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## A Quick Look Back

*Education is a social process. Education is growth. Education is, not a preparation for life; education is life itself.*

—John Dewey

In the 235 years since declaring independence, America has grown and assumed a leading role in the world based upon the vision, dreams, and opportunity it offers: the vision to create a great nation that stood on the shoulders of great nations of history and looked forward, the dreams of freedom for all under a new form of government based upon the high ideals of citizen participation, and the opportunity to create oneself anew and forge a life of attainment and happiness for self and family.

While a wide range of factors has contributed to success in realizing our collective vision, dreams, and opportunity, one of the most essential has been the strength of our systems of public education. The evolution and advancement of the nation has gone hand in hand with broadening access to high-quality

schooling for its young. For most of the past century, we have viewed ourselves—and for the most part, rightly so—as leading the world in producing highly educated citizens and workers capable of meeting nearly any challenge. But there is a growing concern—one we have heard voiced by parents, business leaders, educators, and friends and colleagues from all walks of life—that we are perhaps not as up to the challenge as we once were, that America's existing educational system is not capable of supporting the country's future evolution and advancement.

To understand why this concern exists and why it is valid, it is important to grasp fully the extent to which human society has changed over time and the dramatic shifts that have occurred just within the past few hundred years. The history of the United States has taken place over four centuries, and during that brief period, the countries that now form the developed world have shifted from social and economic systems based on agriculture, to ones based on industry, to ones based on information. As David has argued in *The Shift Age*, a precursor to this book, we are now hurtling forward past the Information Age into something else entirely. It is only by appreciating the magnitude of these changes, and the legacies we still carry with us from past ages, that we can begin to understand how to transform education for the future.

## THE AGRICULTURAL AGE

Most anthropologists date the emergence of modern humans—beings with bodies and brains much the same as those we possess today—at between one hundred and fifty thousand and two hundred thousand years ago. Approximately ten thousand years ago, modern humans started literally to put down roots, and what we now refer to as the Agricultural Age began. We moved from a subsistence existence based on hunting and gathering off the land to one supported by cultivating the land. Over time, as we stayed on the land to reap the crops we grew, a nomadic way of life gave way to one more place based. This

transition, in turn, led to the steadier supply of nutrition and the complex social structures and interactions that fueled additional human development. Most of what we think of as the history of humanity, and all of its developed civilizations, came into being during these ten thousand years. The basic foundation of human society, even as we still know it today, was cemented during the Agricultural Age.

During the Agricultural Age, the populations of the nations lived close to and interacted on a daily basis with the primary source of food—the land. Wealth was generated from the land and cities were formed as marketplaces for the trading of what came from the land. Understandably, the rhythm of planting and harvesting determined the entire rhythm of life.

## THE INDUSTRIAL AGE

Thousands of years passed before we transitioned into the next major age in the history of humanity. Indeed, it is both remarkable and all too easy to forget that the shift from the Agricultural Age into the Industrial Age began less than three hundred years ago. Prior to the late 1700s, when commercially viable steam engines were introduced into the marketplace, the pace and culture of the civilized world remained governed largely by agricultural demands. The steam engine and a wave of other advances led to machines assuming a central role in the manufacturing of goods and the delivery of services. Products that formerly had to be produced painstakingly by hand, over many days or weeks, could be produced much more rapidly and at a much more consistent level of quality. Additionally, the use of the steam engine to power boats, and eventually trains, meant that both products and the people who made, bought, and sold them became much more mobile and connected than had ever been the case in the thousands of years prior.

The mass production of goods required large numbers of workers, and as a result, populations began to centralize and

cities grew dramatically in size. Urbanization, centralization, and mechanization were forces that recast the agricultural landscape and shaped much of what we still see around us today. As the farm was the economic basis for the Agricultural Age, the factory became the foundation for the Industrial Age.

The rhythms of the world started to change and to accelerate. The bucolic flow of the seasons on the farm and in the countryside gave way to the faster paced beat of the urbanized world. Factories, as they developed and became more sophisticated, introduced increasing levels of standardization and mechanization. Other new forms of transportation like cars, trucks, and then airplanes joined trains and steam powered boats. Equally dramatic advances in communication complemented the dramatic acceleration in transportation as inventions like the telegraph and telephone shortened distances and greatly decreased the time needed to get things done. It would be difficult to overestimate the cumulative impact of all of these changes—and so many more—on our collective perception and understanding of the world. Nor is it surprising that so great a shift, and one that occurred so rapidly, left many feeling at the time—and many still feeling—that we are capable of dominating nature, rather than nature dominating us, as it had during the Agricultural Age. Inventions, discoveries, and new technological wonders empowered humanity to feel in charge of its own destiny, ever less reliant on the variable rhythms of the land.

The apotheosis of this age for the United States came in the twentieth century, when it was widely felt that America defeated the Axis powers in World War II not just on the battlefield but on the factory floor. The explosion of industrial capacity and capability the war fueled flowed into the post-war era, resulting in material wealth on a scale and breadth unprecedented in world history. America was seemingly the proof that Industrial Age practices, carried to their logical ends, could provide widely and systematically for a higher standard of living, one well beyond the reach of our ancestors in the Agricultural Age.

Of course, it is worth noting that the Industrial Age did not end the activities or the broad cultural sensibilities of the Agricultural Age; it just subsumed them within a new economic, cultural, and social order. The mechanization and increased productivity of the new age brought tremendous gains, but the new focus on standardization, quantity, and speed that enabled these gains was in stark contrast to the much smaller scale and individualized approaches to living that had characterized the Agricultural Age.

## THE INFORMATION AGE

While the period of time from the early stages of the Agricultural Age to the beginning of the Industrial Age spanned many thousands of years, the gap between the Industrial Age and its successor spanned only a couple of hundred. In the United States, the roots of this new age began with the explosive growth in the number of college graduates due to the G.I. Bill after World War II. This growth led to office—or white collar—workers exceeding the number of factory—or blue collar—workers in 1957.<sup>1</sup> The late wonders of the Industrial Age, the radio, the television, the mainframe computer, and the first satellites in space ushered us into what is now commonly called the Information Age.

Even with these early technologies, it was clear that economic power based upon the production of goods, though certainly continuing, was giving way to wealth based upon information, communication technology, and knowledge. Any doubts about this shift began fading with the introduction of the personal computer in the mid-1970s, followed in the coming decade by the rapid widespread adoption of cell phones, fax machines, cable television, and the Internet. The amount of information in the world increased exponentially, as did the velocity with which it moved around the world. As Nicholas Negroponte put it in his 1995 book, *Being Digital*, we were rapidly moving from economies based on atoms—the building

blocks of material goods and services—to economies based on bits—the building blocks of digital goods and services.

The Information Age was in full maturity as the United States and the other developed countries of the world entered the current century and we wrestle with its impact even as we move beyond it. Indeed, we still wrestle with the legacy of each of the three major ages and the shifts that have come so rapidly over the past three hundred years. As we consider the current state—and the potential future—of our educational system, we must do so with a clear understanding of how it has been impacted by our experiences in the three ages.

## AMERICAN CHILDHOOD EDUCATION THROUGH THE AGES

In last thirty years of the 1700s, when the United States was formed, the Industrial Age was just beginning in England. This meant that the founding fathers of the country, and all its citizens, were products of the Agricultural Age. Its rhythms and culture shaped their thinking. The wealthy in America, as throughout the rest of the world, were the landed gentry. Many of the founding fathers were farmers and the majority of the population worked on the land. Well into the 1800s, given that the story of America was expansion westward, the settling of the land meant the farming of the country.

It was clear that the children of the new country needed education. This usually meant that a small town had a single school with a single teacher who educated children in the proverbial single room schoolhouse. Since the source of wealth was farming, the formal education of the young—to the extent it occurred at all—was structured around this economic reality. The school year was structured around the rhythms of agriculture. Children were let out of school in the early afternoon so that they could go home and help with the chores of the family farm. The school closed for a short time during the planting season—a spring break—so that the children could

help on the farm at this critical time. A long break over the summer, of course, was essential as it allowed children to both play in the warm weather countryside and to help with all the work on the family farm during this critical agricultural season. School began again in the fall when the harvest season was winding down. It is this Agricultural Age school calendar that educators of the Industrial Age inherited, and while many other aspects of school have changed, it is this calendar that is essentially the one in place in the United States today.

The Industrial Age took hold in the United States in the second half of the 1800s and was initially centered in the northeast part of the country. (A more advanced industrial economy is often cited as one of the reasons the North was able to defeat the largely agricultural economy of the South in the Civil War.) This new age brought with it the factories and the cities that, by 1900, had become the hubs of economic life across the country. Standardization, centralization, mechanization, and mass production became the economic metrics of the country—even more so as the Ford Motor Company introduced the assembly line and the scientific management principles pioneered by Frederick Winslow Taylor were widely adopted as an approach to efficient production. As school came to be seen more and more as a training ground for employment, it was natural that variations on these and other industrial concepts would find their way into the developing school systems of the day.

By the end of the nineteenth century, the single room schoolhouse with a single teacher had been largely superseded by larger, more institutionalized schools—more and more of them public. It would be misleading to say that schools were consciously and actively trying to emulate factories. Rather it was a drive toward creating a “common” school experience, based to a large extent on efforts by Massachusetts’s reformer Horace Mann, that shaped the school experience as we now know it. Nonetheless, it is no coincidence that schools built in the early 1900s looked “institutional” as institutions were becoming the new constructs of the age, and educators

were increasingly aware of the need to produce skilled workers capable of playing an active role in these institutions.<sup>2</sup> Just as factory workers were assigned to specific roles and tasks, children became segregated by age into grades. Days became divided into periods. Bells, similar to the bells and sirens of the factory, marked these periods. One teacher covering all subjects gave way to many teachers each covering one or two subjects. Instead of the teacher reporting to the village elders and parents, they started to report to the centralized educational structures of principals and superintendents.

When we look at the structures, both actual buildings and bureaucracies, of education today, they still largely resemble this model created during the one hundred years after the end of the Civil War. We have simply bolted Industrial Age operations and infrastructure onto an Agricultural Age calendar.

In addition, when we look at the general curriculum that children matriculate today in K–12, it is largely the one that was created in this same one hundred years: the three Rs; various categories of history; a foreign language; science classes; social studies; and some craft classes such as shop, cooking, and perhaps a music or art class. This was the curriculum of Industrial Age America, to prepare children to become moderately educated citizens who, if they did not go on to higher education, could nonetheless become productive adults in this mechanized, industrial society.

In the last twenty-five years of the 1900s, the Information Age began to influence education in the now delineated grades of K–12. Film gave way to videotape, language labs were created, classrooms—at least some of them—started to have computers in them, and audiovisual elements became a more integral part of the classroom experience. The new technologies that were shattering old business models and redefining culture crept slowly into the institutional buildings of K–12 education. The rise of the Internet—and more recently, developments that have made the web a powerful tool for collaboration, communication, and learning—have brought

increasing pressure for schools to be “connected” and to address the variety of challenges and opportunities that connectivity brings. This was the unfolding reality as America’s schools entered the current century, and the landscape, as we know, continues to change quickly. Even the few schools that were “state of the art” in 1999 and 2000 have become out of date as wireless and mobile technologies along with myriad other advances become a common element of students’ lives outside of school.

So here we are in the second decade of the twenty-first century with an education system for K–12 based much more in past than in present reality. We have a school year that was developed in the Agricultural Age to serve the economy and culture of that time. We educate our children in buildings that were constructed largely in the Industrial Age, in factories where a child enters the production process as a five-year-old in kindergarten and comes off the production line as an eighteen-year-old high school graduate. We have technologies in these education factories that are now outdated and woefully trailing the cultural and economic realities outside the school.

When we remember that our current reality is the product of changes that have occurred with breathtaking speed over the course of only a few generations, it is understandable that we are still attached to the views and practices of past ages. But the time has come to throw off the yoke of history. We can no longer educate our children, the future of our or any country, in such a legacy-bound way. It is essential to face forward and completely reimagine K–12—and beyond—education in America. The rapidly developing realities of the twenty-first century and the role that America can and should play in them necessitate a complete transformation of the K–12 educational experience.

This book is a call to action to create a completely new vision of American education.

### KEY POINTS

- There have been three ages of modern humanity: the Agricultural Age, the Industrial Age, and the Information Age. These past ages have entirely shaped K–12 education in the United States and around the world.
  - Our current school calendar is a legacy of the Agricultural Age.
  - The rise of schools as an institution parallels the rise of the factory in the Industrial Age.
  - Information Age changes to our school, while some certainly have occurred, lag behind the changes that have occurred in society as a whole.
- This legacy-based educational system from the past is outdated today and will not serve the needs of the future.