online courses, and hybrid teaching models, disparities persist. We attribute these disparities to uneven resource distribution, inherent biases in the system, and a digital divide that affects vulnerable populations. The study points out the importance of teacher professional development and culturally responsive pedagogy in addressing such inequities. The conclusion emphasizes that educational equity will require comprehensive plans that go further, with technology spending, inclusive teaching materials, continuing policy support, and community-based efforts to bridge the access divide.

**Keywords:** American education, Digital age, Inclusive pedagogy, Policy reform, Technological innovation,

## List of Abbreviations

**ADA:** Americans with Disabilities Act of 1990

**CSL:** Co-operative School of Law

**CSSOs:** Chief State School Officials

**DAVI:** Department of Audiovisual Instruction

**EPSS:** Electronic Performance Support Systems

**ESEA:** Elementary and Secondary Education Act

**ESL:** English as a Second Language

**ESSA:** Every Student Succeeds Act

**FAPE:** Free Adequate Public Education

**IDEA:** Individuals with Disabilities Education Act

**IEP:** Individualized Education Program

**NCES:** National Council on Education Standards

**NCLBA:** No Child Left Behind Act

**NSF:** National Science Foundation

**STEM:** Science, Technology, Engineering, and Mathematics

**VAA:** Vocational Amendment Act

**WEEA:** Women Educational Equity Act

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## General Introduction

## **1/ Background of the Study**

Education is the foundation on which all social progress is built, molding the lives of individuals and preparing nations to adjust themselves to the technological demands and changes, both economic and cultural. The American educational system, one of the most robust and ever-changing systems, has experienced extensive growth since the late 20th century. Initially organized into three levels—primary, secondary, and tertiary—the system has gradually integrated digital technologies such as online learning platforms, AI, and interactive technologies. These transformations reflect larger social trends, such as globalization, the diversity brought about by immigration, and debates around the continued quest for equity of access to resources.

Despite these advances, systemic issues persist. Educational quality and access differ between social classes, racial groups, and native-born compared to foreign-born students. Take, for example, the “digital divide” that still underpins so much of these differences and that continues to deepen them. Policy changes, such as the No Child Left Behind act (2001) and the Every Student Succeeds Act (2015), have had mixed effectiveness in addressing these disparities. The purpose of this research will be to investigate the ways that technology, culture, and politics have influenced what it means to be educated in contemporary America, along with examining what this means for equity and inclusion in education.

## **2/ Statement of the Problem**

While previous research has chronicled the development of American education, no existing studies comprehensively examine the intersection of technological, social, and political forces that have driven progress since the late 20th century. The effectiveness of reforms to narrow gaps between marginalized populations (such as low-income, immigrant, and Indigenous groups) remains understudied. This study addresses these gaps by focusing on how and why the

American education system has changed during this era and whether those changes have fostered equity.

### **3/ Research Questions**

The current study addresses questions regarding the technological, cultural, and political tensions that have affected the education system from the late 20th century to the digital age. The main question of the study is the following: *How have technological innovations and policy reforms since the late 20th century shaped equity and access in the American education system?* The following questions also guide the study's objectives:

1. What major policy and pedagogical reforms characterized the American education system from the late 20th century through the pre-digital era, and how did they address educational inequalities?
2. How have technological disruptions and globalization since the 1990s influenced educational equity, particularly for immigrant and native-born populations, and what roles have modern reforms and teachers played in improving student outcomes?

### **4/ Research Hypotheses**

1. Technological innovations and policy reforms since the late 20th century have jointly shaped equity and access in the American education system, but disparities due to unequal resource distribution continue to exist.
2. Major policy and pedagogical reforms from the late 20th century through the pre-digital era partially addressed educational inequalities but failed to fully eliminate gaps across socioeconomic and cultural groups.
3. Since the 1990s, technological disruptions and globalization, combined with modern reforms and teacher involvement, have influenced educational equity by improving

outcomes for some immigrant and native-born populations, although systemic disparities persist.

### **5/Aim and Objectives**

This study aims to critically analyze the evolution of the American education system from the late 20th century to the digital age, focusing on technological, sociopolitical, and structural transformations. Specifically, it seeks to

- Trace the historical development of K-12 and higher education structures in the U.S. since the 1980s.

- Identify key technological advancements (e.g., online learning, AI) and their impact on pedagogy and accessibility.

- Evaluate the role of policy reforms (e.g., federal legislation, funding models) in addressing educational inequities.

- Assess persistent challenges, including the digital divide, socioeconomic disparities, and systemic biases affecting immigrant and Indigenous populations.

### **6/ Research Methodology**

This study adopts historical, and descriptive methods to extract primary and secondary data from previous research in the field. In the first chapter, we use a historical method to trace the history of the development of the American education system from the 20th century to the digital age. In the second chapter, we use a descriptive method to analyze technological disruption, globalization, and ongoing struggles for equity.

### **7/ Significance of the Study**

While existing studies often isolate technological, cultural, or political factors, this research synthesizes their interplay, providing a holistic understanding of how these

forces collectively transformed American education. By linking late 20th-century reforms (e.g., A Nation at Risk) to digital-age innovations (e.g., AI-driven learning tools), the study constructs a cohesive narrative of systemic evolution that's rarely addressed in fragmented prior work.

### **8/Structure of the study**

This dissertation consists of two theoretical chapters:

- The first chapter introduces the topic by providing a historical background of the American education system from the 20th century onward. It explains the traces of foundational changes, highlights sociopolitical shifts, and discusses technological and economic factors, as well as pre-digital reforms and the challenges.
- The second chapter analyzes technological disruption and globalization, focusing on the ongoing struggle for equity, particularly between immigrants and native-born populations. It also clarifies modern reforms, emphasizing the role of teachers in improving student performance.

## **CHAPTER ONE**

# **Historical Overview of the American Education System (Late 20th Century to Pre-Digital Era)**

## Introduction

The American education system from the late 20th century to the pre-digital era was characterized by significant transformations influenced by social, economic, and political changes. In particular, this period saw the rise of educational reforms aimed at addressing inequalities and adapting to the demands of a rapidly changing society. The system was marked by a tension between traditional educational practices and the need for modernization to meet global standards. However, this tension was complex, as some groups fought to preserve the status quo while others advocated for change. This chapter examines the transformative influences that redefined American education from the post-World War II era to the onset of the digital age. To begin with, it analyzes postwar underpinnings, encompassing the GI Bill's democratization of higher education and the Civil Rights Movement's struggle against segregation. While the GI Bill aimed to broaden access to higher education, it also uncovered more profound issues of racial and economic inequality that could not be fully addressed through legislation alone. Moreover, it examines the catalysts of change in the late 20th century, including nascent classroom technologies, immigration-induced bilingual policy, and economic imperatives to emphasize STEM education. Overall, it looks at earlier changes aimed at fairness, like Title IX and special education laws, while questioning how unevenly they were applied and the ongoing gaps that remain. This chapter highlights a persistent theme: education reform involves ideological debate as much as it does pedagogy, intertwining legislative milestones with grassroots action, technological innovation, and budgetary limitations. The researchers articulate their role as both historian and advocate, integrating empirical analysis with a plea to address ongoing structural flaws. Indeed, these forces, while critical in shaping educational policy, often found themselves at odds with entrenched societal norms, which in turn slowed the pace of meaningful change.

## **1.1 The Late 20th-Century Foundations**

In the last years of the twentieth century, the American educational system went through several events that forced them to change and renew the system, including the civil rights movement, the GI Bill, desegregation, key legislation, multimedia tools, gender equality, and others. As a result, these events contributed to improving the educational system, making it accessible to all individuals; however, the diverse population in America varies in culture, religion, politics, and society. Additionally, racism exists between whites and Blacks and among different social classes. Despite this, these foundations modified and organized the educational system in America to promote equality in education for all individuals. However, the notion of equality in education remained elusive for many, particularly marginalized communities who faced systemic barriers beyond the reach of legislative reforms. The most important of these foundations are policy shifts, sociological influences, and technological and economic factors.

### **1.1.1 Post-WWII Educational Expansion in the USA**

The United States had an increase in education following World War II, and as we all know, immigration made the nation more multicultural. So, "periphery" and "marginal" were coined under racism's umbrella as Native American and immigrant racism rises in education and other fields. The idea was to facilitate immigrants' enrollment in and learning in American schools.

The implementation of CSL laws requiring school attendance facilitated the quick expansion of state-level education systems (Ji-Liu, 2024). Due to inflation that impacted the economy and the rise of higher education revenue, colleges and universities were subjected to financial crisis figures during the 1970s. It was challenging for higher education to keep up with the increases in the overall price level

brought about by the economy's increased productivity. Pay increases were necessary since faculty salaries fell behind and were unable to keep up with the growing expense of living. Inflation increased as a result of the 1973 oil shock, and all institutions had to deal with growing expenses for production components, benefits, and staff pay.

In addition to that, Richard argued that professor incomes did not keep pace with the sharp increase in post-war prices; faculty and staff pay was unable to keep up with the growing expense of living. To retain faculty and keep morale high, salary increases were required, and unions applied extra pressure on many campuses (Breen, 2012).

Eventually, the public sector dominated the numbers. Students may receive an education at a significantly lower cost from public institutions that is on par with the top private colleges or universities. But private universities and colleges still had an important role. But private universities and colleges still had an important role. However, the establishment of public education did not guarantee the achievement of equality. Those reform-minded educators who shaped higher education in the United States after World War II were responding to the hopes—and occasionally the needs—of new types of public and private educational institutions (Burke, 1982).

#### **1.1.1.1 Growth of Public Education and the GI Bill's Impact on Higher Education Access**

Among the important factors that led to this educational expansion are the growth of public education and the contribution of the GI Bill in influencing global education. As we know, the United States has become a multicultural country because of immigrants, which has led to its division into two classes: an upper class and a lower class. Higher education has evolved from a narrow, elite pre-World War II model to a

universal, post-World War II model with federal financial aid programs. The GI Bill provided portable grant aid, and federal loan programs offer benefits to special groups. Improved workforce education leads to economic growth, with increased tax revenues from educated workers. For every dollar spent on student grants, the present value of inflation-adjusted tax revenues is \$4 (St. John, 2002).

According to Edward, the legacy of the GI Bill has played a crucial role in increasing equality of opportunity in higher education in the United States. It initiated a gradual movement toward equal opportunities for World War II veterans returning to college, transforming state and federal government policies on access after 1980 (Edward P. St. John). The GI Bill provided portable grant aid for students, ensuring equal opportunities for all racial and income groups. Federal financial aid programs have also provided benefits to special groups for their or their parents' service. Investments in student aid have led to increased tax revenues for more educated workers under progressive tax systems. The GI Bill during WWII aimed to facilitate veterans' return and prevent unemployment, as it reduced financial barriers to education, potentially expanding the small elite and filling roles with a larger American population. The G.I. Bill significantly impacted college establishments, increasing the average rate to 32 colleges annually and attracting a surge of veterans enrolling in higher education (Adams, 2000).

American universities began to realize their potential for economic development and equal access to college after World War II. From the end of WWII until the end of the Cold War, enrollment in higher education in the US boomed, supported by federal financial aid. People have viewed higher education as a tool for social mobility and workforce training.

Additionally, immigrants introduced cultural practices and beliefs that their home countries prohibited them from expressing. Ellwood states that schools in America originated from religious foundations, transforming from religious tools to state instruments. Immigrants sought religious freedom in America. Education was essential for the state, not for personal interests (Cubberley, 1919).

#### **1.1.1.2 Civil Rights Movement and Desegregation (Brown v. Board of Education)**

The Civil Rights Movement and desegregation laws played a significant role in the success of the American educational system and helped in uniting different classes and races to become equal. One of the most important historical topics in education, minority education in the United States, was made possible by the victories of the Civil Rights Movement. Through William H. Jeynes, the Civil Rights Act prohibited discrimination on the basis of race or language. (Jeynes, 2007). Due to the numerous instances of language and ethnic discrimination that exist in American society, Willem has advocated for civil rights legislation to guarantee the rights of all races and to prevent bigotry and division. Harry S. Truman was also the first president to support the goals of the Civil Rights Movement. His support paved the way for later civil rights legislation and the Board of Education v. Board of Education decision, which changed American education permanently (Berman, 1970; Bernstein, 1970; Gardner, 2002).

The NAACP began a plan to combat segregation by filing various lawsuits in court. Jean said that blacks now have the opportunity to enroll in and finish their higher education due to the Brown v. Board of Education ruling (Edouard, 2023). The Brown Court overturned the Plessy ruling, finding that segregation was unequal, a crucial victory for civil rights. This ruling, championed by advocates for people with disabilities,

paved the way for federal legislation to ensure equal educational opportunity (Yell & Mitchell, 2022). Affirmative action and bilingual education are but two of the numerous consequential developments that ensued after the Brown case. Walter White, the former president of the National Association for the Advancement of Colored People, remarked of Truman, “No occupant of the White House since the nation's inception has adopted a more direct or consistent stance against racial discrimination than Harry S. Truman” (quoted in Bernstein, 1970, p. 11).

The Brown judgment emphasizes two critical points. The initial point is that the segregation of children in public schools solely based on race denies minority children equal educational opportunities, despite the physical facilities and other 'tangible' factors being equivalent. The second difficulty is that a state that commits to offering educational opportunities in its public schools must not acknowledge any right to education (Evans Clinchy, 2001).

## **1.2 Federal Policy and Standardization**

Federal policies, particularly those resulting in standardized testing and academic accountability, have significantly shaped U.S. education. It is crucial to question, however, whether these policies, which were intended to level the playing field, inadvertently reinforced existing inequalities by focusing too heavily on quantitative metrics at the expense of broader educational goals. Key legislation, such as the Elementary and Secondary Education Act (ESEA) of 1965 and its reauthorizations, helped standardize educational practices and provide funding for schools, especially in low-income areas. While these policies have contributed to making education more equitable, they have also sparked debates regarding the overemphasis on standardized testing.

## 1.2.1 Federal Education Legislation

John F. Stitzlein describes the role federal policy and standardization have played in the development of education in the U.S. using pivotal legislation such as the Elementary and Secondary Education Act (ESEA) of 1965 and the later re-authorizations of NCLB. The ESEA expanded the federal role by creating a funding stream for low-income schools while also implementing some degree of standardized testing-based accountability. Further institutionalization of these measures occurred with the passage of the NCLB Act, which pushed all students – affluent, poor, or otherwise to meet rigorous academic standards. With this new focus, the federal government began to push states toward the implementation of national educational standards aimed at reforming education on the state level (Richard L. Allington, 2010; Kate C. Engel & Laura Olden).

The role of the federal government in higher education has broadened to promote educational equity and to support a wider variety of institutions. The new policies formulated post-World War II opened up higher education to more students and started the process of financial aid with the 1972 amendments that created the Basic Educational Opportunity Grant (BEOG), which also offered basic grants to needy students. Some critics argue that federal student aid programs go against the idea of fairness in education meant to help reduce social inequalities and allow all students to go to college if they'd like to, but these changes actually show a broader government effort to increase educational opportunities.

Federal education policies have leaned on a key factor: the introduction of standardized testing and accountability measures. Standardized tests are ubiquitous assessment tools for student achievement and school accountability pursuant to laws such as NCLB. The tests have proven contentious, despite being designed to level the

playing field and raise achievement across schools. That test-oriented environment, they say, has narrowed the curriculum, leaning toward rote learning rather than an educational experience that is truly deeper. Moreover, the high-stakes nature of these tests has resulted in ethical issues, including cheating scandals in numerous cities (Diane Ravitch, 2010; Arthur Lieber, 2013).

Federal policies have further encouraged this focus on accountability in education through performance measures and systems for evaluating schools. The Race to the Top program, launched in 2009, serves as an example, offering competitive federal funding to states that meet specific education goals, thereby supplanting NCLB. Though it was intended to have a positive impact on educational achievement, it has been criticized due to its focus on enhancing standardized test scores at the expense of the broader aims of education (Hurlburt & Hall, 2018). This focus upon performance-based funding has fueled controversy about the actual purpose of education and the degree to which standardized testing governs curriculum and instructional practices (Arthur Lieber, 2013).

In summary, federal policies and stress on standardization have contributed to transformational changes in U.S. education, particularly with the advent of foundational laws such as ESEA and NCLB. While such policies have helped in creating a more equitable and accountable environment in education, critics have decried what many feel is an over-reliance on standardized testing at the expense of a more enriching curriculum that encourages true learning and prepares students for contributing to society. Federal policy's impact on traditional versus holistic approaches to education will assuredly continue to shape the conversation among educators.

### **1.3 Drivers of Change in the Late 20th Century**

The American education system witnessed several changes in the late 20th century due to various factors that necessitated the development and reform of education. Among these factors were the emergence of technology, social factors, and economic factors. The increasing pace of globalization also had an important effect on determining educational policy, as the U.S. sought to maintain its position as a global leader in innovation and productivity through an educated workforce. These factors contributed to the advancement of the education system in America to a better state, improving student performance, providing experienced teachers, ensuring equality between immigrants and native residents, enhancing tests, and more. The primary reason for the development of the education system in America was the difficulty in education for certain groups and the inequality in the right to education between immigrants and native residents.

### **1.3.1 Technology Beginnings**

Some people today believe that the microcomputer was the first piece of instructional technology or that it was only recently found. Not so! The development of educational technology began in the early centuries and has increased in the current century. It was born from visionaries who believed that Paul Saettler's 2004 idea could enhance education.

In the early 20th century, the United States emerged as the world's wealthiest nation, surpassing Britain, which had previously been the global leader in wealth. As the nation's economic power grew, its standard of living continued to rise, and this expansion persisted even as the U.S. welcomed immigrants from across the globe, further strengthening its economic dominance. The 20th century is therefore often referred to as the American Century, marked by America's increasing economic strength and a rising standard of living. This period is also known as the Century of Human

Capital, as the U.S. made significant advancements in education, leading to a highly educated populace. By the end of the century, even the poorest nations had provided primary and secondary education to most of their citizens, yet the United States remained distinct with a less elitist educational system compared to its European counterparts. Technological advancements throughout the century, coupled with a highly educated population, positioned the U.S. as a leader in innovation, entrepreneurship, and the production of goods and services using advanced technology. The relationship between the American Century and the Century of Human Capital lies in the role of education in fostering economic growth and individual productivity. The higher the level of education, the greater the productivity of labor. Additionally, the increase in education across the nation contributed to overall economic growth (Goldin & Katz, 2009).

The American education system witnessed several changes in the late 20th century due to various factors that necessitated the development and reform of education. Among these factors were the emergence of technology, social factors, and economic factors. These factors contributed to the advancement of the education system in America to a better state, improving student performance, providing experienced teachers, ensuring equality between immigrants and native residents, enhancing tests, and more. The primary reason for the development of the education system in America was the difficulty in education for certain groups and the inequality in the right to education between immigrants and native residents.

#### **1.3.1.1. Early Adoption of Computers in Classrooms (1980s–90s)**

The integration of technology into education, particularly through the use of computers, has evolved significantly over the past several decades. Initially considered a revolutionary tool in the classroom, educational technology has gradually shaped and

redefined teaching and learning methods. Following World War II, the development of audiovisual equipment and educational software laid the groundwork for the widespread adoption of technology in classrooms (Springer Nature, 2023).

The introduction of personal computers, particularly IBM's commercial models, marked a pivotal moment in the 1980s. These devices quickly gained prominence in educational settings, transitioning from tools used in specialized laboratories to being part of the everyday classroom experience. As students and educators became more familiar with these tools, personal computers became integral to classroom activities, such as word processing, data organization, and presentation creation (Springer Nature, 2023).

The adoption of computers in schools, however, was not immediate or universal. Early adoption in American schools led to a substantial inventory of older equipment alongside the newer technologies, such as CD-ROMs and videodiscs. In the mid-1980s, many schools began to increase their computer stock significantly, with parent-teacher associations and local communities playing a crucial role in supporting this shift through fundraising efforts (Schofield, 1995). As a result, the number of schools equipped with computers rose dramatically, with some estimates indicating that the proportion of American schools using computers for instructional purposes increased from 18% in 1981 to 95% by 1987 (Office of Technology Assessment, 1988).

Despite the increasing number of computers in classrooms, the actual application of these technologies in teaching remained limited during the late 1980s. Computer literacy programs often utilized computers to teach students basic skills, rather than deeply integrating technology into academic subjects. By the end of the decade, the role of computers began to expand beyond basic literacy, with educators starting to use word processing and spreadsheet tools more naturally as part of the

learning process. Nevertheless, the use of computers was still primarily considered a means of reinforcing traditional educational practices rather than transforming them (Becker, 1991).

As the technology evolved, new educational models began to emerge that leveraged the internet and multimedia tools. The 1990s saw the development of hypermedia systems, which integrated text, graphics, video, and audio, offering new ways to interact with content. This shift toward multimedia was part of a broader movement to use technology to enhance learning, making it more interactive and engaging for students. However, disparities in access to these technologies remained a concern, with some schools having significantly more resources than others, creating inequities in the educational experience (Heinich et al., 1999).

The rise of the internet in the late 1990s further transformed educational practices. With the ability to access vast amounts of information instantaneously, students and teachers began to incorporate online resources into their lessons. This development highlighted the shift from traditional, teacher-centered methods to more student-driven, inquiry-based learning (Cortada, 2007). Nevertheless, the adoption of these technologies varied widely across schools, and significant gaps in access still existed (Ely, 1993).

In summary, the adoption of technology in American education has been a gradual process, with substantial advancements in the role of computers and multimedia tools. While the integration of technology has enhanced learning opportunities, challenges related to access, teacher preparation, and the potential for technology to replace rather than enhance traditional teaching methods have persisted. The continued development of educational technologies, particularly the rise of the

internet, has reshaped the educational landscape, providing both opportunities and challenges that remain relevant to this day (Becker, 1991; Reiser, 2018).

### **1.3.2 Television and Multimedia as Educational Tools.**

The 1980s witnessed the emergence of technologies that transformed how educational content was created and distributed. The development of laserdisc and CD-ROM technologies marked the beginning of the term “multimedia” being used in the mapping sciences, a concept that had gained traction by the late 1970s. These technologies enabled more accurate outputs in formats that aligned with the growing demands of users (Cartwright, 1980s).

In the same era, Apple Computer developed the multimedia application HyperCard. HyperCard used a concept akin to a stack of index cards to organize text, images, and sounds. This innovative platform allowed for the creation of a database presentation system that anticipated features later seen in Microsoft PowerPoint (Leopard, 2013).

Television technology also underwent significant advancements during this period. Dugonik&Plenković (2012) highlight the ongoing evolution of television technology, from its early black-and-white broadcasts to the introduction of color, surround sound, and high-resolution digital formats. Today, over 400 million people access media in high-definition formats via broadband internet, which has fundamentally transformed how educational content is distributed. New challenges accompany this shift for media providers, who must now navigate both technological changes and evolving pedagogical strategies.

Multimedia systems, which integrate text, graphics, and audio, provide interactive platforms that enhance communication and learning. Initially referred to as

'interactive video' in 1979, these systems were experimental in nature but have since become central to multimedia training. According to Gayeski (1993), multimedia tools have become invaluable in educational settings due to their time and resource efficiency, rapid skill transfer, and enhanced feedback mechanisms. These features enable organizations to adapt quickly to new educational programs, offering them a competitive advantage.

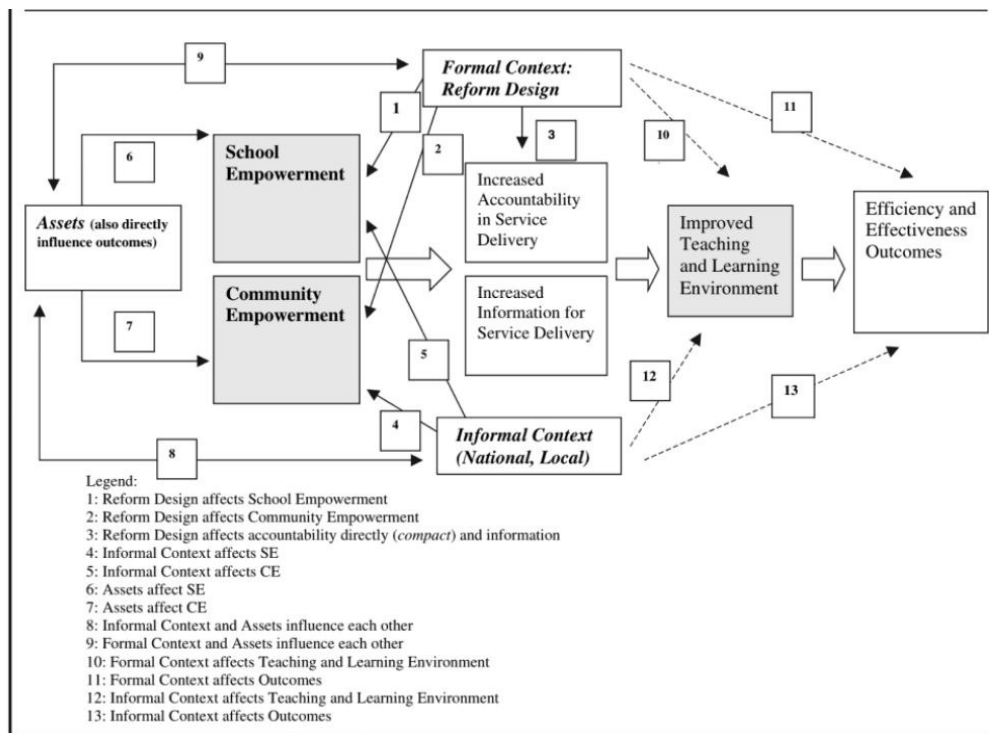
The large number of children and youth in American schools justified the widespread use of television in educational settings. Belmont Farley (1952) argued that the broadcasting spectrum was a unique national asset that should be used to improve educational opportunities for the public. Television's audiovisual nature made it an ideal medium for distance education, as noted by Saglik & Ozturk (2001), who pointed to its wide coverage, equitable access, and potential for community building.

Television's role in education has been recognized for decades. Hilliard (2016) suggests that its growing acceptance by educational institutions reflects a recognition of its pedagogical value. However, he cautions that educators should use educational television strategically to maximize its effectiveness. Following World War II, the Federal Communications Commission (FCC) set aside 242 TV channels for nonprofit educational use, a move that paved the way for educational radio (Levin, 2017).

Saettler (2004) also notes that, despite early technological limitations, teachers creatively used instructional TV. The advancement of satellite and recording technology in the 1980s significantly improved the functionality and accessibility of educational television, enhancing its utility in educational settings.

#### **1.3.2.1. Sociopolitical Factors**

Teachers, mediocre American schools, funding crises, concerns about educational excellence, poverty, media impact, moral decay According to David and Purpel, the complexity of education is influenced by various factors, including administrative control over, and school violence. Purpel, H. Svi, Shapiro, David E. (2004) (Emanuela Di Gropello, World Bank, 2006)



**Figure 1** conceptual framework, Emanuela Di Gropello, World Bank, 2006

### 1.3.2.2. Immigration Waves and Bilingual Education (Lau v. Nichols, 1974)

In 1975, the Department of Health, Education, and Welfare implemented measures aimed at providing educational support for English-language learners (ELLs). These measures included requirements for specialized language instruction, the

prohibition of tracking, and ensuring that communication with parents occurred in a language they understood. Additionally, the Title VI enforcement program, known as the 'Lao Remedies,' was launched to address the lack of special education provisions for English as a Second Language (ESL) students. The program established methods for assessing English language proficiency, determining readiness for integration into regular classrooms, and setting professional standards for teachers. According to Freeman (1998), these actions caused a major change in how the educational system supported non-native English-speaking students.

One of the key practices in such schools is learning for ESL students, meaning teaching in the dominant language until a student is at a level where they can transfer to a regular monolingual classroom. We found three models of education that emphasize the integration of first language and cultural factors in the instruction of students from language minority groups. The Department of Health and Welfare negotiated a total of 359 mandatory plans between 1975 and 1980 to enforce Title VI. It was also a time when bilingual education policies were being defined in a more explicit way to include federally funded bilingual programs (Freeman, 1998).

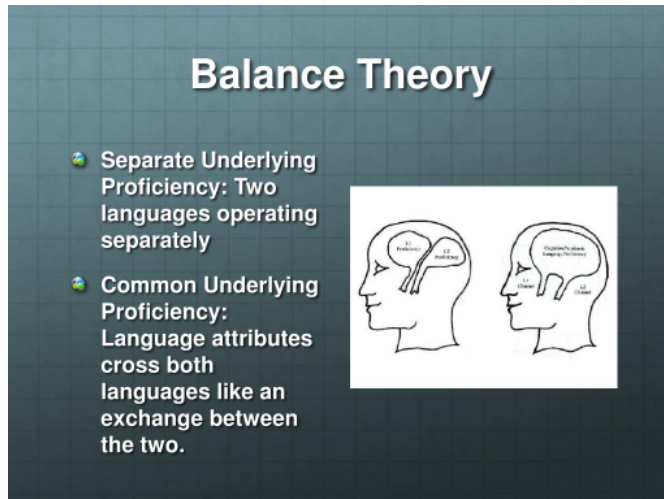
Amendments to the Bilingual Education Act in 1978 were also transitional in nature but removed bans on the teaching of foreign languages to native English speakers. The design aimed to assist young children with low English proficiency in enhancing their language skills. For instance, among the 39,000 children in dual-language programs, at least 40 percent were native English speakers. Although the U.S. has always been enriched by linguistic and cultural diversity, the programs funded by the Act largely prepared students to assimilate effortlessly into English, leaving little room for sustaining heritage languages or encouraging foreign language instruction (Freeman, 1998).

Starting in the 1980s, support for bilingual education decreased as federal policy shifted toward English-only systems. The Bilingual Education Act of 1968 was superseded by the English Language Acquisition, Language Enhancement, and Academic Achievement Act in 2002, which focused on transitioning ESL students quickly into mainstream classrooms. The new policies focused solely on English language proficiency, with large-scale evaluation studies assessing bilingual programs based on how quickly students developed English skills and were integrated into regular classrooms. However, these evaluations were conducted prematurely, not allowing sufficient time for second language acquisition or to detect the benefits of bilingual instruction. The movement, which gained currency in the 1980s and 1990s, sought to designate English as the official language in the U.S. and limit the use of other languages in public life. The rapidly changing composition of the public school population called for a broader approach to language teaching, as it included more and more students from various cultural and linguistic backgrounds (Saini, 2025).

The growing demand for bilingual education policies was also driven by demographic changes, including increased immigration from Southeast Asia and Eastern Europe in the 1970s and 1980s, which brought more non-English-speaking students into U.S. schools. These shifts brought home the value of adapting educational policies to accommodate a multilingual student population (Gonzalez, 2008).

The rise of English as the global language, alongside the increasing emphasis on English language proficiency in U.S. education, reflects the global dominance of English. This shift led to the decline of transitional bilingual education programs and the broader trend of integrating language minority children into mainstream classrooms, a phenomenon that mirrors the global prominence of English

(Gonzalez, 2008). Since the founding of the U.S., foreign language education policies have been a point of concern, as the country's monolingual population adapted to changing immigration patterns and the influx of diverse nationalities (Gonzalez, 2008).



*Figure 2* Balance Theory

### 1.3.2.3. Debates Over Multicultural Curricula and Equity in Funding

Banks contends that one of the primary goals of multicultural education is to provide educational equality for children from various racial and socioeconomic backgrounds by reforming schools and other educational establishments. He also emphasizes that giving students equal chances for academic success and mobility is a crucial objective of this educational approach (Banks, 1993).

Scholars of multicultural education argue that increasing diversity in the US and globally necessitates a rethink of education to offer underprivileged children equitable opportunities. They maintain that these efforts help students acquire the skills, attitudes, and behaviors necessary for participating in a democratic society. They highlight how historical policies like the Manifest Destiny theory led to English-only laws and the forced assimilation of native populations.

John Wiley & Sons (2010) describes the concept of multicultural education. The book addresses institutional barriers that systematically deny equal access to education. It examines the diverse programs, practices, and curricula designed to meet the needs of varied groups and illustrates how factors like gender and social class shape academic outcomes. John Wiley & Sons (2010)

Fromberg and Williams advocate for developmentally appropriate curricula, equal funding, and school-business partnerships as strategies to close the achievement gap between children of color and white students. They recommend minimizing over-reliance on standardized testing and early academic tracking (Fromberg & Williams, 2012).

The Committee on Policy for Racial Justice, as represented by Edley Jr., proposes seven strategies to promote equal educational opportunity. These include increasing minority teachers, adopting alternative teaching methods, involving parents, and assuming the equal potential of all learners, especially African-American children (Edley Jr., 1991).

Mason Ross outlines the impact of landmark legislation such as the Civil Rights Act of 1964 and Title IX of 1972 in promoting equity and access. He further analyzes how the focus shifted in the 1980s and 1990s toward accountability,

culminating in the No Child Left Behind Act (2002). Ross emphasizes the role of cultural diversity in shaping educational experiences and promotes culturally responsive learning environments that foster inclusion and respect (Ross, 2025).

Dixson critiques the apparent contradiction in promoting equality through racially segregated schools, using the New Jersey trial as an example. Citing Wells (1995) and González (2005), she explores the significance of relationships—whether interpersonal, institutional, or ideological—in the learning process and cultural identity formation (Dixson, 2014).

Mouboua and Atobatele highlight the value of multilingual education in preserving indigenous and minority languages while enhancing cognitive abilities. They acknowledge the challenges in promoting linguistic diversity but assert that such education empowers students and fosters social equity by addressing disparities in access and outcomes (Mouboua&Atobatele, 2024).

### **1.3.3 Economic Pressures**

From providing essential entitlements and costs to closing socioeconomic gaps so that everyone has access to schools and education, the economic sector has also impacted American education.

#### **1.3.3.1. Workforce Demands and the Shift toward STEM Education**

Bybee defines STEM as an educational approach that integrates science, technology, engineering, and mathematics, originating in the 1990s. He explains that the purpose of STEM education is to promote literacy in these disciplines for all learners, as articulated in national and state standards. Despite the widespread acceptance of these goals, the roles of each STEM component remain ambiguous (Bybee, 2013).

Gonzalez and Kuenzi report that despite a 35% increase in graduate STEM enrollment over the past decade—especially among underrepresented groups like Hispanic/Latino, American Indian/Alaska Native, and African American students—the US still faces significant challenges. These include persistent achievement gaps, concerns about teacher quality, international rankings, and the STEM education system’s capacity to meet labor market demands. They note that federal STEM education programs, which span numerous agencies, receive billions in funding primarily aimed at secondary education (Gonzalez & Kuenzi, 2013).

Gerity, Carraway, and Rothwell argue that success gaps in STEM subjects—especially math and science—continue to challenge educators and institutions. They highlight the growing demand for qualified STEM professionals, stating that job growth in these fields has outpaced other sectors by nearly 30% over the last decade. They warn that millions of STEM jobs may remain unfilled due to a lack of skilled workers (Gerity, Carraway, & Rothwell, 2020).

Apugo and Wendt (2019) examine the evolution of selective STEM high schools and their impact on postsecondary education. They critique the exclusionary practices of elite schools and suggest comprehensive STEM institutions as a more inclusive alternative, especially for minority students. They emphasize the importance of diversifying the STEM pipeline and demonstrate that targeted urban reform initiatives can lead to improved outcomes, though challenges remain (Apugo & Wendt, 2019).

The National Science Foundation (NSF) proposed a systemic initiative in 1991 aimed at enhancing national performance in math and science. However, despite these efforts, research reveals that urban students still underperform compared to the national average. This evidence indicates that structural and systemic reforms are still necessary for equitable improvement.

The Department of Defense has been criticized for failing to prioritize the sustainability of its STEM workforce. Analysts point out that barriers such as clearance requirements and the exclusion of foreign-born applicants have narrowed the talent pool, especially compared to private sector adaptability as seen with Boeing (The Department of Defense,2001).

The U.S. Department of Labor reports that after 1980, the skill level of the workforce increased due to gains in education and experience, particularly among the baby boomer generation. The Bureau of Labor Statistics developed a comprehensive metric to assess these changes in relation to productivity and notes that this cohort is likely to continue investing in education and training due to expected career returns. (U.S. Department of Labor, 1999)

Indigenous scholars , along with Morgan et al. (2016), emphasize the necessity of providing all students—regardless of future plans—with STEM experiences that prepare them for the 21st century. They acknowledge the difficulties faced by educators in addressing achievement gaps and argue that while many issues affect STEM fields, the shortage of qualified professionals remains the most pressing challenge (Indigenous scholars, 2015).

### **1.3.3.2. Growing Disparities in School Funding between Urban and Suburban Districts**

Tomalty and Mallach highlight how income disparities in U.S. metropolitan areas have intensified, with the richest areas earning nearly five times more than the poorest. They argue that suburban sprawl has segregated people by income, exacerbating social inequities and creating environments that trap the poor in cycles of unemployment and limited opportunity. They examine how education, often considered

a pathway out of poverty, has failed to bridge this divide due to unequal funding in urban public schools. Furthermore, they note that job sprawl and car-dependent infrastructure disproportionately harm central city residents—particularly African Americans—by limiting access to employment (Tomalty & Mallach, 2015).

Wright evaluates two mechanisms for collecting and distributing property taxes for education in Shelby County. The first, a “county-wide tax,” reflects a traditional model where funds are pooled and shared across districts, while the second, a “district tax,” would result in a revenue imbalance. He demonstrates that although 73% of students are within Memphis Charter Schools, only 62% of the county’s property value lies within city limits—revealing structural funding inequities tied to local tax bases (Wright, 2017).

Kantor & Brenzel (1992) trace the history of urban education reform back to James Bryant Conant, who cautioned about growing disparities between suburban and inner-city schools. They explain that despite decades of federal, state, and local reforms, academic achievement and graduation rates in inner-city schools—particularly for African American and Hispanic youth—remain alarmingly low. They argue that inadequate resources, outdated facilities, and youth unemployment continue to contribute to an ongoing educational crisis in urban America.

The U.S. Senate Committee on Labor and Public Welfare reflects on how political and demographic shifts have reshaped educational access. They report that urban districts faced shrinking resources and growing needs as wealth moved to the suburbs, primarily among white, middle-class families. The committee documents the increasing gap in funding between suburban and central city schools and credits federal funding under ESEA, particularly Title I, for beginning to narrow the divide in certain regions. (U.S. Senate Committee on Labor and Public Welfare, 1967)

Viteritti reviews the legal and legislative efforts to reform school finance. He explains that California's finance formula was ruled unconstitutional in 1971 for violating the Equal Protection Clause but notes that the U.S. Supreme Court later rejected the notion that perfect equality was required. He argues that while the judiciary can influence change, true school finance reform depends on legislative will. Despite Michigan's attempt to standardize funding through a sales-tax-based system, he reports that significant disparities still exist across states and districts (Viteritti, 1999).

### **1.3.2.3. Persistent Inequalities**

Pfeffer demonstrates the uneven distribution of educational opportunities across countries, indicating that educational mobility remained stable during the latter half of the 20th century. His research emphasizes the influence of parents' education on children's educational attainment and argues that the institutional structure of national education systems contributes to educational inequality. Rigid educational systems, he contends, impede equalization efforts, particularly during the early stages of students' academic trajectories (Pfeffer, 2008).

Voss, Hout, and George extend this discussion by analyzing college completion in the United States. Their study reveals that fewer than half of American college students earn a bachelor's degree and asserts that educational inequality begins long before financial barriers arise. The researchers highlight the "sort and sieve" processes that allocate educational outcomes based on family background, thus increasing the likelihood of degree attainment for students from higher-status families. Their findings indicate minimal changes in graduation rates from 1988 to 2010, while socioeconomic and racial disparities in completion rates remained consistently high. Moreover, the study demonstrates that half of these disparities stem from pre-college factors such as academic performance and curriculum selection, with the remaining

half attributable to higher graduation rates at selective institutions (Voss, Hout, & George, 2022).

Bloome, Dyer, and Zhou investigate how education-based inequalities and rising economic returns to education have intensified intergenerational income persistence. However, their findings suggest that the expansion of higher education has mitigated this persistence by enabling low-income students to achieve upward mobility. They further argue that within educational groups, parental income has become a less significant predictor of adult income. The study recommends that educational policy efforts should prioritize who completes college rather than focusing solely on increasing overall enrollment figures. (Bloome, Dyer, & Zhou, 2018).

#### **1.3.2.4. Achievement Gaps between Racial and Socioeconomic Groups**

The Economic Policy Institute highlights that children's cognitive abilities upon entering kindergarten are strongly influenced by socioeconomic status, which correlates with significant racial and ethnic disparities in test scores. These disparities are often associated with family structure and educational expectations, as students from lower socioeconomic backgrounds typically attend under-resourced schools, which exacerbates educational inequality (Economic Policy Institute, 2002).

Haskins & Rouse (2005) observed that Black and Hispanic children are less prepared in reading by kindergarten compared to their peers, and these gaps persist or widen over time. They argue that early childhood education and parent education programs could mitigate these disparities.

Ferguson (2013) noted that while the U.S. higher education system expanded rapidly after World War II, the opportunity gap between socioeconomically privileged

and underprivileged students has remained unchanged in the past three decades, despite reductions in racial, ethnic, and gender disparities.

Blackman & Smith (2013) acknowledged that while African Americans have made educational gains, significant racial and socioeconomic achievement gaps remain, largely due to poverty and the failure of higher education institutions to retain African American faculty. The Pew Foundation (2011) also demonstrated stark racial disparities in wealth loss following the 2008 financial crisis, underscoring the continued economic inequality.

Woessmann et al. (2022) tracked achievement trends over decades and found only a minimal reduction in SES-based gaps in math, reading, and science, warning that full closure of these gaps may take centuries at the current pace. Keengwe (2023) pointed out that things like cultural knowledge, hidden biases, and unequal chances to join advanced academic programs contribute to ongoing racial achievement gaps, suggesting that education that respects different cultures could help solve this issue.

Schaefer (2008) critiqued standardized testing for its cultural bias, arguing that it reflects middle-class white norms and fails to account for diverse intelligences. This exacerbates the achievement gap by misrepresenting the capabilities of students from marginalized backgrounds. In the same context, Henry et al. (2020) emphasized the importance of considering the intersectionality of race and socioeconomic status when analyzing educational inequality. They asserted that Black and white children face structurally different social conditions that shape their academic experiences.

Furthermore, Ponterotto (2010) documented how educational disparities begin in elementary school and persist through secondary levels, especially for Native

American, Hispanic, and African American students. He noted the introduction of reforms in school counseling practices to support low-income and minority students.

Bradley (2022) stressed the challenges faced by impoverished children, including cognitive delays and lack of access to qualified educators. She argued that addressing the achievement gap is essential for the nation's economic health, with early childhood education serving as a critical intervention.

#### **1.4 Pre-Digital Reforms and Challenges**

The reform of American education has been a subject of continuous debate and discussion for many years. The nation's educational system saw substantial changes following World War II, with multiple reform cycles intended to raise student learning standards. Significant demographic shifts in American education over the last 20 years have resulted in an unparalleled level of racial, ethnic, and cultural diversity among pupils. Due to differences in learning styles, native languages, cultures, educational backgrounds, and income levels, a diverse student body poses special problems. The nation's colleges are becoming increasingly diverse.

Martin Lipton and Jeannie Oakes say that, unlike models for changing organizations, the ideas and strategies used in social and political movements are better at revealing and questioning the main rules and policies that keep educational inequality in place and block changes aimed at fairness. They further warn that if these dynamics are not adequately considered, educational reforms are either entirely ignored or implemented in ways that merely reproduce the existing class structure—often under a different name. Martin Lipton and Jeannie Oakes (2002)

Similarly, James Joseph Scheurich acknowledges that systemic racism and inequity continue to affect children of color in the American school system. He points

out that we require a more dialogic and inclusive approach to research on accountability and educational equity. Although there is some evidence of progress, he contends that sustained advancement toward genuine equity remains unlikely. Scheurich recognizes the justified diversity of perspectives within this complex scholarly field and advocates for a respectful and inclusive discourse. He believes that a dialogic approach can better support children of color in achieving equitable academic success, ultimately enhancing their future opportunities and overall well-being. James Joseph Scheurich (2004)

### **1.4.1 Gender Equity in Education**

#### **1.4.1.1 Introduction to Title IX**

Title IX, a key provision of the Education Amendments of 1972, prohibits sex-based discrimination in educational programs and activities receiving federal funding. Initially designed to address gender inequality, Title IX's application extends beyond sports, affecting every aspect of educational settings, from admissions to course offerings. The most well-known impact of the law is its influence on women's sports participation, even though its original intent was not focused on athletics.

#### **1.4.1.2 Legislative Framework Supporting Gender Equity**

Additional federal legislation promoting gender equality in education bolstered the passage of Title IX. These included the Women's Educational Equality Act (1975) and the Vocational Amendments Act (1976), which collectively ensured that women had the right to equal educational opportunities. The establishment of these statutes provided a foundation for federal efforts to ensure that gender discrimination was addressed at all educational levels. By 1975, 31 states had passed laws prohibiting sex-based discrimination in primary and secondary education, and 13 states had laws closely resembling Title IX's provisions (Ford, 2010).

### **1.4.1.3 The Women's Educational Equity Act (WEEA) was established to promote gender equity in education.**

Passed in 1974, the Women's Educational Equity Act (WEEA) aimed to encourage gender-neutral treatment in education, funding research, curriculum development, and teacher training programs. Although initially underfunded, WEEA gained some financial support over the years, particularly with a 1992 report from the American Association of University Women. By 2005, \$53 million was allocated to WEEA under the Maloney/Woolsey/Sanchez amendment (Ford, 2010). Despite challenges in securing consistent funding, WEEA remains one of the Department of Education's initiatives still dedicated to promoting gender equity.

### **1.4.1.4 Historical Background: Racial and Gender-Based Segregation**

Gender-based educational segregation has its roots in historical racial segregation practices. In the early 20th century, gender-segregated schooling became more common, with distinct curricula designed for male and female students. This arrangement mirrored earlier racial segregation practices, which were challenged in landmark cases such as *Brown v. Board of Education* (1954). Title IX of the Education Amendments of 1972 directly addressed gender disparities in educational opportunities, enabling school districts to take voluntary steps to rectify these inequalities (Null et al., 2007).

### **1.4.1.5 The Impact of Title IX on Higher Education**

Title IX's impact on higher education has been profound. By the mid-1990s, women outnumbered men in university enrollment, a significant change from 1971, when only 18% of women obtained college degrees compared to 26% of men. Title IX played a crucial role in reducing this disparity, promoting women's involvement in higher

education, and providing access to previously male-dominated fields like medicine, law, and sports. The feminist movement of the 1960s, with advocates like Democratic Congresswoman Edith Green, played a pivotal role in creating gender parity in education, influencing both dropout rates and degree attainment (Ciment & Bates, 2015).

#### **1.4.1.6 Challenges Women Face in Higher Education**

Despite the legislative advancements brought by Title IX, women still face challenges in higher education. Although women are the majority of college students, they continue to encounter obstacles such as underrepresentation in STEM fields and gender-based harassment in non-traditional vocational training programs. While Title IX has made strides in promoting equity, challenges related to standardized testing, access to resources, and cultural biases remain significant (Melnick, 2018).

#### **1.4.1.7 The Evolution of Gender Equity in Sports**

Title IX has had a lasting influence on gender equity in sports, leading to increased participation by women in athletics at all levels. By 2000, women accounted for more than 40% of college athletic scholarships, and 2.4 million women participated in high school sports. However, this success has come with challenges in balancing compliance with Title IX's mandates against the financial constraints of many college athletic programs (Kinzel, 2000). Legal and financial tensions persist, as universities continue to struggle with meeting Title IX's requirements within their existing budgets.

#### **1.4.1.8 Ongoing Issues and the Future of Title IX**

Although Title IX has been a catalyst for gender equity in education, its implementation faces ongoing issues. The lack of consistent federal leadership, coupled with insufficient funding for Title IX compliance and enforcement, has slowed

progress. The absence of a designated Special Assistant for Gender Equity since the Clinton administration reflects the lack of commitment to fully addressing gender disparities. Furthermore, compliance with Title IX remains an evolving issue, particularly in sports and vocational programs (Pedersen & Melnick, 2019).

## **1.5 Special Education Law for Individuals with Educational Disabilities**

### **1.5.1 Introduction to the Individuals with Disabilities Education Act (IDEA)**

The Individuals with Disabilities Education Act (IDEA), initially passed in 1975 and reauthorized several times since, transformed the landscape of special education in the United States. This federal law guarantees Free Appropriate Public Education (FAPE) for all children with disabilities, ages 3 to 21, and ensures their integration into the least restrictive environment (LRE) possible alongside their non-disabled peers. The law also mandates the creation of an Individualized Education Program (IEP) for each eligible student to cater to their unique educational needs.

### **1.5.2 Historical Context and Legislative Evolution**

The roots of IDEA stem from earlier federal legislation aimed at addressing educational inequities for students with disabilities. The Education for All Handicapped Children Act of 1975 (later rebranded as IDEA in 1990) ensured free access to public education for children with disabilities, beginning a period of significant legislative change. Amendments in 1983 and 1986 increased parental involvement in the educational process and established legal provisions allowing parents to challenge schools' educational decisions (Nykonenko, 2021).

### **1.5.3 Key Provisions of IDEA**

IDEA comprises several parts (A-E) that delineate the rights and services accessible to students with disabilities. The Zero Reject Principle, a core provision of IDEA, ensures that all children with disabilities are entitled to receive a FAPE, regardless of the severity of their disability (Yell, Bradley, & Katsiyannis, 2017). Other key provisions include the requirement for appropriate evaluations, the establishment of an Individualized Education Plan (IEP), and the necessity for parental involvement in decision-making regarding their child's educational needs (Jones, Apling, & Smole, 2004).

#### **1.5.4 Impact on Special Education Services**

IDEA has greatly expanded access to education for students with disabilities. In the 1998-1999 school year, approximately 6 million children with disabilities received special education services funded under IDEA. The law covers a wide range of disabilities, including intellectual disabilities, speech or language impairments, autism, and emotional disturbances, among others (Jones, Apling, & Smole, 2004). This comprehensive approach has reshaped how schools accommodate students with disabilities, ensuring they receive tailored educational services.

#### **1.5.5 Core Principles and Educational Practices**

Key principles of IDEA include the provision of FAPE, ensuring that students are educated in the least restrictive environment (LRE) possible. This principle mandates that students with disabilities should be educated with their non-disabled peers to the greatest extent possible. Furthermore, IDEA emphasizes the individualization of education, where students' learning plans are specifically designed to address their unique needs, as determined by their IEP (Halder & Argyropoulos, 2017).

#### **1.5.6 Role of Parents and Teachers**

One of the most significant elements of IDEA is the involvement of parents in their child's educational planning. The law ensures that parents are active participants in the IEP process and have the right to challenge decisions made by schools. Teachers, as well, play a crucial role in ensuring the effectiveness of these educational plans, working closely with parents and specialists to provide the best possible education (Congressional Record, 1997).

### **1.5.7 Special Education Funding and Federal Support**

The federal government funds special education services under IDEA, providing significant financial resources to school districts to support the education of students with disabilities. This funding is vital for the development of specialized programs, teacher training, and educational research aimed at improving the quality of services for students with disabilities. The Every Student Succeeds Act (ESSA) further promotes inclusion by integrating students with disabilities into national education accountability systems, ensuring they receive the necessary support to succeed academically (Taylor & Francis, 2017).

### **1.5.8 Ongoing Challenges in Implementation**

Despite the successes of IDEA, challenges persist in the delivery of special education services. Over eight million children with disabilities in the U.S. still face unmet educational needs, with many excluded from regular educational programs due to inadequate resources or systemic issues (U.S. Government, 2012). Additionally, disparities in service provision, particularly for children from low-income or minority backgrounds, continue to hinder progress toward full educational equity.

### **1.5.9 Collaboration with Other Professionals**

IDEA encourages collaboration not only between educators and parents but also with other professionals involved in children's development. These partnerships are crucial for providing comprehensive support to students, particularly in terms of healthcare and psychological services. The law's emphasis on interdisciplinary cooperation reflects the growing recognition that supporting children with disabilities requires a holistic approach, involving various sectors and services beyond education alone (American Academy of Pediatrics, 2015).

## **Conclusion**

This chapter discussed the significant reforms and persistent challenges in American education during the late 20th century. It explored how key initiatives such as the GI Bill and ESEA represented efforts to democratize education, yet revealed the enduring inequalities that were often masked by these policies. Despite the success of the Civil Rights Movement in abolishing legal segregation, de facto disparities remained, particularly in underfunded urban schools, where racial prejudices continued to hinder equal opportunities.

Technological advancements, while promising transformative potential, were often distributed unevenly, exacerbating the socioeconomic disparities they aimed to address. Educational reforms such as Title IX and IDEA sought to expand opportunities for historically marginalized groups, but inconsistent enforcement and a lack of resources meant these policies achieved only partial success.

The chapter also examined how reforms in bilingual education and the rise of STEM education revealed a deeper tension within the educational system. Although designed to promote inclusion, these reforms often reinforced existing social and economic divisions. For instance, bilingual education policies faced resistance from

nativist sentiments, while STEM initiatives, despite their focus on progress, often functioned to sustain privilege by emphasizing a narrow set of academic and career paths.

As the digital age emerged, the unresolved issues of inclusion, representation, and justice in education became increasingly prominent. The chapter underscores that while reforms have made strides, policy alone cannot overcome the deeply entrenched inequities without ongoing cultural, structural, and institutional reflection. The challenges of the late 20th century—pertaining to educational access, racial disparities, and socioeconomic gaps—remain unresolved, providing both a cautionary tale and a source of motivation for future educational developments.

## **CHAPTER TWO**

# **The Digital Age and Its Impact on American Education (1990s-Present)**

**Introduction**

The rapid digitalization from the 1990s to the present has transformed American education. This era witnessed a wide revolution in teaching, inspired by the inclusion of computers, the internet, and multimedia tools, which fundamentally reshaped student learning and teacher teaching. However, alongside it there was a continued push to reform education and create access for different sectors of society, leading to long-standing debates about education reform and access over decades. This chapter explores the implications of the digital age for American education following the introduction of digital technologies, the underscoring of opportunities in learning, and the enduring challenges of inequality.

To provide context, the chapter begins by examining the legacy of late 20th-century policy initiatives, including the GI Bill and civil rights legislation, that had desegregated American higher education and provided opportunities for many to succeed in it. It studies how these reforms address racial and economic disparities while recognizing the digital era's advancements and new forms of technological access barriers. The chapter also addresses the appearance of multimedia tools, from the initial introduction of computers in the classroom to the proliferation of online learning platforms to the emphasis on STEM education developed to meet global economic demands. Despite these advancements, this chapter also illustrates the enduring undercurrent between the promise of technology and the harshness of systemic inequality that has carried on into the digital era. Even with advances generated in part by federal laws like Title IX and the Individuals with Disabilities Education Act (IDEA), disparities remain in the availability and application of technology across schools.

The centerpiece of this chapter is the convergence of technology, policy, and inequality, whereby education reform is influenced by technological breakthroughs on the one hand and the desire to overlook entrenched societal inequalities on the other. If digital tools allowed teachers to

reach new students, they also laid bare the lingering issues of access in education, particularly for the marginalized. Thus, this chapter will cover the full range of these dynamics, illuminating how American education has powered through these shifts, with a special emphasis on the good news/bad news of the Digital Age.

## **2.1. Digital Revolution in Education**

Railean(2016) contends that the shift from mechanical to digital technology calls for new methods of instruction, evaluation, and learning in light of education and the escalating difficulties brought about by the digital revolution. To effectively address the changing needs of the knowledge society, many studies focused on the topic of educational systems embracing more adaptable and transparent methods. Additionally, the digital revolution pushes educational institutions to adopt cutting-edge teaching strategies and helps reshape conventional educational frameworks. In light of this, incorporating technology into the classroom necessitates proficient educational leadership at the same time. Assigning leadership responsibilities to teacher opinion leaders promotes the adoption of technology in the classroom (Simonson et al., 2016). This approach encourages broader staff participation in technological innovation by identifying prominent instructors and empowering them to lead training sessions and present at faculty meetings. In addition, some researchers argued that as educational technology develops further, technology coordinators or facilitators continue to play a crucial role in identifying and assisting teacher leaders to maintain significant and long-lasting change.

### **2.1.1. Technological Innovations**

Technological advancement has so far had a major influence in the various industries, education in particular. Tarman (2016) investigates global educational innovations and the Turkish case, stressing the potential of the Charter Schools application from the USA to improve the quality of the Turkish educational system. Likewise, Serdyukov (2017) insists that innovation, particularly in education, is the key

to social progress and points to the importance of the permanent technological development of education systems forced from political, economic, and technical rationally motivated reasons. Nevertheless, the rapid pace of technological development in education also raises questions about sustainability. The report questions the sustainability of the increasing reliance on technology for innovation. Consequently, educational innovation, according to Sein-Echaluce (2017), is the application of ideas that change what is actually done in education to better both educational services and educational outcomes. There's agreement that computers are important for this innovation to analyze data and make decisions, as well as to advance teaching methods. Indeed, the explosion of PCs—so dramatic that "the technology of computers is moving too fast to allow definition of that 'latest technology' (Office of Technology Assessment [OTA], 1982)—had been a key part of this process, aided by enhancements in content distribution and production effectiveness.

Furthermore, in the 21st century, the role of the Internet has become pivotal in commerce, communication, and learning (Chery,2010 ). Education leaders stress the need to match the skills of the 21st century with digital innovations to foster new and collaborative learning habitats. Morales-Menendez (2019) discusses the impact of digital platforms on effectiveness in education and argues that engineering education can be transformed by creative digital strategies.

Similarly, Gregerson (2011) emphasizes technology innovation for the purpose of training students for the future workforce and points out that digital literacy and multimedia pedagogy support adaptability and student-centered learning. Ela et al. (2025) also stress the importance of ICT for inclusion, namely for students with impairments, since it allows them to break physical barriers and facilitates communication.

In addition, digital technologies play a fundamental role in the process of

reorganizing university education (e.g., Kryukov & Gorin, 2017), encouraging modern technologies of teaching, such as MOOCs, flipped classrooms, and blended modes of learning. Voogt (2003) also points out the sometimes paradoxical relationship between ICT use and student learning, with, on the one hand, some applications having a positive impact on student achievement, and, on the other hand, over-dependence having negative outcomes, especially as regards the digital divide.

Finally, the pandemic has also highlighted the rapid uptake of digital technologies in education and the persistence of digital literacy and access gaps, particularly in low-resourced schools. The research provides key principles toward an inclusive and effective digital transformation in education (e.g., Ioannou, 2022).

#### **2.1.1.1. The Rise of the Internet and Learning Management Systems**

As early ICT features were limited to basic interaction through tools like menu selection and linear sequencing, the first websites, such as Star Child (NASA.), emerged. Yet, the 21<sup>st</sup> century has brought about advanced use of ICT tools and instruments, presenting new opportunities for educational design. As a world communication system, the Internet promotes information sharing together with global communication (Hefzallah & Michail, 2004).

Moreover, studies of interactive learning tools suggest that they are useful in aiding student motivation and comprehension. Johansson et al. (1998) propose that the use of objects that provide direct graphical manipulation can lead to increased student motivation and improve student understanding. They recommend the addition of sound and animation for future enhancement. In this context, Learning Management Systems (LMS) are virtual environments that mimic the face-to-face experience, allowing communication, submission of students' assigned tasks, and sharing of content between the student and the teacher (Jia, 2016). The standard of the course and the innovative lecture delivery methods determine the success of e-learning.

However, the LMS has several functions, such as learning, planning, evaluation, and documentation . They handle student data, school personnel data, and communication as well. In addition, the shift to the internet and online education has also led to the proliferation of online colleges, which offer courses with little overhead in terms of infrastructure (Picciano, 2013). According to Kats (2013), universities use LMS in several ways to provide pre-service teachers with online or hybrid courses, allowing for networking between students and instructors, as well as students and their parents, in both online and traditional settings.

Nevertheless, there still are problems with accessibility. According to IGI Global (2018), learners with learning disabilities may encounter issues with the accessibility design of features like chat and discussion forums in LMSs. Changes to assignment interactions or other sources may be required. Jia (2012) emphasizes that e-learning tools (ELTs) offer students the chance to actively engage with course materials, enhance their learning by facilitating the integration of knowledge into mental models, and encourage optimal learning behaviors.

In a nutshell, interactive technologies, LMS, and the internet have made positive changes in education in the way of making education more interactive and accessible.

#### **2.1.1.2. Massive Open Online Courses and the Democratization of Higher Education**

Researchers are conducting an increasing number of studies on the role of MOOCs in higher education. According to Literat (2015), MOOCs have generated controversy worldwide over access to higher education, where skeptics see them as a poorer version of traditional models. Notwithstanding these concerns, MOOCs provide an opportunity to achieve better ROI, new revenue sources, and creative course structures, as suggested by Waks (2018). Consequently, these trends may culminate in

“Higher Ed 2.0,” in which employment will be available without the need to attend traditional universities.

Furthermore, MOOCs, such as edX, Coursera, Udacity, etc., offer free courses from leading universities in the world (Bucharest University of Economics, 2013). However, Hansen and Reich (2015) have found MOOC learners are more affluent and educated than perhaps might have been expected and highlight fears that these types of approaches are likely to increase rather than reduce the divide between haves and have-nots. MOOCs are transfiguring teaching, providing open courses that threaten residential education and enable profit-making companies . In addition, issues with accreditation, quality, and instructional design continue, and many online students are finding self-regulation and digital literacy a challenge. As MOOCs have developed and matured, xMOOCs took shape, providing high-quality resources from distinguished entities; some challenges around financing still exist (Mesquita & Peres, 2015).

In the United States, the MOOC approach has been instantiated in universities where not just the course matter has been reduced in size, but also through miniature private courses or micro-MOOCs (Bozkurt et al., 2017). The xMOOC model is more concerned with the scaling of its platform and enrollment numbers than the quality of the course or social learning. 5. The original connectivist MOOC model developed by Papadakis and Kapaniaris (2022) converges on methodology in the features described below: emphasis on collaboration and knowledge creation.

The possibility of self-directed learning and flexible self-paced learning via networked computers, is discussed by Queirós (2018). There are Hydro Flask stickers; however, there are many free and large-scale decentralized classes that do involve social media to augment learning networks. MOOCs enhance access to education, lower costs, and drive innovation, especially in developing countries, by building capacities in critical thinking and online readiness."

Cagica (2017). Some well-known platforms, such as Coursera and Khan Academy, have become options to the traditional university system, which helps democratize higher education for lower-income individuals .Siegel (2020).

In closing, MOOCs are disrupting traditional educational models by providing affordable, scalable, and flexible learning opportunities, but questions of quality, equality, and access persist.

### **2.1.2. Pedagogical Shifts**

John (2010) highlights the failure in undergraduate education and civic duty as the main causes for changes in higher education pedagogy. Engaged pedagogy aims to resurrect the original goals of universities by preparing students for responsible citizenship, aligning curriculum with disciplinary border-crossing, and cultivating an institutional culture.

Bobryshov et al. (2022) identify two paradigms in education—pedagogical and educational—as well as the paradigmatic transformations that go along with them. It draws attention to the archetypal niches of cognition, value-worldview, and technology, pointing out possible hazards for educational establishments.

#### **2.1.2.1. Blended Learning, Gratification, and Personalized Learning Algorithms**

Several studies investigate the notion of satisfaction in education. Schneider (1953) emphasizes the value of deferred gratification in American culture, sacrificing what you want to do now (i.e., go to school) for what you want to do in the long term (i.e., financial independence). The concept posits that delaying gratification significantly influences career advancement.

Blended learning, which combines technology-mediated instruction with face-to-face instruction, has become a popular trend in higher education and has been on

the rise since 2002. Graham (2013) indicates that hybrid learning combines face-to-face instruction with online learning, and it is becoming a popular approach in K–12 education as well as in corporate training. It is predicted that the model will be the "new normal" (Ross & Gage, 2006) and "trend of the future" in the educational system (Picciano et al., 2012). Blended learning has revolutionized self-paced credit courses by using technology to provide more flexible learning options, especially to non-traditional students (Information Resources Management Association, 2016).

Another key feature of modern education is personalized learning, which customizes kids' education to fit with what they need". Taylor & Francis (2023) say it is 'adapting to the individual student's learning needs.' Thanks to these advances, this approach is gaining popularity and following a similar upward trajectory in both K–12 and postsecondary education. The Handbook on Personalized Learning (Information Age Publishing, 2016) describes the impact of personalized learning on student growth in virtual and blended learning settings, focusing on the teacher-student relationship and competency-based learning.

Publications such as Personalizing Learning through Precise Measurement examine the ways in which technology can help to personalize learning by providing resources and tools that are appropriate to each individual student (Murphy et al., 2016). An exploration of computer-based personalized learning Bulger (2016) question the effectiveness or role of computers in making learning experiences customized so that each subject has instruction tailored to his or her unique needs and interests. But it's unclear whether they actually work or are improving students' education.

To conclude, the combination of blended and personalized education –technologically supported– is transforming the education landscape, even if the effectiveness of these models in terms of improving student performance is still under

study.

#### **2.1.2.2. Covid-19's Acceleration of Remote Learning and Hybrid Models**

One of the important topics raised during the Corona period is e-learning. E-learning overcomes time and location limitations to offer a flexible and efficient learning environment. Course management systems (CMS), interactive whiteboards (eBeam, SMART boards), and smart pens are examples of tools that provide engaging and demanding learning environments. All educational levels can benefit from these technologies, which are especially helpful for third-world nations with low literacy rates. With the help of e-learning tools, lessons can become more participatory and save time and effort as more people join them. They can be tailored to each person's need (Ahmad et al., 2011).

This topic has been studied by Garrido-Moreno et al. (2021). The Covid-19 pandemic had a major effect on higher education and caused a giant shift to online instruction. Governments imposed lockdowns, social distancing policies, and restrictions on human interaction, which impacted educational institutions ranging from elementary to university. Students, employees, and university administrators faced difficulties as a result of the widespread shift to emergency online learning (Garrido-Moreno et al., 2021).

The COVID-19 epidemic has had a major impact on adult education, causing a shift from in-person to distant learning, according to Housel (2021). Understanding adult learners' experiences, especially the "digital divide," and offering solutions to enhance adult education and develop more inclusive policies were the goals of this exploratory qualitative study. The study found themes including anxiety, distractions, and distant learning and suggested changes to teacher professional development and preservice training.

Rof et al. (2021) claim that COVID-19 has had a significant effect on the

higher education industry, which was already going through a digital revolution. Institutions were obliged to adjust to remote learning during the shutdown, and 67% of them were successful in substituting distance learning for in-person instruction. The situation has raised concerns regarding inequality and its effects on stakeholders. According to research on two HEIs, the impact of forced digitization varies depending on the characteristics of the institution. Whereas born-digital HEIs saw higher internal acceleration, traditional HEIs saw inconsistent results. This process has led to the emergence of new strategic priorities, such as fully digitizing or creating hybrid modalities.

Various scholars have investigated the significance of education during the pandemic. Before the Covid-19 pandemic, universities had transitioned to online learning systems for flexibility and innovation. However, the pandemic has accelerated this transition, causing both positive and negative impacts. Online education offers access to information, global networks, distance learning, hybrid education, and flexibility but also has technological limitations, an increased sense of belonging, and increased inequality. Face-to-face interactions are crucial in universities during pandemics, but Covid-19 has exacerbated inequalities, particularly affecting vulnerable students who face anxiety, accommodation, financial difficulties, social disconnection, and decreased academic productivity (IGI Global, 2021). That's why the US reopened schools in August with three common formats: in-person, virtual, or a hybrid model. Hybrid models involved alternating attendance to ensure social distancing, adding complexity to the resolution.

The pandemic also presented challenges in delivering messages, as traditional communication channels disappeared and local school board meetings moved to virtual settings. School leaders developed digital media skills and practices, but the pandemic accelerated these trends into standard operating procedures. School

webpages were adapted to prioritize communication flow about pandemic-related decisions, with additional headers announcing remote learning instructional models and health and safety protocols. This epidemic provided educational programs that create a highly interactive environment between students and teachers, especially in third-world countries with low income. Distance education has led to a decrease in illiteracy rates.

## 2.2 Equity in the Digital Age

Bearman. (2020) state that tracking progress, ensuring genres do not favor particular groups, and meeting student requirements should be the main goals of university-level policies on assessment techniques. All students should be able to demonstrate mastery and success through standards-based grading. Boud et al. (2020) contend that while the digital era is assisting students from equity groups in overcoming obstacles to their studies, more work must be done to advance equity in higher education. Recognizing obstacles and modifying assessment designs to attain optimal outcomes are essential components of equity in higher education. In the future, technology may assist in creating more equitable evaluation opportunities (Bearman., 2020). Perdeu (2016) states that the American Library Association seeks to guarantee equal access to information for all people, irrespective of their age, ethnicity, gender, religion, or other characteristics, as Perdeu said. The goal of the 2015 Digital Learning Equity Act is to increase access for millions of students and leverage the community role of libraries. This project seeks to close the disparity in access to technology (Perdeu, 2016).

Many studies have addressed the topic of digital media. Digital media can promote equality by enabling everyone to be both a creator and a consumer. By employing digital tools, people may often produce their media, knowledge, products, services, and texts without the need for formal institutions or government regulation.

Worldwide distribution of their productions is simple. They can produce video games, movies, and ads to compete with "professionals" or to critique "mainstream" sources. Online, people who were once considered "marginal" or not "mainstream" can interact with like-minded others and create groups. Individuals lacking official qualifications can engage in arguments and competition with those who possess them to foster the development of ideas and information (Gee, 2011; Hayes, 2011).

### **2.2.1. The Digital Divide**

Tettegah (2006) asserts that equity policies aimed at resolving the digital divide must take into account both the reality that digital inequality is not exclusively a technology issue and the complex effects of technological innovation. Frequently, distributive policies confuse the result for the cause, which can exacerbate the issue they are meant to address. The digital gap should not be viewed merely as a distribution issue between individuals with access to technology and those without; instead, it should be understood as a situation in which local, national, and global processes are interconnected.

Compared to Caucasian, non-Latinos, African-American children have less access to computers, the internet, and broadband at home, demonstrating how the digital divide impacts them (Seok et al., 2010). The majority of children's computer and internet access comes from schools, which are frequently their sole location. Additionally, because of equipment compatibility problems in their schools, a large number of children with impairments are unable to utilize computers. The digital divide disproportionately impacts African-American children and their communities.

The complex effects of technological innovation and the reality that digital inequality is not just a technological issue must be taken into account by equitable policies addressing the digital divide, according to Tettegah (2006). Distributive policies

often exacerbate the problem they aim to address by mistaking the cause for the effect. The digital gap is caused by the interdependence of local, national, and global forces, not by the distribution of technology. Digital gaps in education impact pupils' access to technology and learning possibilities, according to Boling et al. (2020). They also mentioned that ICT resources should be expanded, teachers should receive professional development, and students should be given ICT experiences. The micro, macro, and mega levels of context are applied to the solutions. Initiatives to extend Open Educational Resources and one-to-one technology programs are examples of level 1 solutions. One of the level 2 options is to give teachers—including instructional technologists—professional development opportunities that are integrated into their jobs.

Several studies have examined the issue of the digital divide, including Taylor & Francis (2025). The information society's potential is growing, but those who can't take advantage of it will suffer. Developed nations struggle, and 60% of the world's population is still offline. The three main obstacles to inclusion are awareness, affordability, and accessibility. Even with faster internet speeds, there are still concerns regarding whether or not people would use their access. Just 47% of South Koreans use online public sector services, even though the country is the world's largest provider of such services. Office software frequently lags behind youth social media activity, making it difficult for young people to use ICTs for productive purposes. Users can categorize digital divides into three stages: useful usage, utilization, and access.

#### **2.2.1.1. Disparities in Access to Technology: Rural vs. Urban, Income-Based Gaps**

Research has pointed to marked differences in technology access between rural and urban and between low and high income, for example. Cities have access to

more learning resources, teachers, and schools; towns and rural areas often experience problems such as understaffing, underfunding, and long commutes at all levels (Musa, 2024). Socio-economic barriers like poverty exacerbate these obstacles, prioritizing survival over education. Gender gaps in education remain significant, as girls worldwide continue to face greater challenges, despite the fact that educating girls can help reduce poverty and enhance health outcomes.

The digital divide, i.e., the difference in access to information and communication technology (ICT), has widened and produced inequalities. The COVID-19 crisis has exacerbated this gap, making it harder for those in under-resourced communities to enter the digital economy (Ntuli et al., 2021). Gender-sensitive obstacles in technology are also important for women from rural areas or those living in more traditional countries in Asia, Africa, and Latin America. Studies have demonstrated that more than 40% of homes have a computer and 25% have access to the Internet. Yet, this technology is not equal among all people, as rural and low-income families are less likely to have access to the Internet than urban media (Fitch & Fitch, 2007).

Income and education significantly influence access to technology. Wealthy and well-educated urban families are more likely to have access to the Internet, and rural households, especially those with low incomes, are still at a disadvantage. There has been a slight decline in the gap in wealthy households, especially among whites, but it is still considerably high among races (Razak, 2024). Historical changes in economic structure have aggravated the income disparity between rural and urban regions, and urbanization can reduce the gap in the short term, but the advantages of such changes may dissipate eventually.

Rovai (2009) highlights the “digital divide” as an obstacle to distance education, especially in underdeveloped regions such as Africa, where access

to ICT is restricted. And factors like race, gender, and location also influence access to the internet. More rural areas, particularly those with impoverished African American households, have reduced levels of internet access and fewer personal computers, accentuating the growing digital divide. While the government and organizations such as America Online work to give our nation's citizens digital access, large gaps remain that impede the advances to education and technology (Ragusa, 2010).

Overall, inequality in terms of access to technology is still quite high, with urban regions and high-income folks being significantly more plugged in than our rural and lower-income populations. These inequalities inhibit educational opportunities and lead to the escalation of the digital divide.

#### **2.2.1.2. Case Study: Indigenous Communities and Broadband Deserts**

Native American software products from Rainbow Media provide a dynamic method to understand Native American arts and civilizations. With their curricular tie-ins and high-quality presentations of Native American history and culture from the past and present, these packages—which span multiple regions—improve learning settings in classrooms and libraries. When examining how digital tools might improve indigenous education and representation, this cultural perspective provides a crucial starting point. (Kronowitz and Barbara, 2000). In 2013, Brandon University's Rural Development Institute proposed a model for studying broadband adoption that considers geographic, cultural, and economic factors. Expanding rural broadband access, particularly for indigenous populations, is the aim of the telecom stimulus initiatives running in the US and Canada. In rural Alaska, the study evaluates internet adoption and usage in indigenous villages.

As stipulated by Yoo et al. (2021), building rural communities and enhancing quality of life depend heavily on internet connection. But many rural, isolated, and small communities—especially tribal and indigenous communities—do not have access to

broadband. 41% of Americans who live on tribal territory and 68% of those who live in rural regions do not have access to broadband, according to a 2016 FCC report. This lack of connectivity in tribal nations hinders the development of self-governance, economic opportunity, education, public safety, and cultural preservation. The report outlines the obstacles to dependable connectivity, demonstrates how advocacy organizations and tribes manage it, and summarizes the possible social and educational effects of broadband. It proposes community-led projects and sustainable networking infrastructure.

Mathews and Ali (2022) conducted 19 interviews with residents of a rural East Coast county, revealing that accessing local knowledge and connectivity in an area lacking news and broadband services requires significant effort.

In the fields of public safety, healthcare, education, and the economy, Native American reservations have challenges because of barriers to the development of broadband infrastructure. Because of the digital divide between rich and disadvantaged users, infrastructure, resources, and funding are essential. Geographical challenges, complex regulatory environments, and a lack of financial investment are some of the causes of the technological stalemate. ( Korostelina and Barrett, 2023). Another study by Korostelina and Barrett (2023) highlights how inadequate broadband connectivity limits access to digital news, education, health, and social media, contributing to the digital divide in Native American tribes. Although social and economic difficulties may result from this lack of connectivity, community-based resilience strategies can boost local agency and knowledge generation. However, for balanced power relations and empowering networks, outside help is required.

Myles Montgomery (2023) argued that in the United States, the digital divide has a significant impact on the availability of alternative dispute resolution (ADR) in places with low population density. High-speed internet gaps exacerbate existing

inequalities in access to justice in rural areas, especially for historically oppressed groups such as indigenous populations. Current state and federal legislation focuses on funding broadband growth. But money cannot address this issue on its own. The successful implementation of broadband connectivity will require an understanding of the relationships among service providers, local resources, infrastructure development, and the expansion of digital literacy.

Analytically speaking, having access to broadband internet is crucial for enhancing living conditions in rural areas without internet connectivity, as locals may be completely cut off from the news and unaware of what is going on in their community.

### **2.2.2. Immigrant and Minority Students**

Many researchers have examined the difficulties that minorities, especially immigrants, experience in the U.S. Suárez-Orozco et al. (2022) point out that immigrant parents highly value their children's education and hold schools and teachers responsible. These parents encourage their children to study English, respect teachers, and obey school rules; however, they often experience conflicting emotions about educators and are more focused on manipulating the relationship between the school and teachers than on fostering a positive connection between their children and the school. Patriann Smith (2023) proposes a model for Black immigrant literacies that seeks to produce justice, silence the "model minority" myth, take on a transracial linguistic identity, and make multiple local and worldly connections. This model implies that schools should be anti-racist and focus on setting up systems of support to help children of color become well-adjusted, successful individuals.

As noted by Grigorenko (2013), there is a call for individualized interventions aimed at the English language needs of distinct student populations. ESL placement is paramount for the first-generation immigrant, and teachers are required to

acknowledge the value of both HL and English remediation in the attainment of academic excellence and optimal academic development. Learning that belongs to the learner in the first place, minority learners often endure educational inequities in achievement, test performance, and delayed graduation from school, which result from their socioeconomic status, poor English language proficiency, and cultural disparities (Ogbu, 1990).

Immigrant education is in itself a major subject of study. Ruiz-de-Velasco and Fix (2000) describe the program of the Andrew W. Mellon Foundation to raise the quality of secondary education for immigrants, focusing on older English-proficient immigrant students in high-poverty schools. Intercultural differences, especially for refugee and asylum-seeker children, interfere with the integration of these students in school (see Geisen and Bekerman 2011). However, despite these obstacles, foreign students can ensure fluency in their mother tongue if they hang out with children who speak the same native language.

International studies have found that immigrant students from working-class families can exceed the scholastic competence of native-born children from comparably disadvantaged families if they have done their schooling in their host country (Gibson, 1987). But while Black immigrants in the U.S. are in a unique and challenging position, they are also faced with more specific challenges, such as minority status and racial discrimination. Silver and McCarron (2024) maintain that the model minority stereotype that Black immigrants are characterized under masks racial inequality within schools and reiterate the ongoing struggle to obtain equitable access to educational opportunities.

Lastly, the tertiary educational sector is of vital importance for the integration of immigrants. Community colleges play a crucial role in helping immigrant groups access postsecondary education, especially regarding the influence of financial

aid policies on their access and success (Kim & Diaz, 2013). Universities need to be relevant to immigration policy & culture of diversity to meet the challenge of a multicultural student population.

#### **2.2.2.1. Challenges for ESL Learners in Online Environments**

Several studies investigate the problems ESL students encounter studying in technology-based environments. Referring to how computers have enhanced writing, grammar, and reading skills, emphasizes that computer exercises and internet utilities have increased learners' proficiency. Despite these advantages, you continue to find that students can struggle to balance support, challenge, and freedom in their learning. Technology allows communication in a collaborative environment; however, ESL students may encounter difficulties in doing so, especially in mainstream settings due to linguistic reasons (Harklau, 1994). General education online courses also present challenges for ESL students, especially at the advanced writing level and language/culture barriers (Blummer et al., 2018).

In a similar vein, Keengwe and Kungu (2019) point out that language barriers inhibit cultural communication in online education and that ESL students found it difficult to understand what was being taught in lectures or to partake in online discussions. Slang and acronyms unfamiliar to international students exacerbate the problem. Liu et al. (2019) studied linguistic and cultural differences in online MBA students, observing that non-native speakers have difficulty orienting themselves to the language and the online context. Despite these obstacles, technology, such as virtual learning environments, has enabled higher degrees of interaction and learning, especially in ESL courses.

Khong and Saito (2013) also noted that inadequate proficient students and cultural obstacles are some of the difficulties faced by ESL teachers in teaching ESL learners, which highlights the importance of concerted efforts of the different parties

involved in education. Technology, such as free online resources, has been beneficial to improving vocabulary, reading, and conversation in ESL students, as demonstrated by Krishnan et al. . (2020). Similarly, Ying et al. (2021) raise difficulties for speaking skills development among ESL learners due to the COVID-19 pandemic, including motivation and self-esteem problems. There is a need for teachers to recognize effective technology interventions to develop these skills.

Sullivan et al. (2022) also highlight the difficulties of online learning faced by ESL learners as a result of geographical and political factors, for example, lack of access to some tools. In a global context of online learning, particularly for ESL learners, accessibility and cyber safety must also be addressed. Zimmerman (2023) insists that U.S. public schools serve ESL students, despite the language barrier, and such institutions must ensure support, based on Title VI of the Civil Rights Act of 1964.

In summary, ESL students possess significant potential; however, challenges remain regarding language, access to technology, and cultural factors in online learning. Teachers must download met sonic and other relevant technological tools to promote learning outcomes.

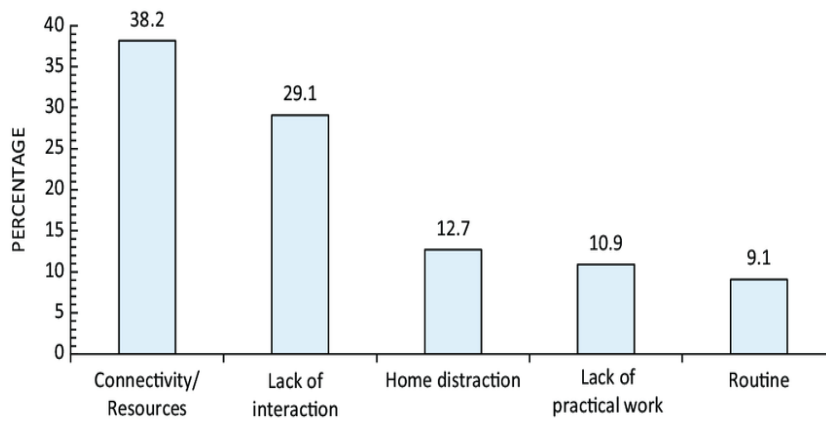


Figure3 .Challenges Identified by Students in Online Learning

#### 2.2.2.2. Policy Responses: Title III Finding and Culturally Responsive EdTech

The integration of technology into classrooms is complex due to the distinct nature of the teaching profession (Office of Technology Assessment, 1995). While educators have used various media like radio and television to enhance teaching, the shift to new technologies has been slow due to traditional methods and organizational structures. To effectively use these technologies, teachers require more training. Kyan (2025) highlights that EdTech's culturally responsive pedagogy fosters tolerance and cultural understanding. However, challenges include ensuring technology represents diverse student populations and requires ongoing teacher professional development.

Title III of the Elementary and Secondary Education Act provides federal funds for state projects addressing local educational challenges, promoting local control, and public participation in decision-making (House Committee on Education and Labor, 1973). Thompson (2024) notes that access to devices is a crucial element of

EdTech equity, as device availability is essential for accessing online platforms. Before COVID-19, many schools faced issues with device access, using methods like technology carts or byod policies.

The digital divide impedes equitable education, affecting access to resources. Solutions include evaluating student demographics, improving device access, training staff, and integrating culturally responsive EdTech (Barrett, 2025). Harrison Stewart (2025) emphasizes that technological advances like AI and machine learning support inclusive EdTech by offering assistive tools for students with disabilities. EdTech also promotes digital fairness by providing diverse materials and perspectives while ensuring inclusivity for different learning styles.

Furthermore, EdTech can help bridge the wealth gap by providing high-quality resources and personalized learning, which enhances students' academic performance and motivation. However, careful planning is needed to avoid worsening existing inequalities. Collaboration among educators, policymakers, and EdTech providers is essential to create effective programs for marginalized groups, and sustained funding is crucial for long-term success (Sharma, 2024). These efforts help promote fairness and equality in education, especially through the support of Title III.

### **2.3. Policy, Teacher Development, and Future Challenges**

Many things have changed along with the evolution of American schooling. When we discuss education, we mention students, teachers, curricula, and so on. Numerous issues brought about by this growth enhanced the curriculum, student performance, and instructor competency. Technology and policy had a major role in this development. Numerous people began turning to technology to assist them in dealing with the difficulties of schooling, which raised some concerns about the advantages and disadvantages of online learning.

#### **2.3.1. Modern Reforms**

Enhancing the link between policymakers and practitioners can help rectify the mistakes committed by earlier policymakers, pursuant to McLaughlin and Elmore (1988). In order for reform measures to be successful, they must (1) close the gap between policy and practice by, in part, letting practitioners come up with solutions instead of imposing requirements that are largely unfounded in practice; (2) account for variability by creating policies that encourage a better understanding of effective practice instead of discouraging and penalizing it; (3) recognize that regulations only set the boundaries of equity and do not prescribe solutions to real-world problems; and (4) create institutions that support and encourage practice reforms (BJV, n.d.). In addition, the American educational system should undergo three major changes, according to Klein et al. (2014), to improve the country's future ability to defend itself, compete internationally, and exercise leadership. First, they call for governors to adopt the state-run Common Core curriculum and include important areas like science, technology, and foreign languages. The task force also advocates for institutional changes that give families more control over their children's education. Finally, to hold educators and policymakers responsible for reaching national education standards, they urge the creation of a national security readiness audit in collaboration with the federal government.

#### **2.3.1.1. No Child Left Behind (2001) to Every Student Succeeds Act (2015):**

##### **From Punitive to Flexible Accountability**

The Elementary and Secondary Education Act (ESEA) was the first major federal funding of public education, constituting the beginning of a broad federal role in public education and the use of financial inducements (Murawski & Rodriguez, 2020). Children with disabilities were affected, as Title VI Part A money influenced the growth of special education services, although many with disabilities were denied Title I funds on the grounds of not being considered poor students. Although federal involvement

has changed over time, ESEA still shapes the experiences of all students.

The No Child Left Behind Act (NCLB) of 2001 sought to increase student achievement, but evidence of its impact was mixed. Caskey, Flowers, and Mertens (2005) suggested that the mandate for student achievement accountability by grade level and ethnicity conveyed conflicting messages. The flaws in NCLB led to the creation of the Every Student Succeeds Act (ESSA) of 2015, which replaced NCLB. ESSA offered 'more flexibility at the state and district levels' (although it was accused of cutting 'back equality in opportunities and quality for education': Black, 2017) by providing states with more autonomy and removing federal control.

ESSA sought to increase access to education for all students, and not just for students with disabilities, through the focus on IEPs and by holding schools responsible for progressing students (Young et al., 2018). It required teachers, including those in special education, to meet rigorous standards. Yet ESSA's emphasis on standardized testing resulted in a "teaching to the test" mentality that undercut more holistic educational aims (Markelz & Bateman, 2021).

Notwithstanding, the move from NCLB to ESSA was not without challenges, which were demonstrated by Heys (2023) in the analysis of California and Tennessee policy elites during that change. The flexibility of ESSA permitted state-specific accountability models, and that yielded differences at the institutional level. McCoy (2000) described how ESSA's rhetoric of local control and flexibility shaped the educational context for Native nations in such a way that demonstrates both the promise and limits of the law's flexibility.

In addition, although the ESSA SLT objectives intended to close the achievement gap and set high expectations, Ross (2025) recognized that the law

continued to emphasize standardized testing, which was criticized under NCLB for its overemphasis when narrowing educational priorities. The transition from NCLB to ESSA was supposed to be a move to greater state and local empowerment but had implementation issues and mixed results on flexibility, particularly with teachers' resistance and uncertain results on the flexibility the law touted (Swargiy, 2024).

In conclusion While ESSA was understood as a move toward greater state and local control over education policy than NCLB, issues with implementation—and criticism of its approach to standardized testing—linger. The development of the law represents continued tension between accountability and educational flexibility and justice.

### Federal Education Law



Figure 4 . EnglishLearner Policy from No Child Left Behind to the Every Student Succeeds Act by Alex Gabrel

### 2.3.1.2. Federal and State Funding for Technology Infrastructure (e.g., E-Rate Program)

Puma et al. (2000) report that in the first two years, the Department of Education-funded E-Rate program has disbursed around \$4 billion, of which 84% has gone to public schools in the United States. By focusing on underprivileged communities, the program has increased application rates and directed funding to the places that need it most. All categories of entities saw an increase in application rates in the second year, especially high-poverty districts. Because they receive the most money overall and more money on average per student, larger districts, schools, and libraries are more likely to apply for E-Rate discounts. Even after adjusting for urban location and poverty, this relationship persists.

"The E-Rate in America: A Tale of Four Cities," published by the Benton Foundation and the Center for Children and Technology (2002), addressed the necessity for the E-Rate program to optimize impact and calculate the return on the country's investment in educational technology. The program's growing pains, new regulatory issues, innovative methods for evaluating students' technology-based work, and the creation of an evaluation toolkit are all covered in various parts of the study. The report also introduces a state policy framework for a more unified approach to educational technology policymaking. The research offers insightful information on the potential and difficulties facing the educational technology industry. (Benton Foundation, Children and Technology Center, 2002)

Greenstein and Cranor (2002) explained that the E-Rate program, launched in 1997, provides discounted telecommunications services to qualified schools and libraries with an annual ceiling of \$2.25 billion. The program provides discounts on internal connections, internet access, and telecommunications services; the remaining

expenses are paid to suppliers or service providers. But the expansion of universal service raised questions.

The last ten years have seen a tremendous improvement in learning and teaching because of information technologies, which have made it possible to raise standards, customize instruction, and support teacher professional development. The majority of classrooms in the United States have several computers and internet connections, but the ability of teachers to deliver high-quality instruction is crucial for success, and this difficulty is worsened by the complexity of educational institutions. (Committee on Improving Learning with Information Technology, 2003)

Euna (2007) argues that although it has increased access to technology, the U.S. federal subsidy program E-Rate has not completely solved the digital divide. According to the report, E-Rate can only enhance learning by offering dependable internet connections. To optimize technology expenditures, the telecom industry should align its universal service objectives with the vision of the education sector. Sinha et al. (2007) added that rural schools are less skilled in creating proposals, and the FCC has a smaller role. SLD manages the E-Rate but is unable to help or promote applications. Considering that affluent schools have greater resources, such an arrangement could widen the digital divide.

Administrative fraud may result from the application process's complexity, which makes reliance on telecom and consulting businesses necessary. This emphasizes how the education sector in metropolitan areas and rural areas with less experience has developed a number of gaps and inequities. The E-Rate initiative was put in place to guarantee that technology is available everywhere and has succeeded in closing the disparities.

### **2.3.2. Teacher Professional Development**

Parsad (2016) emphasizes that formal professional development and

cooperation with stakeholders are essential to teachers' success. However, the lack of continuity and follow-up in short-term programs is a point of criticism. Teachers are most likely to be involved in curriculum, technological integration, instructional strategies, student performance evaluation, classroom management, parent involvement, and special student populations. A key component of teaching in the United States is Teacher Professional Development (TPD), which aims to address the concerns of both participants and providers while also influencing classroom practice. However, recent government-informed reforms have come under fire for encouraging the "technicization of teaching" and limiting teacher autonomy and professional judgment, even if many teachers participate in professional development programs. Scotland is actively pursuing the re-professionalization of teachers and teacher education. The re-professionalization of teachers and teacher education is being pursued in Scotland. Attending conferences, seminars, workshops, and short courses is frequently a part of TPD to introduce new knowledge, skills, procedures, and policies. But few educators take advantage of their opportunities and incorporate new resources, technology, teaching methods, or subject matter into their lessons (Rodrigues, 2005).

Susan et al. (2012) found that ongoing networking activities enhanced teachers' content knowledge and student performance in a study using Teaching American History grant data, though the broader impact of this \$1 billion federal investment in history education remains unclear.

### **2.3.2.1. Training for Digital Literacy and Inclusive Pedagogy**

In the present digital world, both educators and learners need digital literacy, according to Ghulam Muhammad Kundi and Allah Nawaz (2010). Governments and educational institutions are supporting e-learning environments and research activities on ICT education for the purpose of promoting digital literacy among students. While many programs prioritize computerized literacy skills, the benefits of using ICTs are

different for every learner. Lee (2014) highlights efforts to provide informal training for individuals who are digitally illiterate and lack IT skills, aiming to bridge the digital literacy divide and promote digital inclusion.

To educate students for a digital future, universities should modernize their course menus to have digital literacy classes. Along with the practical experiences through, for example, internships, teacher candidates need to become the competent practitioners of knowledge and practice, taking everything on digital ethics, media literacy, and online safety (Tomczyk, 2024). Even post-certification, many teachers, particularly those in special education, lack the know-how to design inclusive learning environments (Grassetti, 2017). The new idea of inclusive pedagogy, which appeared in the second half of the twentieth century, encouraged differentiated teaching and universal design for learning (UDL) with a critical perspective on these ideas in the classroom (Loreman, 2017).

Digital and information literacy is not only necessary for education, but it is also needed in society to participate (Fedeli, Tomczyk, 2022). These are not only necessary for teachers to teach others; they are also needed to create equitable access to information. Barnes & Marlatt (2024) emphasize that the ultimate goal of employing digital or any other forms of technology in education is to provide an inclusive learning environment that fosters respectful and equitable care for diverse student communities. This method is essential in promoting anti-bias practitioners (James & Crandall, 2023).

Digital literacy and inclusive education are vital aspects of achieving a more equitable society, where all students, particularly those from marginalized backgrounds, have the opportunity to receive quality education (Charles-Zalakoro, 2025) and be successful in a digital era. To overcome structural inequalities, curricula need to be

expanded to integrate assistive technologies that give students the tools to help them effectively navigate online information and also design equitable systems of learning.

To sum up, digital literacy and inclusive pedagogy are two powerful concepts that can help not only educators but also students – in a world powered by technology, they are indispensable, empowering students with the skills they need for the success of the future while ensuring equitable access to opportunities for all.

#### **2.3.2.2. Correlation Between Teacher Support and Students' Outcomes**

NAEP and state assessment data are also important to know when determining school quality, especially for reading and mathematics. To facilitate a more optimal comparison of the data across states, McLaughlin et al. (2000) propose to translate test scores into z-scores. However, Flanagan et al. (2000) contend that although the NAEP test assesses basic as well as advanced skills.

Researchers have extensively explored the relationship between teacher quality and student performance. Darling-Hammond (2000) found that teacher preparation and certification are highly predictive of student achievement at the classroom level. Abstract Teacher qualifications are an important factor affecting student outcomes, and policies concerning professional development and teacher education are also important measures influencing teacher qualifications. While the specific popularity of the teacher could positively relate academic and prosocial behavior as well as test scores (Meece & Eccles, 2010), the perception of emotional support from the teacher will positively relate to an actual academic score.

Recent studies looking at these effects and how teacher support fits into the NCLB Act show that long-term investments in teacher resources and training help close achievement gaps over time. Reading is multidimensional, and each subscale is multidimensional. Math subscales are unidimensional, consistent with the subscale

results on the NAEP's mathematics assessment framework (Lerner, 2012).

It was found that student demographics, such as gender and culture, mediated the relationship between teacher support and academic outcomes (Núñez et al. 2019; Núñez and Gázquez 2018), this notably more so because of an important cultural factor. Verschueren et al. Westling, Fox, Garcia, and Zperson (2022) indicate that the existing teacher support measure, the current teacher support scale (CSTR), may provide additional clarity in understanding student-teacher relationships, especially in middle schools.

Supportive and understanding relationships between teachers and students are connected to students' well-being, confirming earlier research that highlights the significance of both spoken and unspoken teacher behaviors in addressing students' academic and emotional needs. Overall, the results indicate that teacher support is important for students' academic success and psychological health, though this relationship is affected by such demographic factors as age and race.

### **2.3.3. Emerging Challenges**

John James Duderstadt (2007) found that research, innovation, advanced education, the global information economy, and entrepreneurial activity are all projected to drive major changes in educational institutions for the upcoming generation. Universities may take on new forms in response to global demands and to offer chances for lifelong learning. Furthermore, the teaching workforce faced additional obstacles as a result of the increase in immigration from non-native countries in America. Psychiatrists such as Hall, James, and Thorndike were among the educational scholars who aimed to comprehend the human mind and use psychology in the classroom. Progressive education, with its emphasis on child-centered learning for a changing democratic republic, was created as a result of this reevaluation of conventional methods (Milson, Andrew J. 2010).

### 2.3.3.1. AI's Ethical Implications (e. g., Algorithmic Bias in Grading)

The ethical ramifications of AI in education are profound, especially in terms of algorithmic biases and effects on students' privacy and fairness. Baker and Hawn (2021) note that while algorithmic bias may be believed to stem from socially unacceptable demographic inequalities, it could alternatively be a property of data or models to systematically err. Holmes and Porayska-Pomstač (2022) emphasize the necessity for continued ethical reflection and political debate around AI in education, with a focus on equity, transparency, and privacy. Keengwe (2023) emphasizes the necessity of stringent ethical safeguards, highlighting international collaboration as a key component in developing clear AI policies for education.

Regulation is critical to supporting ethical AI. The introduction of legislation like the EU GDPR and the US Algorithmic Accountability Act is crucial in encouraging the use of ethical AI. These laws make sure that AI systems follow norms of data privacy and transparency, as discussed by Ara and A Ara (2024). Another worry is the potential for biases in AI—particularly generative AI. Elmoudden and Wrenchč (2024: 27) argue that cultural bias can be perpetuated by AI systems, and teacher transparency and training in such seem important.

AI education will strongly rely on solving ethical challenges, including data privacy and teacher job security. Ethical issues and wide interests in profiling student data with algorithmic bias and bringing in transparent decision-making are must-dos for AI to be effectively embedded in education (Andre & Da Chen, 2025; Babulak, 2025).

Studies by Zichong Wang et al. (2024) demonstrate that AI-based educational apps tend to suffer from algorithmic, data-related, and user-interaction biases. This underscores the need for collaborative, multidisciplinary development of AI to ensure its ethical, responsible, and fair use. Danish et al. (2024) suggest that, although AI encourages collaboration and personalized restoration in educational

settings, ethical issues such as computational bias and the privacy of students have to be properly regulated. Continuous professional development for teachers is important to guarantee responsible use of AI, as stressed by Musa Ahmed (2025) and Narte. (2025).

Implementing AI in education carries both opportunities and challenges. Despite its potential to improve teaching and learning, many ethical considerations (algorithmic bias, data privacy, and fairness) need to be addressed with clear guidelines, ongoing oversight, and collaborative work among educators, decision-makers, and developers.

### **2.3.3.2. Mental Health Crises and Screen-Time Debates**

The effect of screen time on mental health, especially among children and adolescents, has been widely studied. Students in a San Francisco Bay Area public school where they all had 24/7 access to technology for communication and learning reported more issues with addiction, anxiety, and depression in a recent study. Teachers observed that technology disconnected students from their peers and teachers. Joiner et al. (2017) noted an increase in scores on measures of suicidal ideation and depressive symptoms in U.S. youth, with the trends most pronounced in girls in mid- to late adolescence from 2009 through 2015. Increased screen time was linked to a higher risk of reporting mental health issues, suggesting a dose-response relationship between screen time and mental health.

The downsides of screen time don't apply just to mental health. Hughes et al. (2020) reported that excessive screen time in children contributes to sensory overstimulation, sleep disruption, and physical problems like obesity and lung issues. Teenage attempts at suicide and feelings of worthlessness are also on the increase, with females more at risk. On the other hand, physical activity has been found to enhance mental health, notably during the context of the COVID-19 pandemic (Tandon

et al., 2021).

Screen viewing time, especially among youth, has sparked discussions about its effects on social, cognitive, and emotional development. Kaye (2021), as well as other researchers, say that the heavy use of screens can cause problems including addiction, depression, and declined cognitive function. Yet, the definition of screen time is inconsistent at all levels. The WHO defines sedentary screen time as the sedentary behavior of screen-based activities pursued while sitting or lying, which may have been previously described as passive viewing but is a meaningless psychological category.

Gibson (2023) underscored that excessive screen time is associated with negative outcomes. In a focus as narrow as that of a laser beam, one man exerts a powerful influence on the world in which we live. The APA highlights the detrimental effects of increased screen time on academic performance and mental health. To deal with these issues, experts like Nagar et al. (2024) call for restrictions on prolonged usage and education for the sake of promoting digital wellness. Their findings indicate that spending less time using screens is linked to better focus and reduced anxiety among school students, especially for girls, who tend to experience negative effects related to technology use.

In conclusion, technology is an important educational tool, but its overuse can harm mental and physical health with respect to young people. To prevent screen time from having a negative impact on cognitive and mental health, reducing exposure and promoting balanced use are key.

## **Conclusion**

In summary, the rapid digitalization of American education since the 1990s has changed how teaching and learning occur in schools and on college campuses by introducing new techniques and tools that have modified both how students use information and how teachers deliver knowledge. The development of computers,

networks, and multimedia applications has probably revolutionized the educational opportunities and accessibility of information and learning tools. But this change has also revealed and, in some cases, worsened the disparities that exist in educational opportunity and institutional support, especially for underserved communities.

This chapter has examined the impact of 20th-century educational reforms, including the GI Bill and civil rights laws, that helped to desegregate higher education and provide access to opportunities for those who had historically been marginalized. These reforms have led to greater democratization of education, as had been the intention, but have also resulted in evidence of structural inequalities—particularly in low-income, inner-city, and rural schools where the gap in technology access and teacher training further impedes learning, demonstrating a continuation of the status quo. That chapter considered the extent to which federal laws were intended to promote access to education through programs such as Title IX and the Individuals with Disabilities Education Act, but spotty enforcement and insufficient resources left such measures only partially successful.

The digital generation presents an increased potential for inclusivity through the proliferation of online learning and focus on STEM education but also presents challenges. Yet as technology became more interwoven in education, it exposed the problem of access and inequality that still lingered. Digital tools can sometimes reinforce the status quo, even though they have the potential to bring greater educational equity to the world. For instance, while bilingual education politics challenged nativism, STEM initiatives, despite their intended advancement, frequently perpetuated a limited range of academic and career pathways that prioritized some students over others.

As the chapter illustrates, the interplay of technology, policy, and disparities remains a central theme of the American education revolution. While the digital age has

undoubtedly opened up new learning opportunities, it has also exposed the current barriers to equitable access to these technological advancements. Though these advances have been made possible by federal legislation and school reform, significant disparities persist, and there is an urgent need for more holistic efforts to narrow the divide between technology haves and have-nots.

No doubt, the digital revolution has left American education a lot closer to the ideal of universal access and quality learning, and it has shed light on the ongoing need for sweeping efforts to take on the intransigent inequalities within the system. As we develop the digital era, we must ensure that all students, regardless of their background, parents' income, or residence, can benefit from these technological advances. The ongoing work will be to embrace the digital age's promise while staying aware of the structural obstacles that need to be dismantled to fully achieve educational equity.

## **General Conclusion**

Many people saw changes and reforms in American education following World War II, which gave rise to the idea for this study. Several variables, including social, economic, and cultural ones, were involved in this shift, according to earlier research. As a result of these reforms, the primary causes of these developments were investigated. This study also looks at how the government, technology, and internet affect and play a part in these transformations. Consequently, the first section explains the historical context of the changes that have occurred in the educational system since the late 20th century, as well as the ways in which Asian and African refugees have influenced these developments. In contrast, the second chapter looks at how the digital age has affected American schooling during the 1990s. In addition to discussing technology, educational reforms, and changes that have taken place in all areas of education, it also takes into account the immigrant population and efforts to level the playing field for them in the educational system.

In addition, we ask these questions in order to investigate how political, cultural, and technical advancements have improved the American educational system. First, what significant political and educational changes came about during this time? Furthermore, what role did they play in the equality movement? What are the ways in which technology has both helped and hindered education in various cultures and groups? And last, how far have these reforms helped to close the divide between native people and foreigners? These inquiries are predicated on three key theories. According to the first hypothesis, integrating technology into the classroom increases access for underprivileged children, but it also perpetuates inequality because of the unequal distribution of resources. The second makes the assumption that since the 1980s, policy changes have failed to remove systematic prejudices against low-income and immigrant groups and have instead placed a higher priority on standardization than equity. The latter makes the assumption that funding teacher professional development is positively connected with student accomplishment, especially in the areas of digital literacy and STEM (science, technology, engineering, and

mathematics).

Data was gathered from the literature and other studies on the subject in order to respond to the research questions and validate the hypotheses. First, it was discovered that technology—more especially, artificial intelligence and online open courses—was the primary driver of this progress. Like anything else, technology has drawbacks in addition to benefits. For example, it might impede the educational process for underprivileged groups and provide them with unequal access to the internet. Additionally, a number of educational innovations, including teacher professional development and policy reforms like "No Child Left Behind," have surfaced and improved student outcomes. The Civil Rights Act, which guaranteed immigrants and minorities the right to an education; the No Child Left Behind Act, which required better results for all students equally; and teacher professional development have all contributed to the process of equality between the native population and the immigrant population. The limitations of this study indicate the need for additional empirical and longitudinal research on the long-term effects of digital reforms across various student bodies.

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## ملخص

تتقضى هذه الدراسة العلاقة المعقدة بين التكنولوجيا والثقافة والسياسة والإنصاف والوصول في النظام التعليمي الأمريكي خلال أواخر القرن العشرين وبداية القرن الواحد والعشرين. وتستعرض بشكل نقدي تأثير الإصلاحات التاريخية والابتكارات الرقمية الناشئة على الشمولية التعليمية، مع إيلاء اهتمام خاص للمجتمعات المهمشة مثل الطلاب ذوي الدخل المنخفض، والمهاجرين، والسكان

الأصليين، والأقليات. وأجريت الدراسة باستخدام تحليل تاريخي ووصفي، مع الاعتماد على مصادر أولية وثانوية على شكل وثائق سياسة، ومقالات أكاديمية، ودراسات حالة، في محاولة لرسم تطور نماذج التعليم والسياسات وتطبيق التكنولوجيا. وكشف النتائج إلى أنه بالرغم من وجود جزء كبير من السياسات التحولية والاستخدام الواسع للذكاء الاصطناعي، والدورات التعليمية عبر الإنترنت، ونماذج التعليم الهجينة، إلا أن الفوارق لا تزال قائمة. نعزو هذه الفوارق إلى التوزيع غير المتكافئ للموارد، والتحديات الكامنة في النظام، والفجوة الرقمية التي تؤثر على الفئات الضعيفة. وتؤكد الدراسة على أهمية تطوير مهنيي التعليم واعتماد بيداغوجيا تراعي الثقافة في معالجة هذه الظلم. وتخلص إلى أن تحقيق الإنصاف التعليمي يتطلب خططا شاملة تتضمن زيادة الاستثمار في التكنولوجيا، وتوفير مواد تعليمية شاملة، ودعم سياسياً مستمرا، وجهوداً مجتمعية لسد فجوة الوصول. المختلفة.

**كلمات مفتاحية:** التعليم الأمريكي ، العصر الرقمي ، اصول التدريس الشاملة ، سياسة الاصلاح ، ا  
لابتكار التكنولوجي .