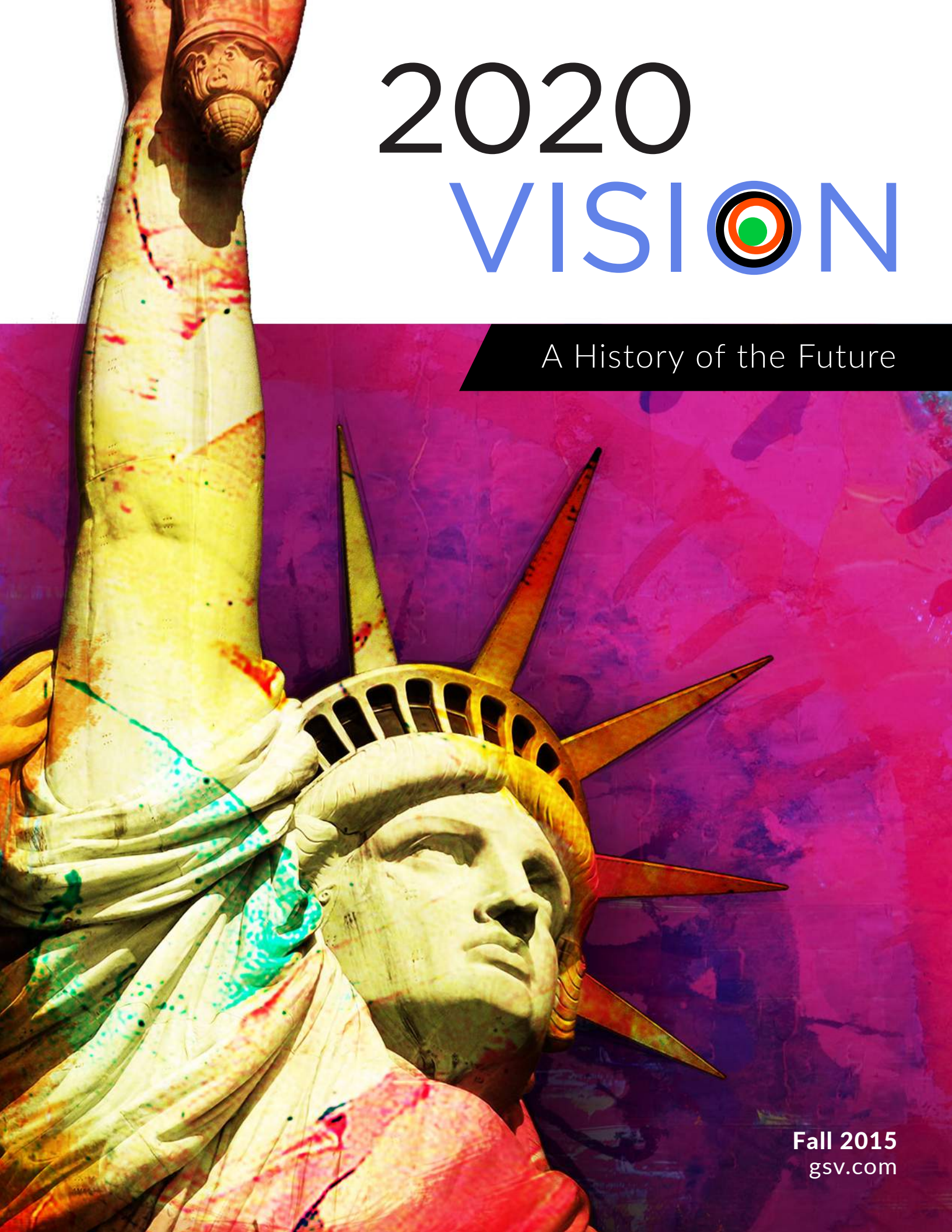
2020 VISION

A History of the Future



Fall 2015
gsv.com



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It's time to try defying gravity.

IDINA MENZEL FROM WICKED

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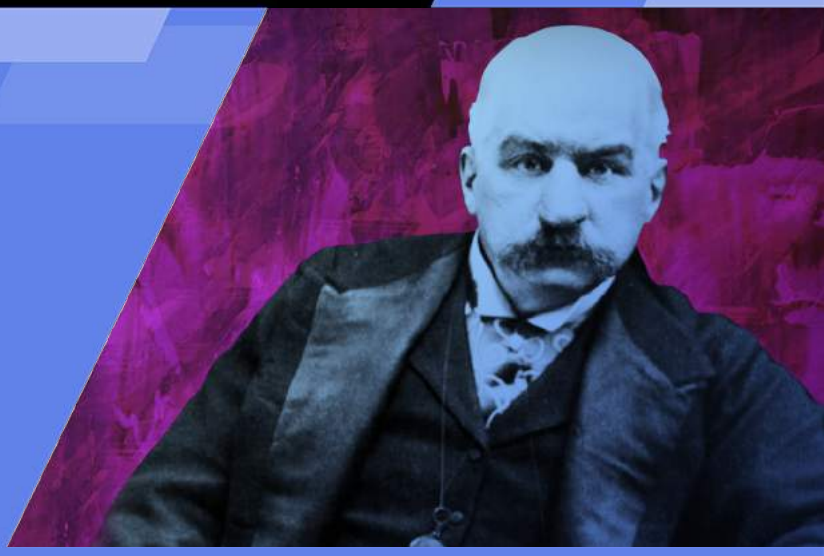
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PROLOGUE



When you expect things to happen,
strangely enough, they do happen.

J.P. MORGAN

Many people know the story of Andrew Carnegie, the poor Scottish immigrant who came to America with nothing but boundless ambition. Carnegie was the founder of what became the first billion dollar corporation in the United States when he merged his steel operation with a syndicate led by J.P. Morgan to form U.S. Steel in 1901.

Carnegie was determined to use his wealth for civic good and to create opportunities for others. He funded over 3,000 public libraries, Carnegie Mellon University, and Carnegie Hall on the way to giving away 90 percent of his net worth before his death.

A lesser known part of the story is that Carnegie commissioned an author, Napoleon Hill, to study the World's great leaders and achievers to determine the characteristics that led to their success. Hill traveled the World for 25 years for this assignment and recorded his findings in a book, *Think and Grow Rich*, which ultimately sold 20 million copies. The secret to success, Hill discovered from the people who made history, could be boiled down to one sentence: *Whatever the mind can conceive and believe, it can achieve*.

2020 Vision: A History of the Future fast forwards to a United States of America we believe is possible, and then puts the movie in reverse to show how we got there. Our overarching goal — *ensuring that everyone has an equal opportunity to participate in the future* — is a fundamental right in our belief system.

The lens we view this from is an optimistic, can-do perspective. We know there will be plenty of skeptics who give a multitude of reasons why we are wrong in our thinking, or point to the fact the authors are from the Bay Area and like to spend time in Colorado, where this must have been written.

We take the view that there is no option but to achieve our 2020 Vision and that there is magic in thinking big. The achievements of the past 100 years — from doubling the human life span, to wireless communication connecting every corner of the earth, to mapping the human genome, to putting a man on the moon — make the objectives put forth in this paper seem relatively simple in comparison.

Some of our optimism rises from the emergence of the Global Silicon Valley, which resides in the country of *ImagiNation*. The "can-do spirit" and entrepreneurialism that are hallmarks of Silicon Valley have gone global and viral. No longer are innovative ideas contained mainly between San Francisco and San Jose. They have spread to Austin and Boston; from Chicago to Sao Paulo; from Mumbai to Shanghai to Dubai.

The Boom of Big Ideas is transforming every industry, from Healthcare to Communications, Transportation, and Energy and it is in the midst of radically changing the $5 trillion global education industry. Companies are going from concept to "Billion Dollar Babies" at breathtaking speeds.

Imagination is a key ingredient in the transformation of existing industries. Re-conceptualizing a digital World, where computing power is doubling every two years and cost is plummeting, is the framework from which tomorrow's revolutionary companies will be conceived.

This is a paper of How, Now, and Wow. *How* we "did it." *Now*, as in when we started. *Wow*, as in what was accomplished and the impact on society.

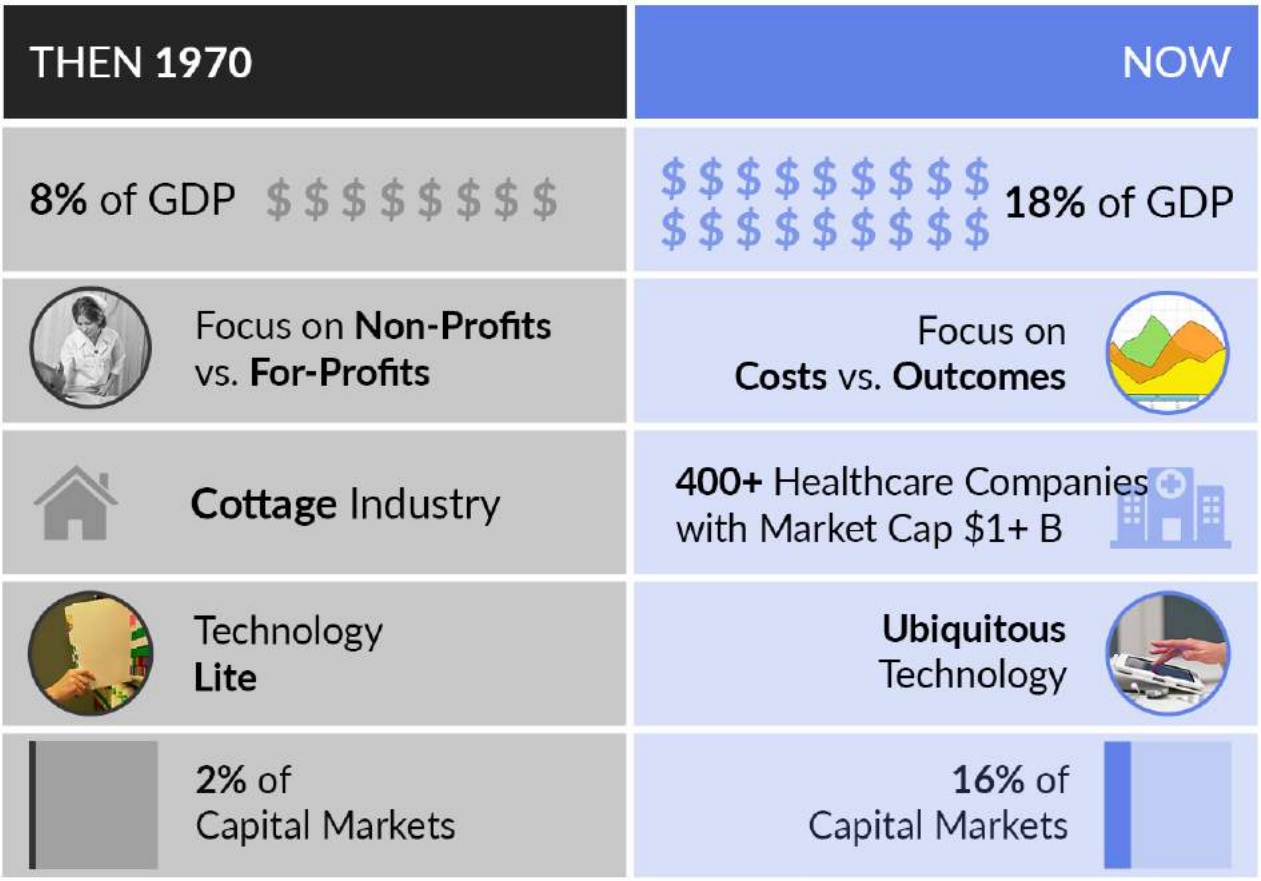
An analogy we use to frame where the Education Industry is today is to compare it to the Healthcare Industry 45 years ago.

In 1970, healthcare was a huge market — eight percent of U.S. GDP — but a highly fragmented cottage industry, characterized by limited technology and uneven service. Skeptics questioned whether investors could make money in the sector and critics debated whether they should. From an investor's standpoint, the sector was almost non-existent, with healthcare companies representing less than three percent of capital markets.

Today, healthcare is a much larger market, at over 18 percent of GDP, or $3 trillion. Spurred by significant capital investments, healthcare has emerged as a sophisticated, technologically-advanced sector that represents over 16 percent of U.S. capital markets. The industry has rapidly consolidated and is global. In 1970

there were just four companies with a $1 billion or greater market value… today there are over 400 companies that surpass this marker.

HEALTHCARE INDUSTRY, THEN AND NOW

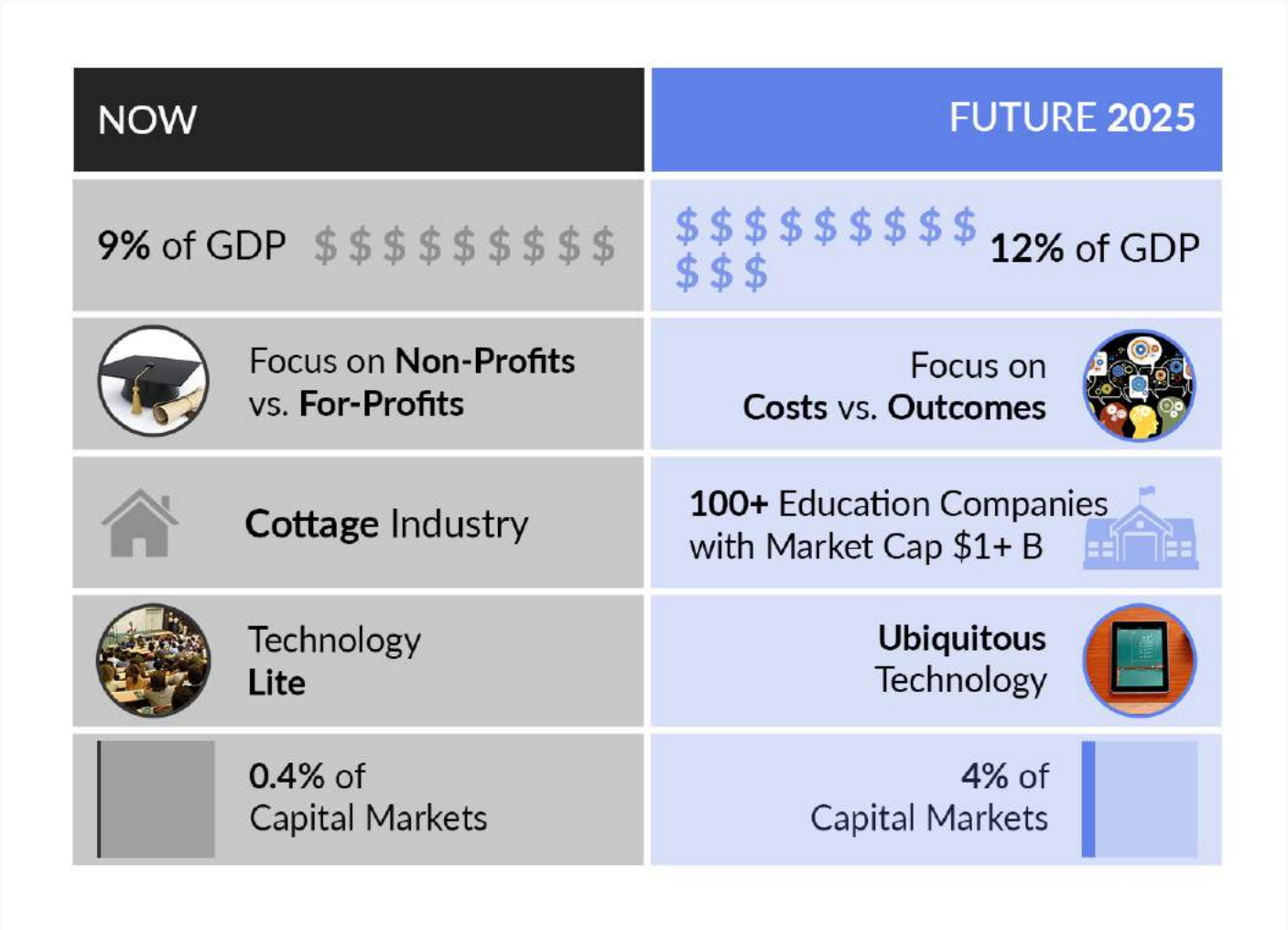


Source: Capital IQ, GSV Asset Management

Today, Education is a large industry at nine percent of U.S. GDP, second only to Healthcare, and larger than Defense and Social Security combined. Skeptics question whether investors can make money in the sector and critics debate whether they should. While education is large in terms of overall money spent, it is a widely fragmented cottage industry, with very few large individual companies.

A major difference between Healthcare and Education is that if 50 percent of the patients died that entered a hospital, they would close the hospital. In education, if 50 percent of kids drop out of a high school — to become the "living dead" — they bring in the next class. While the Education Industry has made important technology improvements over the past five years, when compared to what's transpired in almost every other industry, it has much ground to gain. As with Healthcare in the 1970s, talent is pouring into the industry, and there is more to come. Increased depth of professional management will catalyze solutions to massive problems and create large, scaled enterprises.

EDUCATION INDUSTRY, NOW AND 2025?



Source: Capital IQ, GSV Asset Management

Looking at capital markets, while education represents nine percent of GDP, it is just 0.4 percent of the U.S. Stock Market. There are only 11 Education companies with a market value of $1 billion or greater.

We believe the convergence that will take place between money spent in Education as percent of GDP and proportional representation in the public markets will translate into the 12 percent of GDP and four percent of capital markets over the next 10 years. This represents a mind-blowing *trillion* dollar opportunity.

Nothing is more powerful than an idea whose time has come.

VICTOR HUGO

Supporting our thesis that massive change is upon us, venture capital investment has been growing at a 45 percent rate into education companies over the past five years, reaching nearly $2 billion in 2014. Activity and interest from the same people who funded **Facebook**, **Twitter**, **Dropbox**, and **Uber** is evidence of rapidly growing scaled opportunities, for the first time ever, in the second largest segment of the economy… we call these EdTech businesses "Weapons of Mass Instruction."

Talent is equally distributed by zip code, but opportunity is not. Our mission is to change that. We believe that the combination of a clear blueprint for the future and aligning incentives with objectives will help catalyze the right ideas. Capital targeted at companies that demonstrate the greatest learning outcomes will turbocharge these concepts into impact.

We can create this type of future. We just have to believe it to achieve it.

EXECUTIVE SUMMARY



Whether you think you can, or you think you can't – you’re right.

HENRY FORD

A History of the Future

By 2015, there was a widely held belief that America was an empire in decline.

Some said it was inevitable and was just following the arc of fallen World Powers before it, such as Great Britain and the Roman Empire. Others felt the steep fall from being the sole global Superpower was from self-inflicted wounds, such as high deficits, disastrous wars, escalating economic inequality, permanent government gridlock, and flagrant immorality.

What was clear was that the United States had lost its *MOJO* and its way. The American Dream — the limitless opportunity the United States symbolized, and the aspiration for your family having a better life than your own — had become a fantasy.

Occupy Wall Street was a movement that highlighted the perception and fact that fewer and fewer people were participating in the future. Technology and Globalization were twin forces wiping out marginal jobs and making career obsolescence a new reality for many.

The Global Knowledge Economy required a well-educated populace, but international academic tests revealed that American students were not globally competitive. Persistently high drop-out rates, especially in large urban school districts, were effectively creating the "living dead." For those able to graduate from college, jobs were scarce and the $1.2 trillion of student debt was suffocating.

It became self-evident that not only was the United States' stature at risk, but growing inequality threatened the democracy itself.

Rather than take this fate without a fight, leaders came together in Beaver Creek, Colorado, in the fall of 2014, to map out an alternative path than the "Road to Ruins." While there were many different issues that needed to be addressed,

leaders agreed that the overriding issue to restore the fabric of the United States was that EVERYBODY needed an equal opportunity to participate in the future.

For a country as great as America, it was unacceptable that opportunity was defined by the parents a child picked. Redistribution of wealth was a non-starter, but redistribution of opportunity was imperative.

With this fundamental truth as the compass, the destination for the New America was set. True North was that *every person in the United States was to be provided equal opportunity to participate in the future*. The foundation for this inalienable right would be built upon universal access to World-class education and relevant knowledge.

Cynics and Skeptics gleefully pointed to the decades of well-intentioned failures and looked at the "2020 Vision" as another fool's errand.

You don't just accidentally show up in the World Series.

DEREK JETER

Recognizing that there was no "Silver Bullet" that would magically and instantly reach the destination, a comprehensive game plan was created to "March" towards the goal, step by step. Jim Collins, best selling author of ***Good to Great*** and management guru, catalyzed the Beaver Creek group's journey toward a "20 Mile March." A mantra of, "whether you think you can or you think you can't, you're right" was adopted by the architects of the 2020 Vision, along with an attitude that the "planks were drawn."

A story that inspired the leaders of this movement was that of Gordon Moore, who in 1965 predicted that the number of transistors on an integrated circuit would double every two years. The effect of "Moore's Law" was that computing

power would double every two years for the past 50 years and/or the cost would be cut in half. If the automobile industry would have had its own Moore's Law, a **Ford** *Taurus* that cost $20,000 in 1990 would essentially be free and you'd throw it away after you drove it.

Interestingly, while Moore's Law was the foundation and catalyst behind the Technology Revolution, it's not a *physical* or *natural* law.....it was a *conjecture*. In other words, the "Law" that has transformed computing and society was really more of a vision of what could become. It was a force of will. Nonetheless, the belief in Moore's Law allowed engineers and technologists to imagine a World where you could have a computer in your pocket, self-driving cars, and personalized medicine.

So, in effect, Moore's Law became like gravity... inevitable.

The 2020 Vision was quite clear: equal opportunity for everybody to participate in the future. With our destination in mind at the start, we ran the March in reverse to the beginning — the status quo in 2015. From there, we mapped out the steps of our March, which is the script of how we got to where we are today in 2020.

The March

OUR 10 SIGNPOSTS



We identified 10 "signposts" on the march towards our goal of giving everyone an equal opportunity to participate in the future. These signposts were key indicators that we were on track to reach our destination. For each signpost, we identified the impediments, needs, and solutions to optimize our outcomes and fulfill the mission of our journey.

AMERICAN DREAM



I always believe that the sky is the beginning of the limit.

MC HAMMER

The aspiration for the American Dream had been a driving force for much of our country's history. The term was first coined by James Truslow Adams in ***The Epic of America***, a book written during the Great Depression that imagined a very different future.

The vision was for a prosperous meritocracy. America's rapid emergence in the years that followed, coupled with two wars that left the Old World in tatters, solidified its position as a global power. But our greatest achievement was conquering the World's imagination. The United State became a symbol of limitless opportunity.



The American Dream is that dream of a land in which life should be better and richer and fuller for everyone, with opportunity for each according to ability or achievement.

JAMES TRUSLOW ADAMS

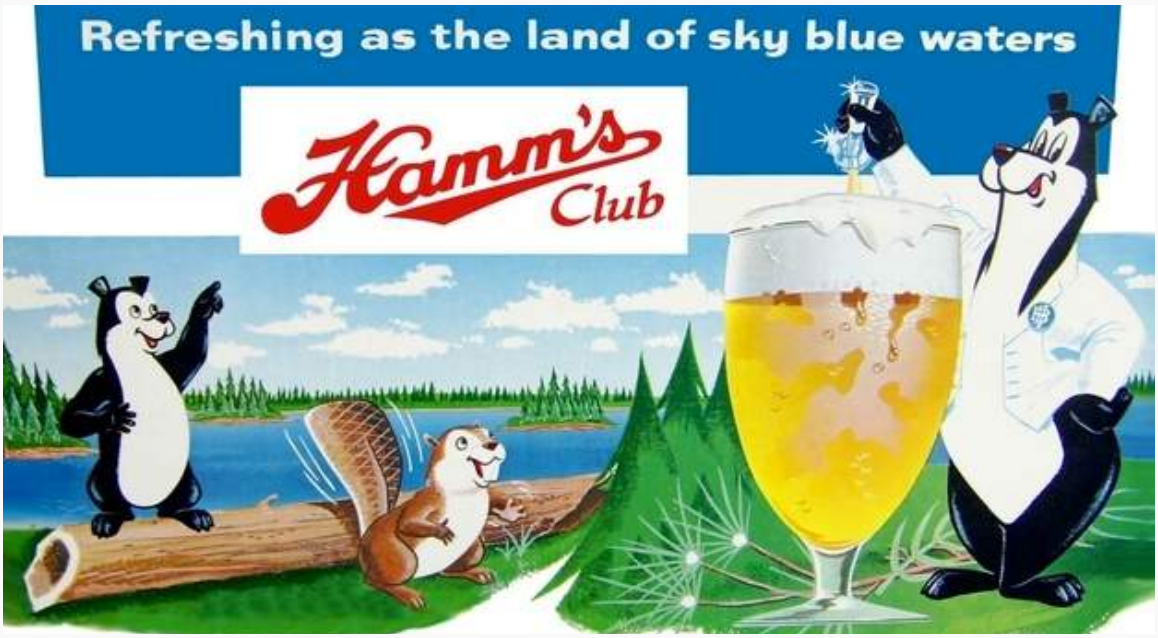


This was a very different model than those of the World powers that came before us. While the major dynasties of history were created through conquest, America became an empire of ideas.

The invention of America in 1776 marked the arrival of a disruptive global platform — a government, "For the people and by the people." While imperfect, this platform stood apart from others because it was built on new fundamentals: Equal opportunity to life, liberty, and the pursuit of happiness. People were willing to give their lives for this idea. Effectively, America was the World's first "open platform" that would integrate anybody, regardless of their race, religion, or social class. Founded entirely by immigrants — risk-takers and entrepreneurs who navigated uncertain waters to the New World — innovation and grit were part of our DNA.

My own family's American Dream story began with my grandfather, Odd Moe, who in 1912, traveled with his family by ship from Trondheim, Norway, through Ellis Island, to Duluth, Minnesota. My grandfather Moe had a 4th grade education, but through sheer persistence, was able to become the President of Hamm's Brewery in St. Paul, Minnesota.

HAMM'S BEER



His two sons — one of whom is my Dad — both went to law school. Whenever I talked to my grandfather, he was never interested in my sports achievements. He wanted to know how I was doing in school because he recognized that education would create opportunities for his family.

Pioneers + Mavericks

My Grandfather's story is one of millions of stories of immigrants that came to this country to seek a better life. Andrew Carnegie was a Scottish immigrant who was dirt poor but ultimately created what became **U.S. Steel**, the World's first billion dollar market value business. Andrew Carnegie took the money he made from the

sale of his company and reinvested it in over 3,000 public libraries, as well as Carnegie Mellon University. He believed passionately that knowledge and education multiplied access to opportunity.

Amadeo Giannini came from an Italian immigrant family and wanted to create a bank for the "little guy." In his time, banking was the privilege of the Cultured Class. So, in 1904, Giannini started the Bank of Italy in San Francisco. In 1906, San Francisco was hit with a devastating earthquake that reduced his bank to rubble. But instead of cursing the heavens and quitting, Giannini crawled through the wreckage to retrieve assets. By 1919, the Bank of Italy had become the largest bank in America by number of deposits, and in 1928 he changed the name to **Bank of America**. Today, it's a $160+ billion[1] market value business.

Courage is being scared to death and saddling up anyway.

JOHN WAYNE

Sam Walton was able to go to college through his army service. After graduating, he started Walton's Five and Dime in Missouri. That business promptly failed. He then opened a second Walton's Five and Dime in Missouri, and that business went broke as well. He moved to Arkansas and his third try went a bit better. **Walmart** became the largest retailer in the World, with a $200+ billion market value.

Howard Schultz grew up as an immigrant's son in the projects of Brooklyn, New York. His father, who was an oft-unemployed janitor, couldn't imagine the type of things Howard was ultimately able to do. Howard went to college only because he secured a football scholarship to Northern Michigan University. After college, he moved out to Seattle, where he was a household appliance salesperson. Howard came up with the idea for what **Starbucks** would become on a trip to Europe, where he witnessed the connective power of the local coffee bar. Starbucks took

[1] Market value estimates, as of September 2015

the power of "local" and made it global, with 21,000 shops in 63 countries, and a market value of $80 billion[2].

Steve Jobs was the son of immigrants twice over. His natural father was a Syrian immigrant and his mother was of Swiss descent. His adopted parents were Armenian Americans. Jobs had a vision of creating an "insanely great" computer, but what he ultimately created was **Apple**, an insanely great company, with the largest market value in the World at $700+ billion.

Sergey Brin immigrated to the United States from Russia as a six-year-old. With his partner, Larry Page, Sergey took on the challenge of organizing all of the World's information. They started **Google** in a garage, but today it is a $400+ billion market value business with over 1.2 trillion searches per year. Not only is Google organizing all of the World's information, but the company has brought us Google Maps, Google Earth, Gmail, YouTube, Android, self-driving cars, Google Glass, and who knows what's next.

The attitude of Americans has long been that no challenge is insurmountable if you have a big enough vision and are willing to work hard. This mindset is what made America great.

The American Century

Historians have called the 20th century the "American Century" because of America's success by almost every metric. From economics to social developments, to politics, America blossomed into an incredible power. The fundamentals of this success were based on innovation, education, and immigration.

INNOVATION

[2] Market value estimates, as of September 2015

Initially, America "borrowed" great ideas from other parts of the World, brought them to our shores, and commercialized them. James Watt invented the steam engine in England in 1781. In America, Oliver Evans used the design to create a high-pressure steam engine with a broader range of commercial applications, including the steamboat. The locomotive was invented by George Stephenson in England in 1814, but it wasn't until the completion of America's Transcontinental Railroad that people saw the impact this invention would have on commerce and transportation.

The automobile was invented by Karl Benz in Germany in 1886. You may recognize the last name, but it was Henry Ford in Detroit in 1903 who pioneered the use of assembly lines to produce cars for the mass market. Ford once quipped, "You can have any color you want as long as it is black." This innovation introduced the World to the automobile era.

EARLY AUTOMOBILE, KARL BENZ DESIGN

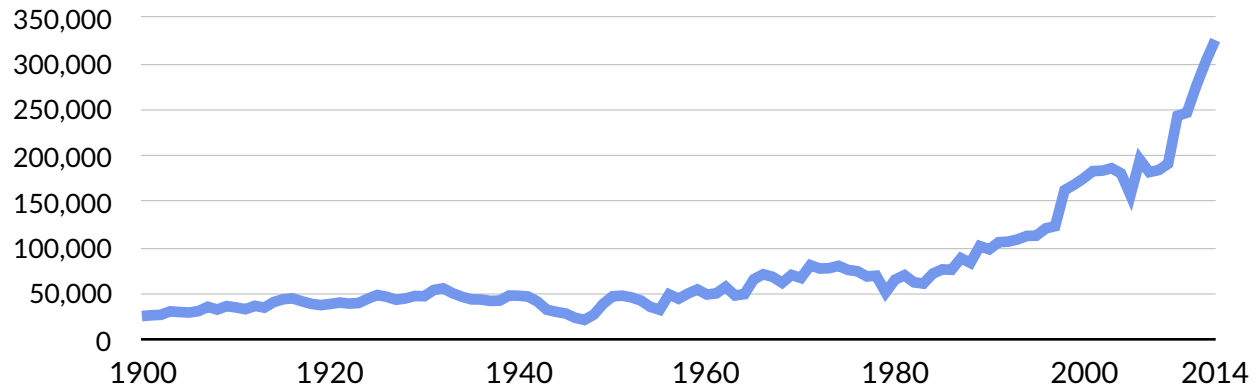
Germany, 1886



Over time, America became a nerve center for innovation in its own right, a trend that accelerated in the second half of the 20th century. The dramatic growth in patents issued per year is a rough proxy for this trend.

U.S. Innovation Surge

Annual U.S. Patents Issued, 1900-2014



Source: U.S. Census Bureau, The Race Between Education and Technology (2008)

KEY TAKE-AWAYS

In 1899, Charles Duell, then Commissioner of the U.S. Patent and Trademark Office, mused that, "Everything that can be invented has been invented." From 1900 to 2014, the number of patents issued annually went up twelve-fold, from 26,000 to over 325,000.

EDUCATION

The second key driver of the American Century was education.

In 1837, Massachusetts legislator, Horace Mann, borrowed from aspects of the Prussian education model to make the case for a system of free and open public schools in the United States. Horace Mann's call actually echoed an approach that was evolving organically across the country. But in elevating the issue to the national stage, Mann helped usher in America's great "invention": Universal Access to high quality education.

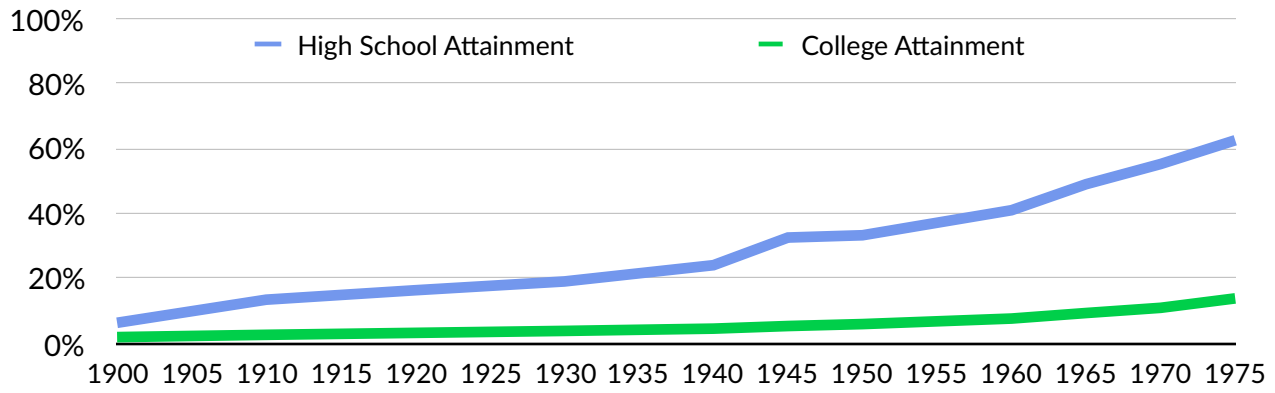
America's second major education innovation came from Vermont Senator Justin Morrill and President Abraham Lincoln in 1862. Morrill penned the *Land Grant College Act* to fill a growing void of education institutions that could meet the practical demands of an industrializing nation. It provided federal support for the development of colleges focused on "Agriculture and Mechanic Arts."

For most of the 19th century, the vast majority of American workers were employed in jobs that did not require much formal education. As late as 1870, over half of the labor force was in Agriculture. In contrast, by 1920, more than a quarter of the nation's workers had jobs in occupations for which a high school or college education was expected.

The bill ultimately created a constellation of great public education institutions, including the Universities of Minnesota, Missouri, Wisconsin, and Connecticut, providing more access to the masses. Ironically, neither Abraham Lincoln nor Justin Morrill had any formal education of their own, let alone a college degree.

U.S. Education Surge

U.S. Education Attainment, 1900-1975 (Age 25+)



Source: U.S. Census Bureau, The Race Between Education and Technology (2008)

KEY TAKE-AWAYS

From 1900 to 1975, high school education attainment increased more than 10x, from six percent to 63 percent. During the same period, college completion increased from two percent to nearly 15 percent. The key driver was America's evolution from an agricultural economy to an industrial economy that demanded an educated workforce.

President Franklin Roosevelt led the third defining education initiative of America's history. The G.I. Bill of 1944, which FDR called the "Second Bill of Rights," provided college education and other training to *nine million* veterans returning from World War II. Detractors scoffed at the scope and price tag of the legislation. However, FDR recognized that while America may have prevailed on the battle field, a failure to re-engage veterans as productive members of society upon their return would destroy his country's long-term competitive advantage.

Taken together, these initiatives drove broad gains in education attainment for much of the 20th century. In 1900, just six percent of adults had completed high school and a minuscule two percent had a college education. By 1975, over 60 percent had a high school degree and nearly 15 percent had a college degree.

IMMIGRATION

The third pillar of the American Century was immigration. As Ronald Reagan once said:

> *You can go live in France, but you cannot become a Frenchman. You can go live in Germany or Turkey or Japan, but you cannot become a German, a Turk, or a Japanese. But anyone, from any corner of the Earth, can come to live in America and become an American.*
>
> **RONALD REAGAN**

The power of that idea has motivated people all over the World to come to our shores. And immigrants have consistently done extraordinary things in their adopted home. Some of the World's great brands and businesses were created by immigrants to the United States. In fact, 42 percent of Fortune 500 companies were started by immigrants or their children, as well as 60 percent of the top 25

technology companies. Immigrants have been twice as likely to be granted a patent than a native-born citizen.

For much of the American Century, there was a strong pipeline of immigration to the United States, providing motivated, innovative human capital that helped create a thriving nation.

OLD MACDONALD HAD A POINT

GDP per capita, perhaps the most telling measure of both quality of life as well as standard of living, went up nearly five-fold from 1900 to 1975, pressed forward by innovation, education, and immigration. At the same time, income inequality plummeted. In 1928, the top one percent of wealthy American families captured 24 percent of the nation's income. By 1975, it was only nine percent.

Looking back on the American Century, you might say that Old MacDonald had a point… E I E I O. Our prosperity was based on ***EDUCATION***, ***INNOVATION***, ***ENTREPRENEURISM***, ***IMMIGRATION***, and ***OPPORTUNITY***. These were the ingredients that led to great success.

OLD MACDONALD HAD A POINT… E. I. E. I. O.

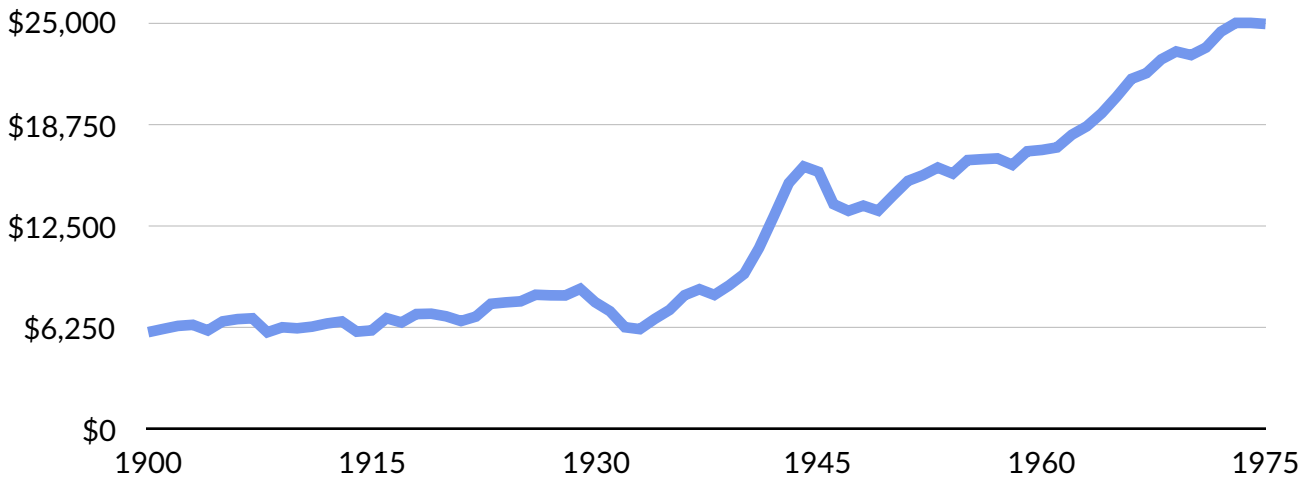
Education, Innovation, Entrepreneurism, Immigration, and Opportunity



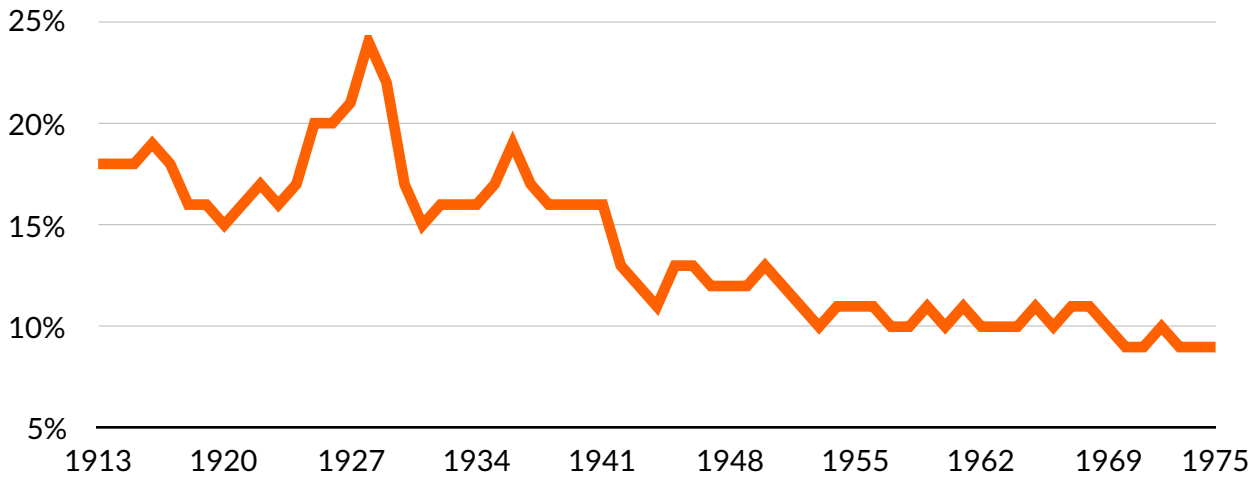
Source: GEICO

Opportunity Soars

***Increasing Wealth**: U.S. GDP Per Capita Increases 4x, 1900-1975 (2009 Dollars)*



***Decreasing Inequality**: Top 1% Share of U.S. Income Decreases 50%, 1913-1975*



Source: U.S. Census Bureau, MeasuringWorth, Income Inequality in the United States (Picketty and Saez, 2013)

KEY TAKE-AWAYS

From 1900 to 1975, opportunity, as proxied by GDP per capita, increased over 4x due to technology innovation, growing access to education, and a strong immigration pipeline. At the same time, inequality decreased 50 percent. The share of income captured by the wealthiest one percent of American families fell from 18 percent to nine percent.

Opportunity Stalls

Hall of Fame Football Coach Lou Holtz has a saying: “You get better, you get worse, but you don’t stay the same.” Unfortunately, in the 1970s, America did not get better, and in many ways, the country came unhinged.

Beginning in 1900, median income increased consistently for 75 years. But in 1975, it began to flatten — a trend that held fast through 2015. Backing out the enormous influx of women into the workforce during this period, median income actually began to decline.

GDP per capita growth slowed in 1975 as well. At the same time, income inequality swelled. The American Century was turned on its head.

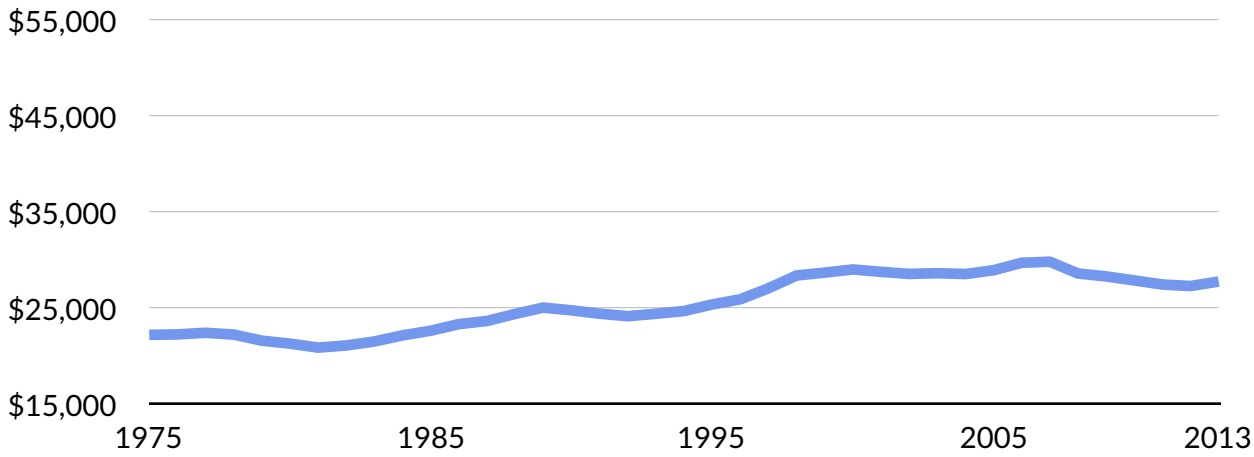
HITTING THE BRAKES ON THE AMERICAN DREAM

The Rapid Expansion of the American Dream Came to a Sudden Stop in the 1970s.

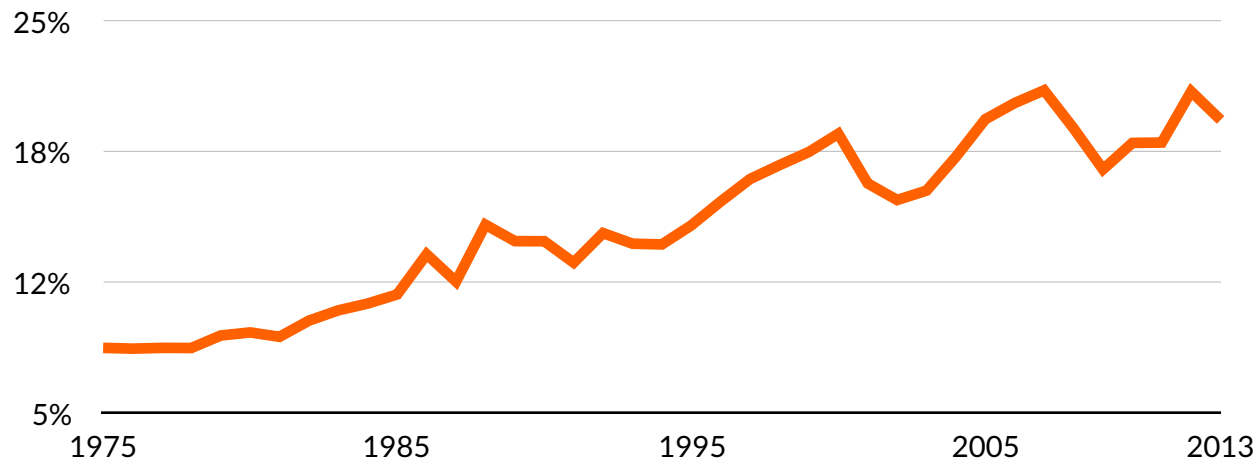


Opportunity Stalls

***Median Income is Stagnant**: U.S. Median Income, 1975-2013 (2013 Dollars)*



***Income Inequality Soars**: Top 1% Share of U.S. Income Increases 3x, 1975-2013*



Source: U.S. Census Bureau, MeasuringWorth, Income Inequality in the United States (Picketty and Saez, 2013)

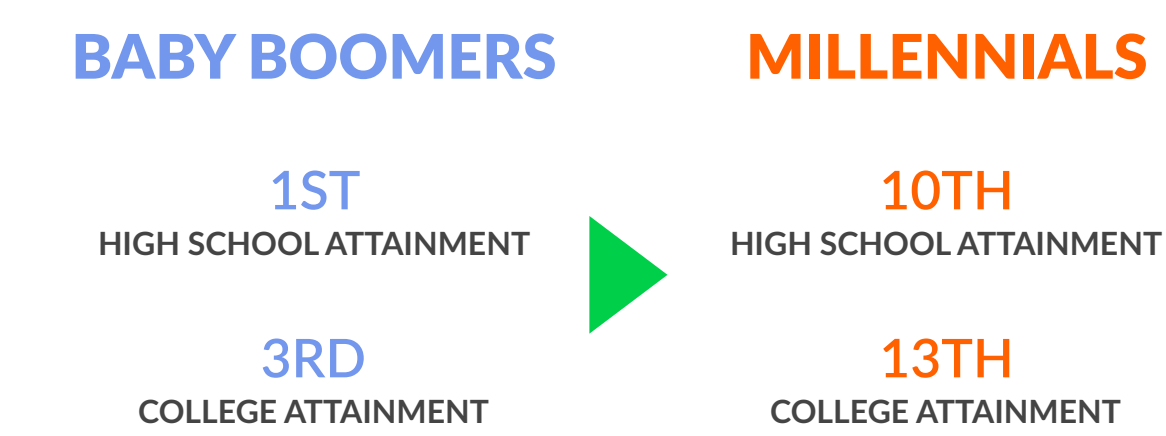
KEY TAKE-AWAYS

From 1975 to 2013, opportunity growth stalled in the United States as evidenced by a stagnant medium income, which actually *decreased* for men. At the same time, income inequality increased 3x, as the wealthiest one percent of American families increased their share of U.S. income from eight percent to over 20 percent.

The fundamentals that drove the Boom flattened or declined. The Baby Boomers were first in the World for high school attainment and third for college attainment. The Millennial Generation coming through the system had dropped to tenth and thirteenth, respectively. In fact, the United States was one of the only countries in the World whose ascending workforce had no more years of schooling than the one that was retiring.

America Falls Behind in the Global Education Race

America's World Ranking in Graduation Rates, Baby Boomers vs. Millennials



Source: Council on Foreign Relations

Immigration, which was an amazing driver of growth, became a good news-bad news story. The good news? We continued to attract the best and the brightest to our universities. In 2014, a record 886,000 international students came to America.

The bad news is that we only issued 85,000 HB-1 visas… documents that enabled people to stay for work. In essence, we were sending the smartest people back to their homes to build the next **MercadoLibre** or **Baidu**.

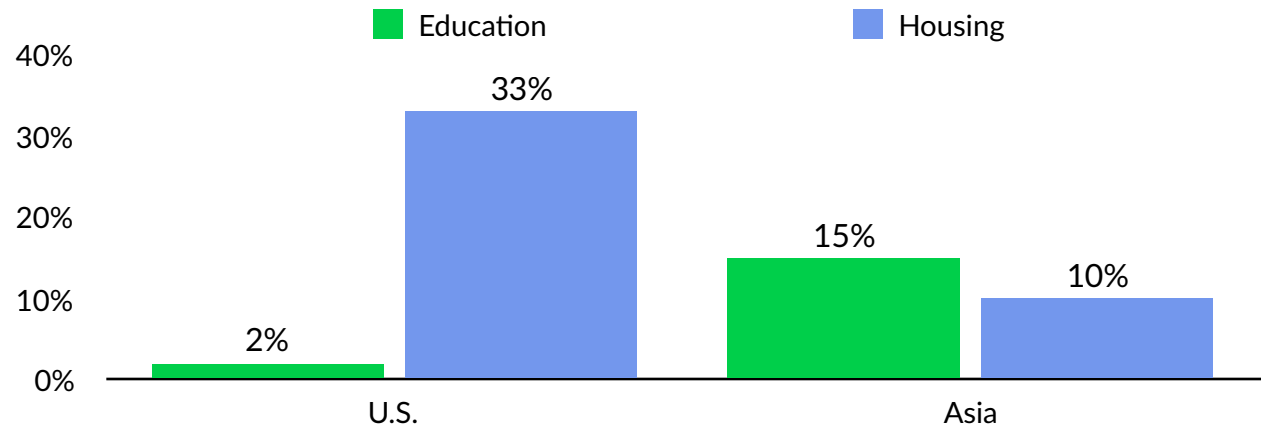
While America Slept

While America slept, the rest of the World woke up. Countries began taking pages from America's "E.I.E.I.O." playbook and adopted them to create their own prosperity. By 2020, China had a larger economy than the United States and priorities tell a big part of the story.

You can tell a lot about people by how they spend their time and money. In the United States, two percent of household income was spent on education. In Asia, it was 15 percent. While we spent 33 percent of our income on housing, it was only 10 percent in Asia. So, in other words, families in Asia spent over 7x as much on education while we spent over 3x as much on housing.

American vs. Asian Spending: Vastly Different Priorities

Education & Housing as a Percentage of Household Expenditure (U.S. vs. Asia)



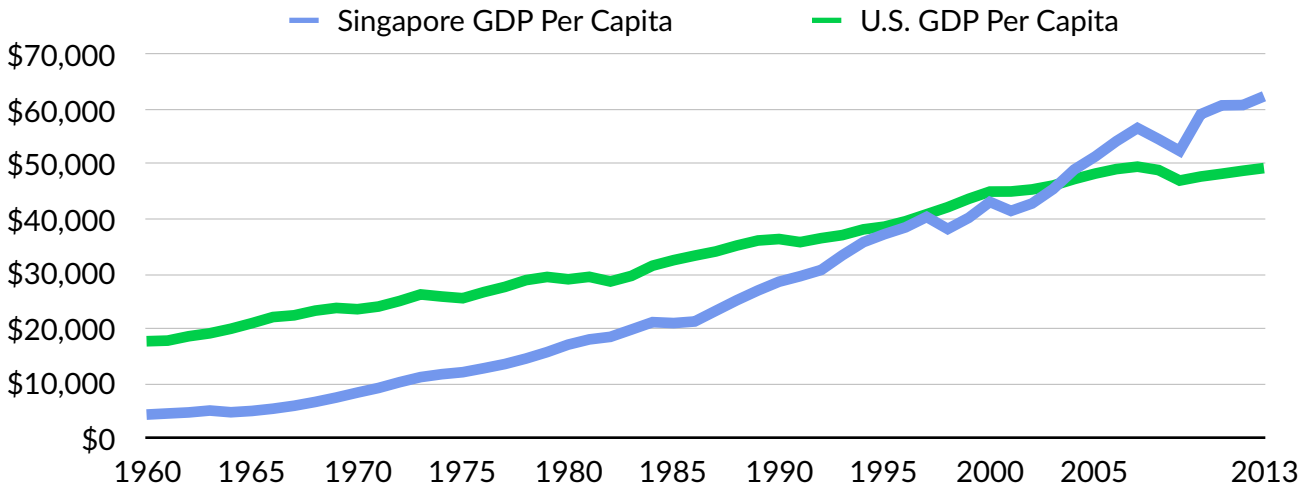
Source: U.S. Bureau of Labor Statistics; CLSA Asia-Pacific Markets

In 2020, India had four times as many college graduates as the United States. China, was projected to have 200 million graduates by 2030 — a group larger than the entire U.S. workforce. But Singapore might be the best example of borrowing a proven human capital playbook and implementing it in incredible fashion.

When Singapore secured independence in 1965, the idea that it would become a global economic powerhouse would have seemed preposterous. Most of the country's population of two million were illiterate and 70 percent of its GDP derived from port and warehousing activities. Yet, Singapore, led by Prime Minister Lee Kuan Yew, *willed* itself into the modern era through innovation, grit, and a relentless commitment to improvement — an ethos that still drives the city-state.

Singapore: Rise of the Garden City

GDP Per Capita in the United States and Singapore, 1965-2013



Source: World Bank

KEY TAKE-AWAYS

In 1960, Singapore's GDP per capita was $4K, compared to $18K in the United States. Since then, it has increased 14x to $62K, surpassing America in 2004. During this period, Singapore transitioned from a regional backwater to an economic power by constantly anticipating and developing the skills needed to compete and thrive in the global economy.

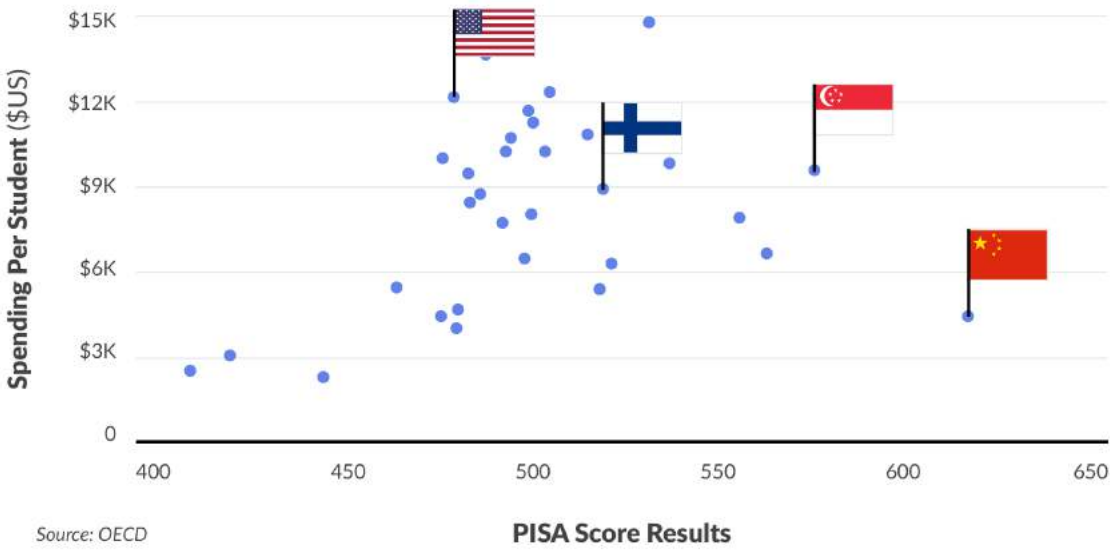
Constantly evolving their school models to align with global talent demands, Singapore branded its education system, "Thinking Schools, Learning Nation." As Chan Heng Chee, a former ambassador to the United States once observed, "For Singapore to survive, we have to be extraordinary… If we were ordinary, we would

just disappear." Today, Singapore's GDP per capita exceeds that of the United States.

An examination of the United States education system was a study in contrasts. We were still clinging to a model developed over a century earlier and our students were falling behind. For too many, the future was "just disappearing," despite a furious rate of spending.

Everybody was familiar with the PISA studies that revealed mediocre U.S. academic performance compared to our international peers. Interestingly, when the results were graphed against the amount of money spent on education, it was clear that *money doesn't buy happiness*. In aggregate, America spent more money than any country in the World on education, and nearly as much as the highest spender on a per student basis. In contrast, China/Shanghai spent one fourth as much per student but was the top performing country in the World.

Money Doesn't Buy Happiness



KEY TAKE-AWAYS

In 2012, more than 500,000 students, aged 15 and 16, took part in a two-hour aptitude exam administered by the Program for International Student Assessment (PISA). The United States ranked 36th, on par with Hungary, Russia, and the Slovak Republic, despite one of the highest rates of spending per student.

The Poverty-Education Cycle

It has always been true that education is a great equalizer. By the same token, unequal access to quality education perpetuates cycles where people are effectively barred from participating in the future by virtue of the zip code where they are born.

In this sense, President Obama rightly observed that, "Income inequality is the defining challenge of our time." There was a direct correlation between family income and academic outcomes, and the problem was growing more acute. In 2000, there were four states where 50 percent or more of the student population was low income. By 2014, it was 21 states.[3]

The deck was stacked against students from low income families at every step of the education pipeline. They significantly trailed their peers in reading and math skills from the moment they entered kindergarten. A disadvantaged start had a cascading negative impact. Only 50 percent of low income students graduated from high school, versus 80 percent of students from high income families.

THE POVERTY EDUCATION CYCLE

Low income Students Started Behind and Stayed Behind in the U.S. Education System

Ladder Rungs	Low Income Student*	High Income Student*
Kindergarten Readiness	48%	75%
Graduate from High School	51%	83%
SAT Scores *(Reading + Math)*	937**	1142**
Graduate from College	9%	77%

Source: Brookings Institution, College Board, Pew Research Center

**Low Income = Bottom-Third Family Income; High Income = Top-Third Family Income*

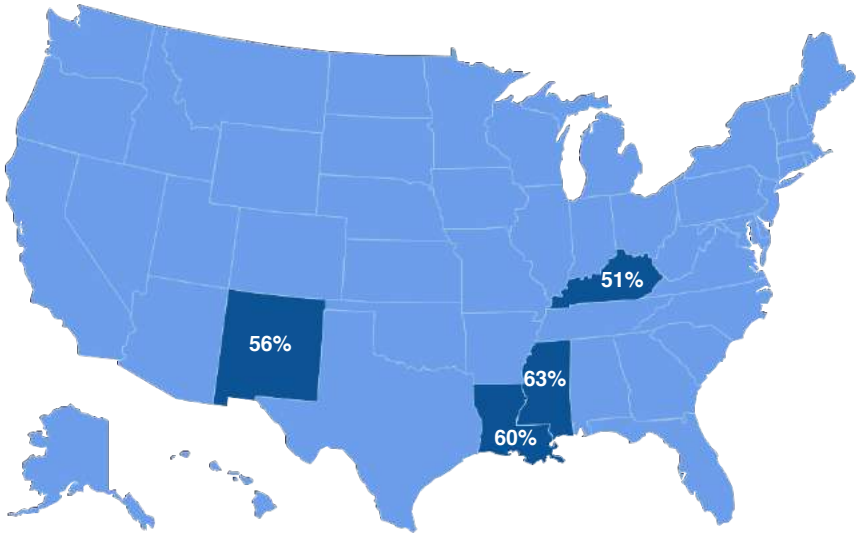
***Low Income = Family Income of $20K-$40K; High Income = Family Income of $200K+*

[3] Southern Education Foundation

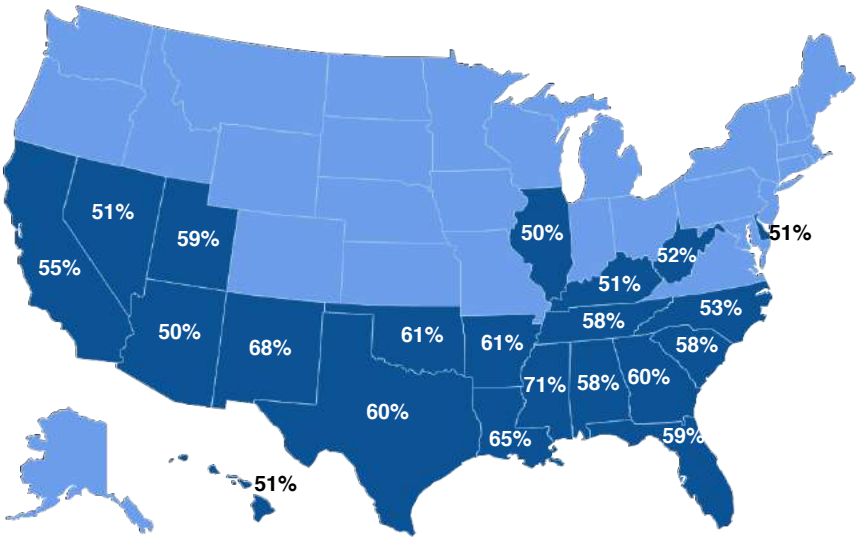
America's Exploding Population of Low-Income Students

States where Students from Low-Income Families Exceed 50% of the Total Student Population

***2000**: Four States with 50%+ Low-Income Students*



***2013**: Twenty States with 50%+ Low-Income Students*



Source: The Atlantic, Southern Education Foundation

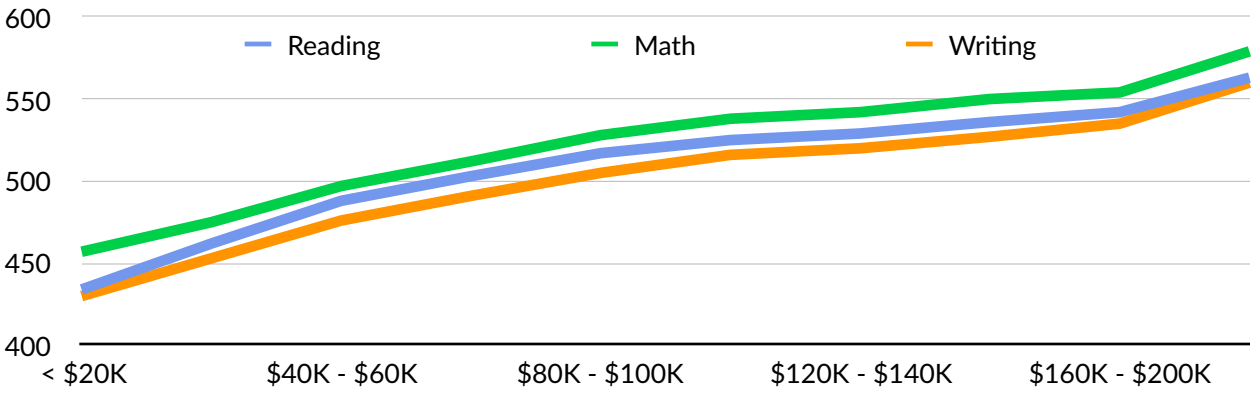
KEY TAKE-AWAYS

America's population of students from low-income families was exploding. In 2000, there were four states where 50 percent of the total student population was low income. By 2013 it was 20 states, which approached over half of the country's *entire* student population. We played it forward and saw millions of people who had long odds to meaningfully participate in the future.

Even when low income students did graduate from high school, they underperformed on college entrance assessments, like the SAT, which determined access to the best education opportunities. ***The only real thing that the SAT predicted was family income***.

The Only Thing the SAT Predicts is Family Income

Composite SAT Scores by Family Income (2013)



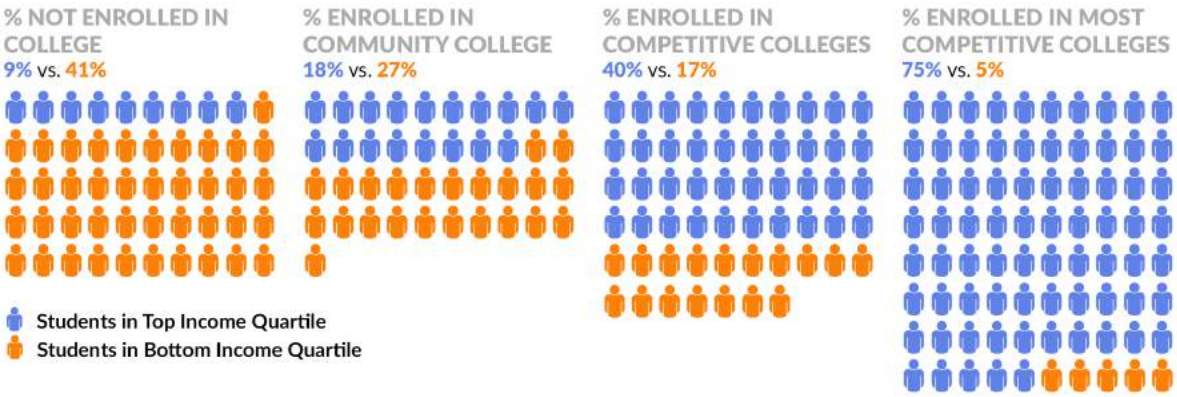
Source: College Board

Not surprisingly, low income students rarely enrolled in the most competitive schools and tended to skip college altogether. Ultimately, only nine percent of children from low income families ended up graduating from college, compared to 77 percent from high income families.

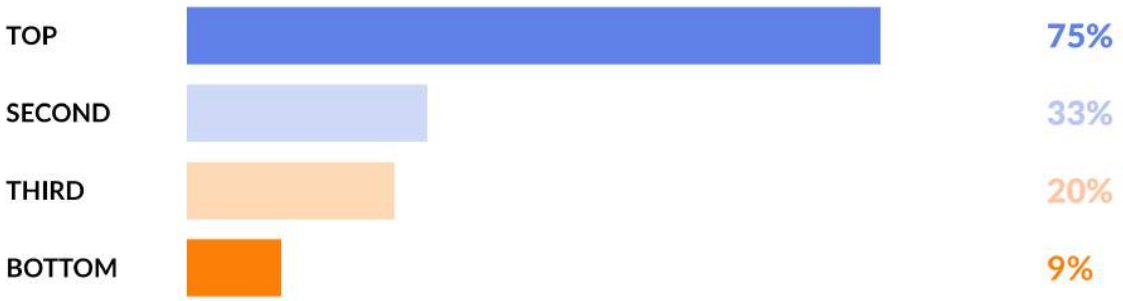
Over 500 years, we had come full circle: *your future was your parents' past*. Here is what the American Aristocracy looked like in 2015: four out of the last five presidents had Ivy League credentials, 32 percent of the Senate had an elite education, 100 percent of the Supreme Court went to an Ivy League school, and 43 percent of Fortune 100 CEOs went to an Ivy League school.

The American Caste System

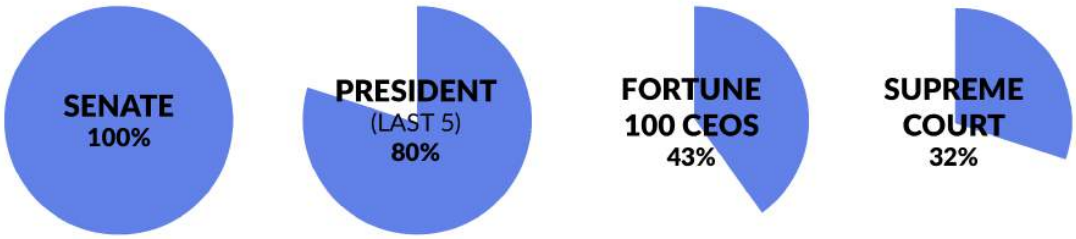
***College Enrollment**: High Income vs. Low Income Population*



***College Graduation Rates**: Percentage of People with a 4-Year Degree by Income Quartile*



***The U.S. Aristocracy**: Power Brokers Who Have Gone to "Elite" Colleges*



Source: The Pell Institute, PewResearchCenter

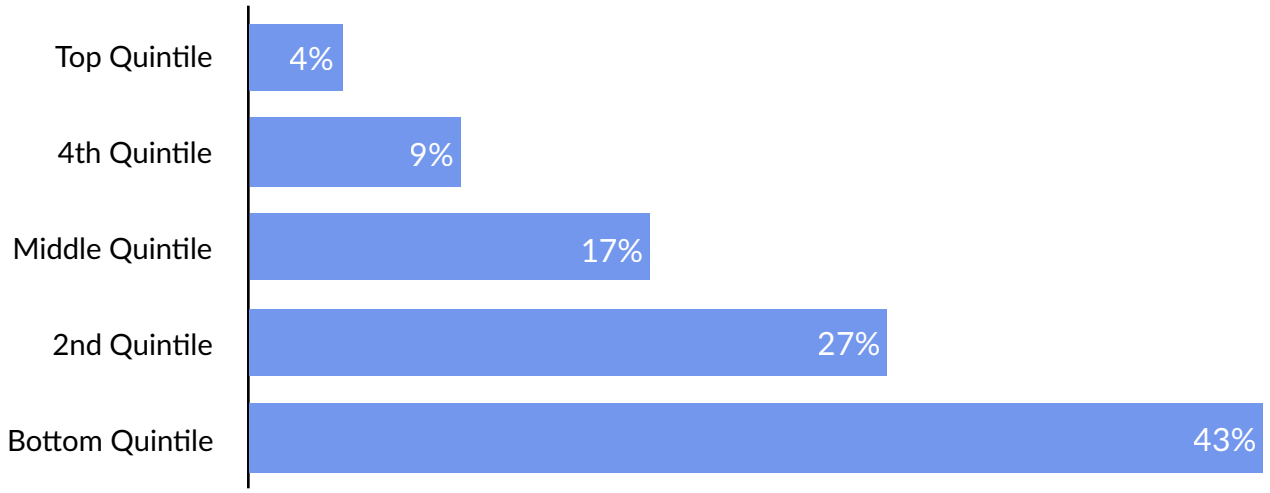
KEY TAKE-AWAYS

While education historically was the ticket to improve your standard of living, the system had become rigged to perpetuate the status quo. College education was directly correlated to family income. High income families were disproportionately represented in elite schools. Elite schools were the gateway to power positions. Over 500 years, we had come full circle; *your future was your parents' past*.

For the first time in our country's history, *there was no social mobility*. Over 70 percent of people born at the bottom of the income ladder never made it to the middle rung. We had effectively evolved from a meritocracy to an aristocracy.

Upward Mobility is a Myth

Distribution of Family Incomes for Adults Born into the Lowest Income Bracket



Source: PewResearchCenter

KEY TAKE-AWAYS

Children born into the lowest family income households were unlikely to substantially improve their lot in life. Over 70 percent found themselves below the middle income rung as adults and 43 percent remained stuck at the bottom for life.

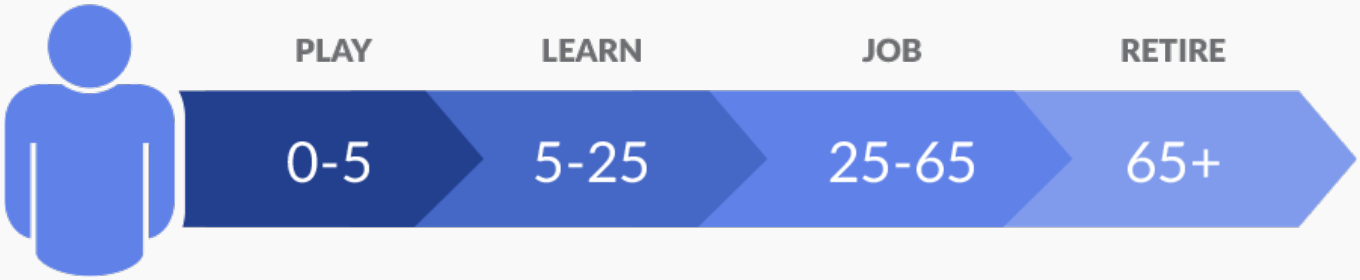
While money was a symptom, it wasn't the solution. We already spent more per student on education than almost every country in the World. Robin Hood couldn't help us either. As Margaret Thatcher once said, "The problem with socialism is that eventually you run out of rich people."

New World, New Challenges

Winston Churchill gathered his advisors in the depths of WWII and said, “Gentlemen, we have run out of money. Now we have to think.” As a country, it was time to think.

Our old human capital pipeline hadn’t really changed at all since it was created at the beginning of the 20th century. It worked like this: You played from ages 0-5, you learned from 5-25, you worked from 25-65, and then you retired.

OLD SYSTEM: 1900



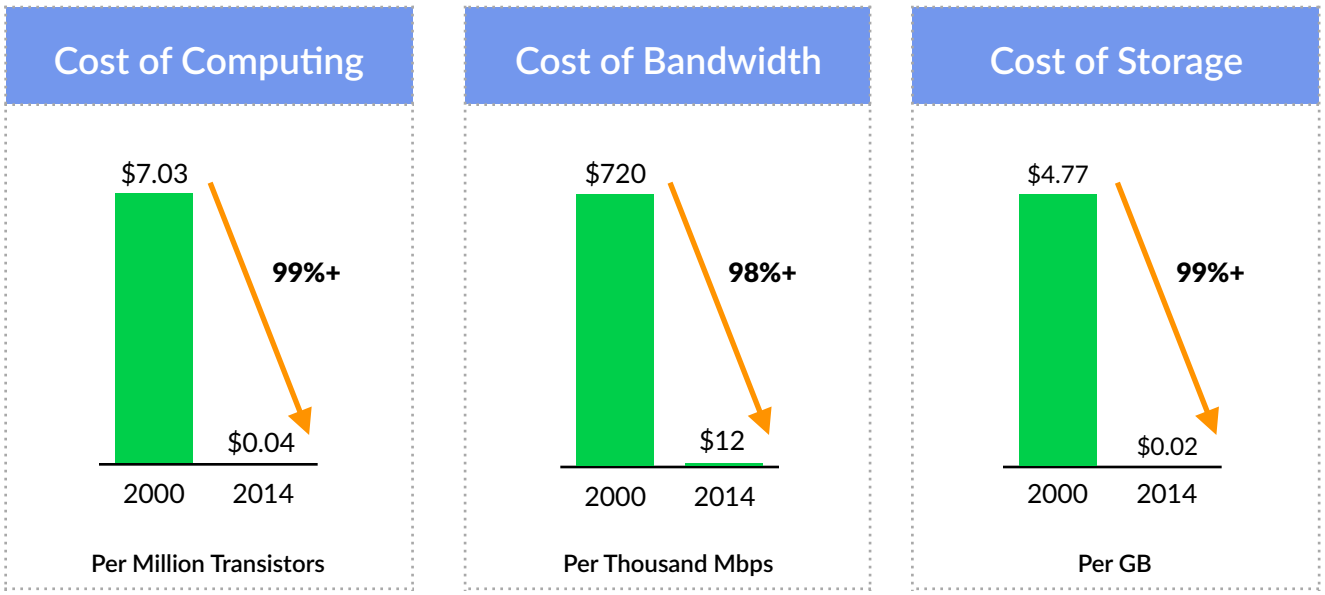
In 1900, 70 percent of the workforce was in agriculture or industrial manufacturing. The average male lived to age 46 — which means I would have been dead seven years ago.

DIGITAL TRACKS + DIGITAL DISRUPTION

By 2015, with the relentless pace of Moore’s Law, the cost of computing, data storage, and bandwidth were all approaching zero. The net result was that “digital tracks” were rapidly being laid all around us that were fundamentally transforming everything from communication to commerce. Looking back as little as 15 years was a study in contrasts.

New Technology Fundamentals: Rapidly Declining Costs

Cost of Computing, Bandwidth, and Data Storage, 2000 vs. 2014



Source: Deloitte

KEY TAKE-AWAYS

From 2000 to 2015, computing power increased over 100x, while the cost of computing fell more than 99 percent. During the same period, the cost of bandwidth decreased over 98 percent and storage became essentially free.

In 2000, there were only 370 million people on the Internet (roughly five percent of the World's population), no one had heard of a smartphone yet, broadband was a fantasy, and applications off of a platform had not been invented.

By 2015, there were more than three billion people on the Internet, over two billion smartphones in the hands of Digital Natives, and 140+ billion apps downloaded from **Apple** and **Google** per year.

THE DIGITAL TRACKS HAVE BEEN LAID

Global Indicator	2000	2015
Internet Penetration	370 million (6%)	3.1 billion (43%)
Broadband Penetration	60 million (1%)	2.3 billion (32%)
PC Penetration	180 million (3%)	1.4 billion (20%)
Mobile Phone Penetration	740 million (12%)	5.2 billion (73%)
Smartphone Penetration	0	2.1 billion (28%)
Tablet Penetration	0	500 million (7%)
Mobile App Downloads	0	140+ billion
Digital Natives in Workforce	6%	35%
Global Middle Class	1.4 billion	2.5 billlion

Source: Gartner, Nielsen, A.T. Kearney, eMarketer, KPCB, GSV Asset Management

Digital infrastructure ushered in an Internet Age that evolved in three phases. The first phase was the creation of the digital infrastructure upon which new businesses could be built. This was roughly 1995 to 2001, and the leaders were **Netscape**, **AOL**, and **Cisco**.

The second phase of the Internet Age was to build products off of the Internet Platform. **Amazon**, **eBay**, **Google**, **Apple**, **Salesforce**, and **Facebook** were all pioneers of this era.

The third phase, which was now upon us, was the transformation of crucial segments of society and the economy, such as government, health care, and education. Each was beginning to utilize Internet capabilities and models more effectively to evolve for public good.

THE INTERNET TRANSFORMS KEY SECTORS OF THE ECONOMY + SOCIETY

Sector of the Economy/Society and Internet Impact by 2015

Global Indicator	2015
Consumer	
Business	
Security / Safety / Warfare	
Education	
Healthcare	
Government / Regulation / Policy	

Source: KPCB

Digital Tracks ushered in Digital Disruption as new technology upended Old World business models and ideas. While digitization dramatically increased the quantity and convenience of photography, for example, it also completely redefined the economics.

Smartphones made everyone a photographer and **Instagram** rode this trend in 2010 to cultivate a network of 200 million people uploading 60 million photos per day. Just a year after its founding, the company was sold to **Facebook** for over $1 billion. Instagram had 15 employees at the time.

RISE OF SMARTPHONE PHOTOGRAPHY

St. Peter's Square, Rome, 2005 vs. 2015



WHAT: The first photograph was captured on a busy Parisian street in 1838. By 2015, over 3.5 trillion photos had been taken. More photos were being snapped every two minutes than were taken in the 19th century and most of the 20th century combined.

WHY IT'S A GAME CHANGER: When atoms become bits, the world changes fast — and often. Entire companies and industries can effectively vanish over night because when human and capital-intensive processes go digital, marginal costs move towards zero.

Contrast these figures with pre-digital age giant **Kodak** — synonymous with photography — which at one point employed 145,000. Ironically and tragically, 132 years after its founding, and at the inflection point of the photography boom, it went out of business. Facebook acquired Instagram just months later.

NEW SYSTEM

Innovation and displacement cycles were poised to accelerate as software continued to "eat the World" and technology automated industries that had traditionally been operated by humans. The global manufacturing industry alone, for example, employed over 320 million workers, accounting for $6 trillion in employment costs.[4]

Attempting to solve our current problems without accounting for the quickly evolving technological and economic fundamentals would be disastrous. Not only would we fail, but we would miss an entirely new set of challenges on the horizon.

[4] McKinsey Global Institute

In the future taking shape, change was the new normal. The U.S. Department of Labor predicted that Millennials entering the workforce would have 15+ lifetime careers.

Learning is not compulsory... neither is survival.

W. EDWARDS DEMING

The rise of "Sharing Economy" platforms like **Airbnb** and **Upwork** (formerly oDesk) meant that anybody with an apartment, or a laptop and a marketable 21st century skill set, could become an entrepreneur or a free agent in 60 seconds.

Applying these advancements to the old model of learning resulted in a new system altogether — where learning occurred from the time you are born to the time you retired — if you ever retired — with multiple jobs along the way.

NEW SYSTEM



Looking at the whole field, we saw key Megatrends present that were playing a critical role in the evolution of this new system of learning.

TAILWINDS



I don’t set trends. I just find out what they are and exploit them.

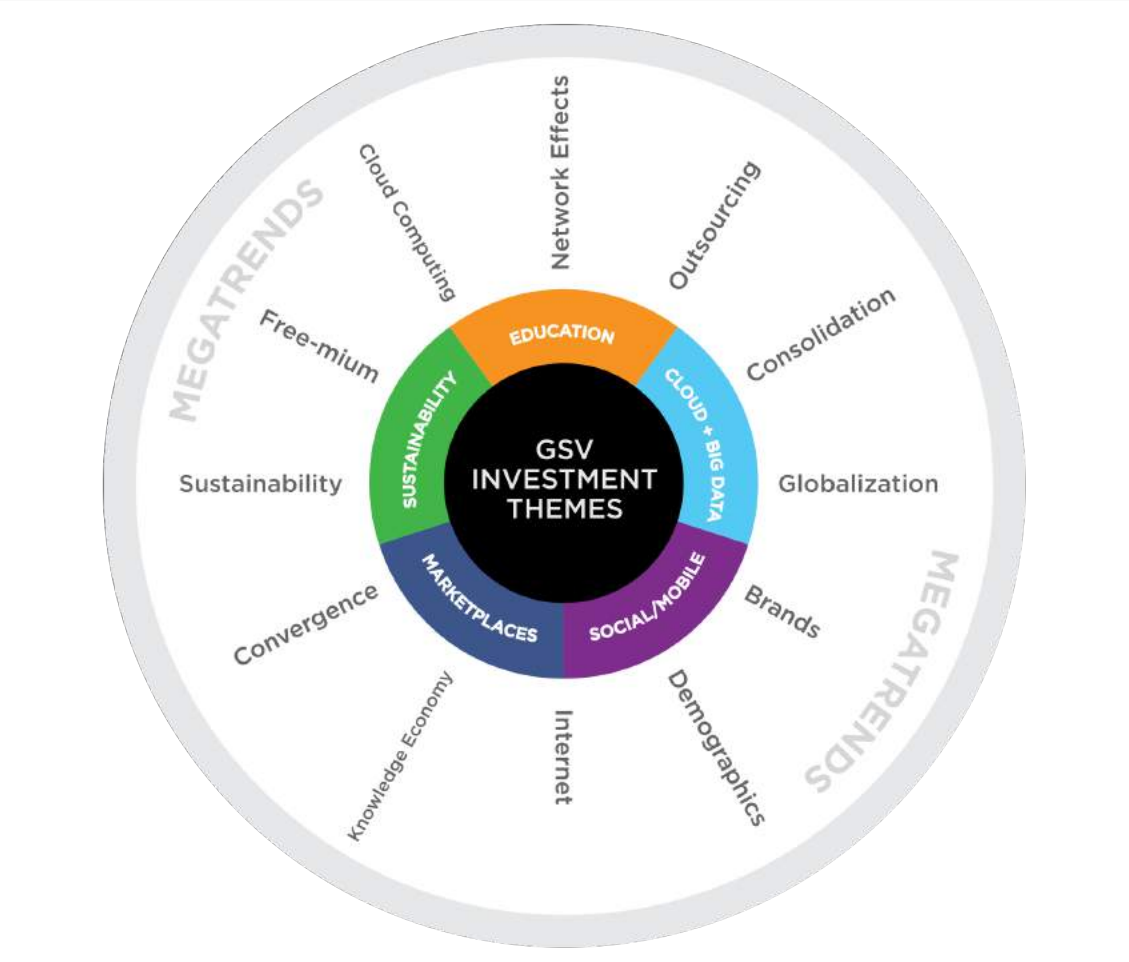
DICK CLARK

Megatrends

In essence, Megatrends are powerful *technological*, *economic*, and *social* forces that develop from a groundswell (early adoption), move into the mainstream (mass market), and disrupt the status quo (mature market), thereby driving change, productivity, and ultimately growth opportunities for companies, industries, and entire economies.

Megatrends play a key role in how social, economic, technological, and political changes take hold, and as we look backward through history, their effects are easily seen. In real time, however, Megatrends tend to go underappreciated.

GSV MEGATRENDS + INVESTMENT THEMES



The nature of Megatrends is that they are relatively slow to develop, driven by bottom-up "local" events that slowly gain in critical mass until they come to define large-scale and pervasive change. Identifying new trends is always difficult. But only by continuing to look for the forces that shape the World's trajectory — and how those forces will impact key sectors — is it possible to capitalize on opportunities and catalyze change. Broad Megatrends that were transforming the World as we knew it included the Internet, Globalization, and Sustainability.

For example, the Internet Age, which was born with the commercialization of *Netscape Navigator*, was only 20-years-old in 2015. But it had already reshaped virtually every industry. Virtual networks connecting over three billion people defined the ways we communicated, collaborated, shopped, enjoyed entertainment — and increasingly — how we learned. We were only just beginning to feel the impact, but digital channels were enabling us to broadly increase access to quality education. Lowering costs while *improving* experience was becoming the new reality.

Globalization, catalyzed by the Fall of the Wall in Berlin in 1989 and accelerated by the exponential growth of the Internet, was a double-edged sword. On one hand, globalization opened up the 96 percent of the World that wasn't the United States. On the other hand, it made everything more competitive.

For startup companies, in the old World, you created a product and sold it locally, then regionally, and if it was successful, you went national. For the "once in a blue moon" product that made it through the expansion gauntlet and gained a national footprint, overseas markets *might* be worth exploring. In the new World, you had to be global from the get-go.

For individuals, Globalization created a more competitive, quickly-evolving talent pool. In the old World, it paid to master a skill and find a secure job. In the new World, adaptability and a constantly evolving skill set were the keys to success.

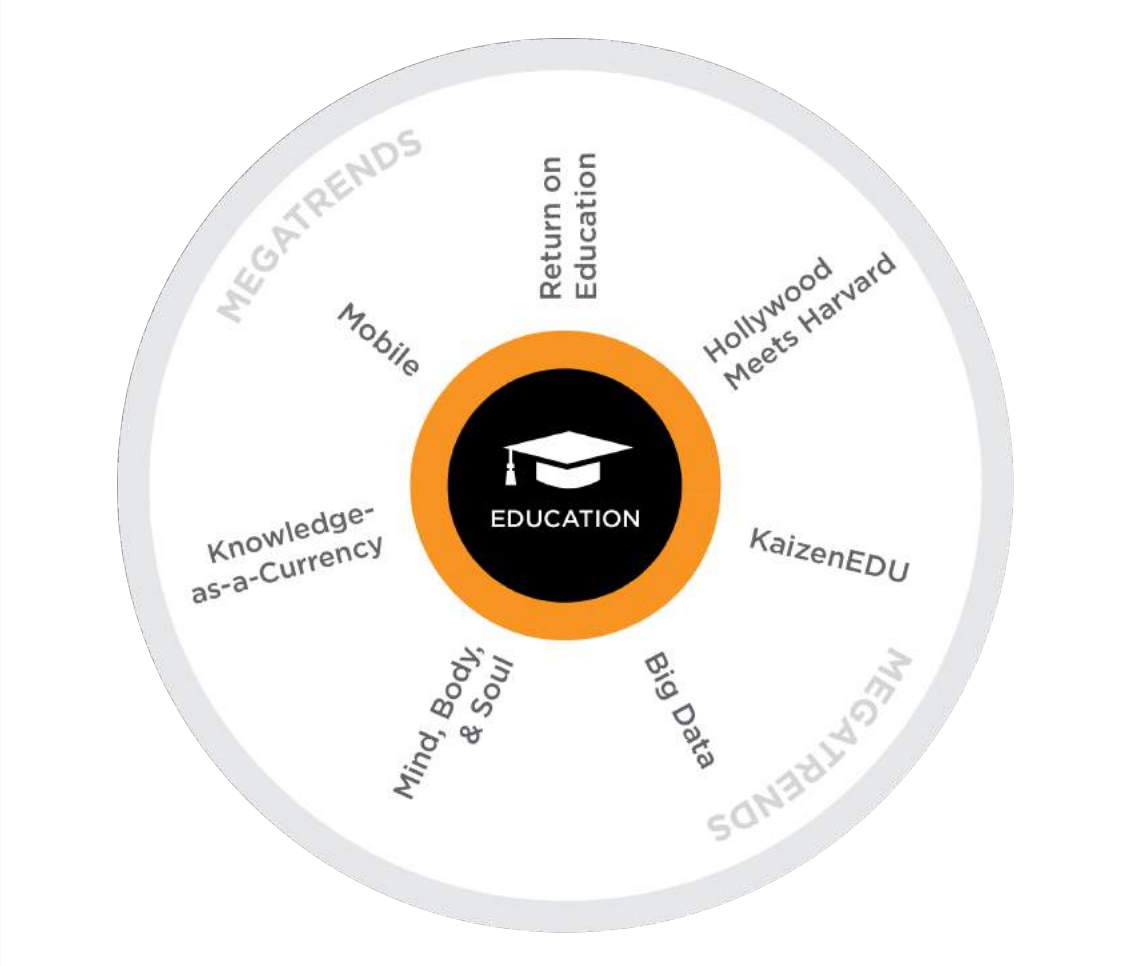
Sustainability is the reality that the planet needs to be protected and opportunity cannot come at the expense of the environment. It's not a question of being

"green" versus growth — one needs to do both. Education needs to embed this mindset and think through the future implications of "progress today".

Education Megatrends

In 2015, we identified seven key education Megatrends that would serve as tailwinds for our 2020 Vision, in addition to the aforementioned broad Megatrends. The intersection of these Megatrends with our Ten Signposts shaped our views of what would be the most important education innovations, and why.

EDUCATION MEGATRENDS



1. RETURN ON EDUCATION (ROE)

The uber Megatrend above all others is what we call Return on Education, or ROE. Historically, the perceived effectiveness of education has been highly subjective. Bizarrely, the shorthand to determine the value of education was cost: the more expensive, the greater the perceived value.

Big Data applied to education unlocked real-time analytics that distilled relevant, quantifiable insights to improve effectiveness. Assessment of actual skills and abilities was becoming a "currency" that replaced less objective measurements. In this model, schools, programs, and content would be hired and fired based on demonstrable impact on student outcomes.

Corporate tax structure (i.e. being for-profit or not-for-profit) becomes irrelevant as the focus goes where it should: effectiveness for students. It is absurd to think that just because an organization is not-for-profit, it's "good." Or, if a company is for-profit, it's "bad." What makes a company good or bad is whether it delivers education results and creates opportunities for the students completing its programs.

In 2015, only 50 percent of college graduates were working in the field they studied and over a third indicated they would have chosen a different major. Nearly 40 percent of college graduates believed that their school did not prepare them well for employment.[5]

With an average of $11,000 in public spending per year for every student enrolled in K-12, and a minimum average cost of $19,000 per year for a four-year degree (which ballooned to $42,000 per year for private institutions), schools were not delivering what we were paying for… a 21st century workforce that was ready to succeed in the Global Knowledge Economy.

[5] McKinsey + Chegg (*Voice of the Graduate*, 2013)

In fact, despite spending more than almost every country in the World per student in elementary and secondary school, U.S. 15- and 16-year-olds ranked 36th among nations for their academic aptitudes. American Millennials consistently scored below their international peers on literacy, numeracy, and problem solving skills assessments.[6]

Companies like **Coursera** were changing the equation by providing free courses and charging less than $100 for a certificate. **General Assembly** students had a 98 percent success rate securing a job or promotion within six months of course completion. **2U** created virtual degree programs for leading education institutions, broadening access without sacrificing quality. The company had a stunning net promoter score of 70 and its students graduated at the same rates or better than their brick-and-mortar peers.



Key fundamentals that drive ROE include lowering costs, improving access, increasing professional capacity of instruction, and most importantly, improving

[6] ETS (America's Skills Challenge, 2014)

learning outcomes. Blended Learning models, which demonstrate a more cost-effective approach to achieving student gains, would continue to blossom in the new ROE environment.

Investors ultimately came to the realization that the greatest returns would be created where companies achieved the greatest educational impact… in other words, ***IRR = ROE***. Through greater transparency and integrated Big Data analytics, massive capital flows would be directed to the education companies demonstrating scale and impact.

2. KAIZEN EDU

Kaizen is a Japanese business term meaning "continuous improvement." An education corollary is our concept of "KaizenEDU," which means "continuous learning." Hard work and a college degree were the minimum price of admission in the Global Knowledge Economy. But in a rapidly changing World, you could no longer fill up your "knowledge tank" until age 25 and cruise through life. Effective workers had to refill their knowledge tanks *continuously*.

To keep a lamp burning, we have to keep putting oil in it.

MOTHER THERESA

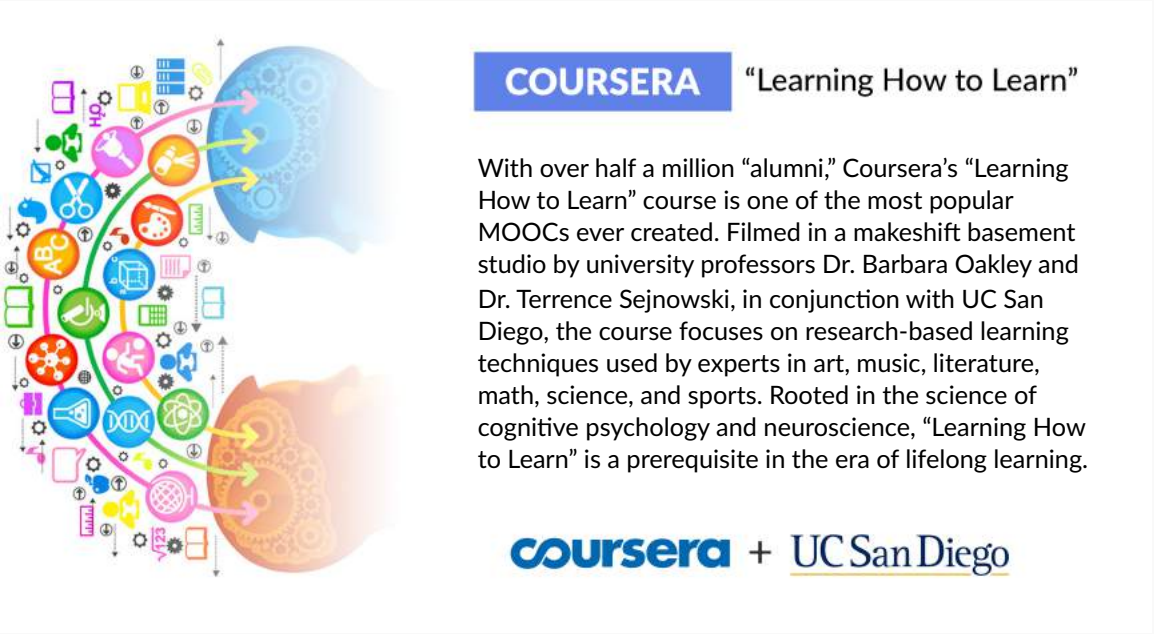
Everybody needed to be a lifelong learner to stay relevant, but it wasn't feasible to drop out of life to access valuable ongoing education opportunities on a college campus. Moreover, it was unrealistic to believe that individuals would be able to pay the ransom required under the traditional pricing scheme.

Between Millennials having a projected average of 15 careers in their lifetime and jobs being "Siri'd" at an accelerating pace, lifelong learning was a reality. Accordingly, "learning how to learn" was a new core competency.

New models that delivered high quality learning anytime, anywhere would become the norm, as companies like **Coursera**, **Curious**, **EdX**, **Fullbridge**, **General Assembly**, **Grovo**, **Koru**, **Lynda**, **O'Reilly Books/Safari**, **Pluralsight**, **Skillshare**, **StormWind**, **Udacity**, and **Udemy** filled the void.

COURSERA'S "LEARNING HOW TO LEARN" COURSE

Learning How to Learn Is a Key Foundation of KaizenEDU



The fact that, effectively, *all people are students* — "APAS" — drives creative monetization opportunities for education companies addressing this massive market opportunity. The model of segmented, episodic learning would be replaced by seamless, continuous learning driven by a constant need for new knowledge… like breathing. The way lifelong learners paid for their ongoing education would radically change.

3. HOLLYWOOD MEETS HARVARD

Another key trend is "Hollywood Meets Harvard." It's pretty hard to learn if you're not paying attention. Hollywood is really good at creating engagement. People can

name the length of Gilligan's ill-fated tour (three hours), but struggle to remember the Quadratic Formula ($ax^2 + bx + c = 0$). We needed to create education resources where there was high engagement, leading people to learn because they were interested, rather than being pushed. Hollywood is also a reminder that large investments in content quality can be leveraged over massive audiences.

Theater goes back 2,500 years to Athens and the Greek Tragedy. It was part of a broader culture of storytelling and ritual. People used stories and symbols to communicate ancient truths. It was an effective device to teach, remember, and remind. In many city-states, going to the theatre was an obligation of citizenship.

The greatest ancient theaters, like the Odeon of Herodes Atticus in Athens, held 5,000 people or more. Others were nothing more than sloping hillsides. As time passed, theatre increasingly became a pastime of the cultured class, and productions concentrated in large cities, from Broadway in New York to London's West End.

THE ODEON OF HERODES ATTICUS IN ATHENS

Constructed in 161 AD



The trick on the "Demand Side" of the theater equation was that to see a show, you had to be in a specific geography, at a specific time, and be willing to pay for

an economically sub-optimized production. On the "Supply Side" of the House, there was a high fixed cost for creating a play, there was variability in the cost and quality of the talent, and generally, the only way to make a reasonable return was to have the show run for many weeks.

These supply and demand limitations might suggest that the introduction of the motion picture camera in 1896 invented by Thomas Edison would have been embraced by entertainment entrepreneurs. But initially, this transformative technology was regarded as a novelty, used as a preview at Vaudeville Shows and a marketing gimmick in storefronts. It wasn't until 1927, when *The Jazz Singer* combined film with sound, that people started seeing the potential of the movie industry.

Toto, I've a feeling we're not in Kansas anymore.

DOROTHY GALE

The Wizard of Oz

Originally — and this is what happens with almost every new technology medium — movies were essentially filmed plays, adding little innovation to theatrical productions. Similarly, when TV adoption began to reach scale in the United States, initial programming consisted of little more than showing a radio broadcast.

People have an inherent desire to be entertained, but until the magic of movies became more accessible, they had limited and expensive options for entertainment. Ultimately, Hollywood became the epicenter for the production of films that were watched by the masses at affordable prices in movie theaters across the Country.

In 2015, the average American went to four movies per year. Globally, the movie industry had grown to $36 billion in box office revenue. Contrast that to the sub-

$4 billion global theater industry, which remained rooted in Broadway and London.

Effectively, “supply” induced “demand” with lower prices. In other words, by increasing access and lowering the cost, the movie industry grew to be 9x larger than theater in terms of revenue and hundreds of times larger in terms of attendance.

Importantly, the rise of movies did not mean plays went away. Similarly, despite the rise of online and mobile learning services, elite colleges would continue to provide high quality experiences for the relatively small number of people who had the time and money to attend.

But these institutions were being augmented by a mass market being created to address a persistent lack of access to education opportunities. The online experience did not cannibalize the offline market… As with movies, supply induced demand. Accordingly, we saw tremendous market opportunities for education providers that applied Hollywood-style production quality and distribution economics over massive audiences.

Video games were 3x larger than the movie industry, reaching $100 billion in revenue in 2015. “Learning by Playing” became a massive opportunity with the convergence of video games with efficacious educational content.

Media models that scaled premier content enabled students to access the very best teachers at a fraction of the price, in the comfort of their living rooms… on a bus… or in their hotel rooms. Personal Knowledge Portfolios, somewhat analogous to a **Spotify** playlist, enabled people to choose courses and instructors that were “Just for Me.” As a result, the best professors captured the broadest audience. Like “Rock Stars,” they were paid accordingly.

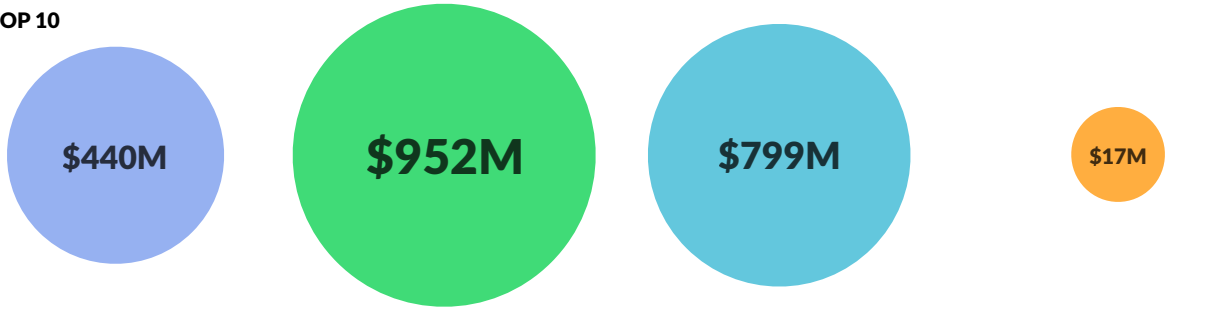
Key companies capitalizing on opportunities created by Hollywood Meets Harvard included **2U**, **Coursera**, **CreativeLive**, **DreamBox Learning**, **mLevel**, **Sesame Street** (**HBO**), **StormWind**, and **Tynker.**

MARKET VALUE: EDUCATORS VS. MEDIA & ENTERTAINMENT STARS

Top-10 Highest Paid Actors, Athletes, Musicians + Teachers, 2015

ACTORS		ATHLETES		MUSICIANS		TEACHERS	
							
1. ROBERT DOWNEY, JR.	***$75M***	**1.** FLOYD MAYWEATHER	***$300M** (Boxing)*	**1.** BEYONCÉ	***$115M***	**1.** DAVID SILVERS	***$4M** (Columbia University)*
2. Dwayne Johnson	*$52M*	**2.** Manny Pacquiao *Boxing*	*$160M*	**2.** The Eagles	*$100M*	**2.** Zev Rosenwaks *Cornell University*	*$3.3M*
3. Sandra Bullock	*$51M*	**3.** Cristiano Ronaldo *Soccer*	*$80M*	**3.** Bon Jovi	*$82M*	**3.** Dean Takahashi *Yale University*	*$2.6M*
4. Bradley Cooper	*$46M*	**4.** Lionel Messi *Soccer*	*$74M*	**4.** Bruce Springsteen	*$81M*	**4.** Scott Allen *Pluralsight Instructor*	*$1.5M*
5. Leonardo DiCaprio	*$39M*	**5.** Roger Federer *Tennis*	*$67M*	**5.** Justin Bieber	*$80M*	**5.** William Fruhan, Jr. *Harvard University*	*$1.2M*
6. Chris Hemsworth	*$37M*	**6.** LeBron James *Basketball*	*$65M*	**6.** One Direction	*$75M*	**6.** Rob Percival *Udemy Instructor*	*$1M*
7. Liam Neeson	*$36M*	**7.** Kevin Durant *Basketball*	*$54M*	**7.** Paul McCartney	*$71M*	**7.** Dan Laughhunn *Duke University*	*$1M*
8. Ben Affleck	*$35M*	**8.** Phil Mickelson *Golf*	*$51M*	**8.** Calvin Harris	*$66M*	**8.** Deanna Jump *Teachers Pay Teachers Instructor*	*$850K*
9. Christian Bale	*$35M*	**9.** Tiger Woods *Golf*	*$51M*	**9.** Toby Keith	*$65M*	**9.** Andrew Isaacs *UC Berkeley*	*$710K*
10. Jenn. Lawrence	*$34M*	**10.** Kobe Bryant *Basketball*	*$50M*	**10.** Taylor Swift	*$64M*	**10.** K. Ramaswamy *Thunderbird*	*$700K*

TOTAL TOP 10



Source: Forbes, TheBestSchools.org, GSV Asset Management

4. KNOWLEDGE-AS-A-CURRENCY (KNAAC)

By 2015, globalization and the rise of virtual nations like Facebook — the largest "country" in the World, with over 1.5 billion "citizens" — challenged the old concept of a sovereign currency. Complicated exchange mechanisms, opaque values, and barriers to global transactions were all in direct odds with a hyper-connected World that increasingly expected transparency and efficiency.

As a response to the new reality of a digital, global economy, Bitcoin became the World's first decentralized currency. Unlike traditional currencies, which are issued by central banks, Bitcoin has no central monetary authority. Instead, it rests on a peer-to-peer computer network, akin to massive decentralized communication networks like **Skype** and **WhatsApp**.

Bitcoin: The Wealth of Virtual Nations

A New "Coin of the Realm" for a Connected, Transparent Global Marketplace



Similarly, Knowledge As A Currency (KNAAC) is a critical concept for replacing a degree-driven education system that doesn't meet the needs of modern society.

Abraham Lincoln, perhaps the greatest lawyer in American history, had no formal education. "Sixteen" was self-taught and he passed an examination to practice law in the Illinois Supreme Court by reading borrowed books from a local law firm. Just because Honest Abe didn't go to a fancy law school did not mean that he lacked outstanding legals skills or that he wasn't capable of becoming a highly effective lawyer.

Unfortunately, the college admissions officer remained the surrogate hiring director for many companies in the U.S. economy. The college you went to and the degree you received was the proxy for your talents, instead of what you knew, what you could do, and how effectively you could do it. But in Silicon Valley, what companies cared about was if you had the skills to be effective (Can you code or not? Are you adaptive?), not if you graduated from some prestigious school.

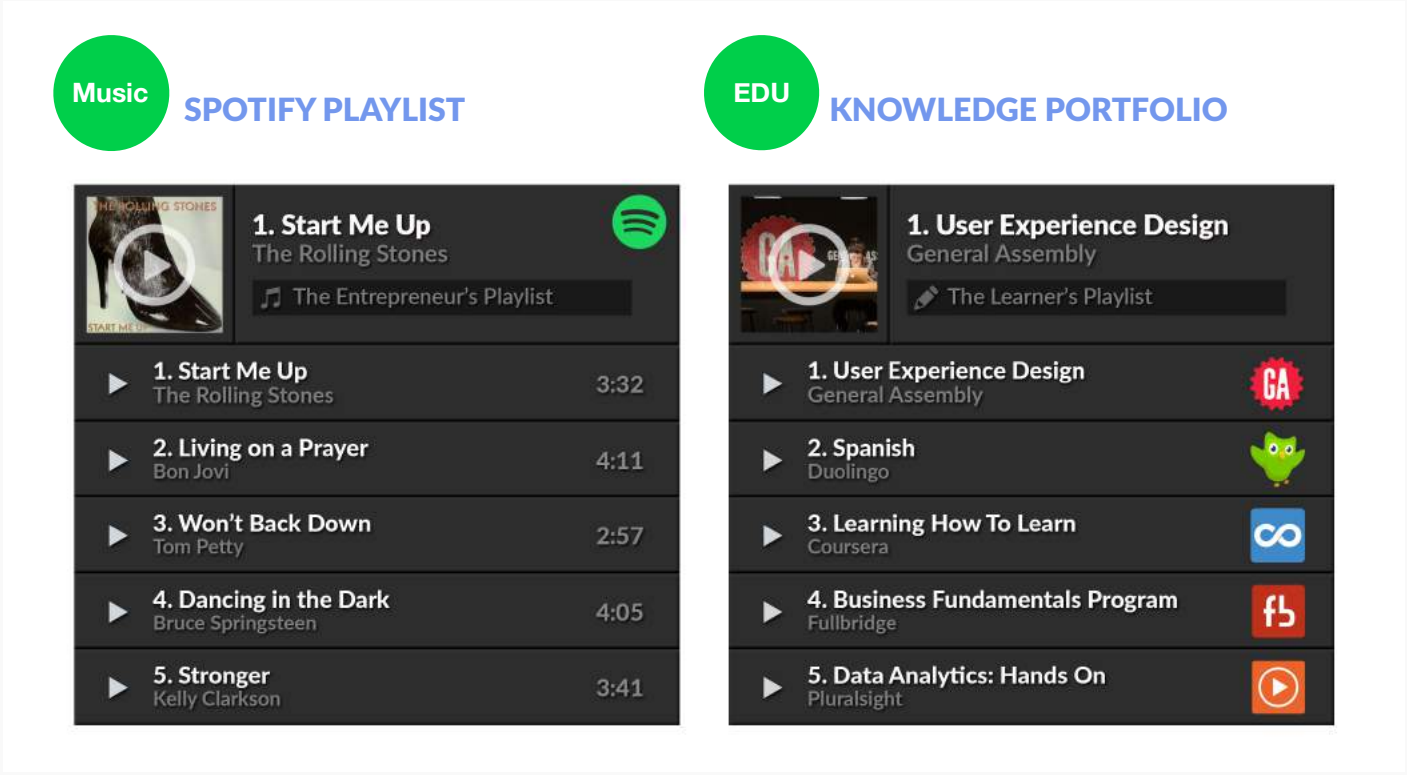


The old ticket to ride was a degree. The new ticket to ride was going to be a Personal Knowledge Portfolio that incorporated content, courses, and experiences, which were curated over time. The fundamental skills of critical thinking, entrepreneurship, quantitative reasoning, and communication were the foundation of an effective Knowledge Portfolio.

Badges and certificates for verifiable skills play an increasing role in a society that shifts its emphasis from the degree you were granted to the knowledge you possess. While traditional education continues to play a role, it's about *knowledge, not college. What you know, not where you go*.

In this new paradigm, learning is about continuously building your knowledge portfolio from a variety of education experiences and providers, much as you can curate a diverse music playlist on **Spotify**. Key companies bringing the concept of Knowledge-as-a-Currency to life in 2015 included **Degreed**, **Parchment**, **Accredible**, **Pathbrite**, **Acclaim** (Pearson), **Credly**, **Smarterer** (Pluralsight), and **LinkedIn**. Their efforts were amplified by organizations like **Mozilla** and the **MacArthur Foundation**, which partnered to create transparency through groundbreaking initiatives like *Open Badges*.

THE AGE OF THE PERSONAL KNOWLEDGE PORTFOLIO



5. BIG DATA = SMART DATA

In 2015, we created more information every two days than in the previous history of humankind. IDC predicted that, by 2020, an estimated 1.7 megabytes of new information would be created every second for every human being on the planet. To put that in perspective, in 1969, we sent astronauts to the moon and back using computers with only 2 kilobytes (0.002 megabytes) of memory.

Advances in data science and database technology made it possible to unlock insights from these vast troves of information, creating opportunities for a wide range of industries. E-commerce platforms like **Amazon**, **Alibaba**, and **eBay** used powerful algorithms to predict purchase preferences and make timely product recommendations with precision accuracy. **Tesla** created cars that were effectively computers on wheels, using big data analytics to anticipate problems and improve performance as they were driven. Major traffic problem on your way to work? No problem — your "Carputer" was already identifying alternate routes using integrated *Google Maps*. Feeling faster? An automatic software update meant that you could now go from zero to 60 in three seconds, as opposed to four.

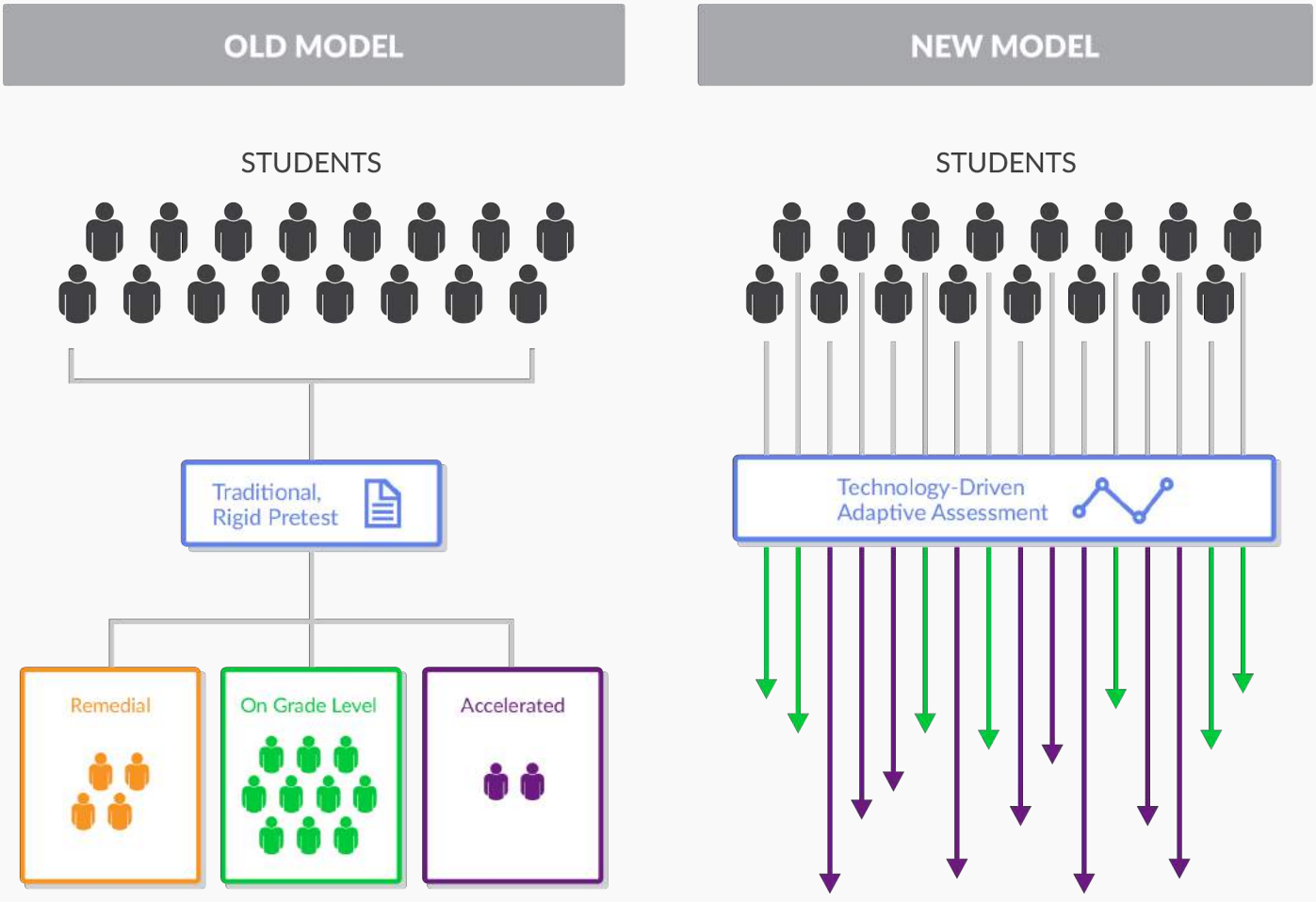
The list went on. If you weren't using big data, you had big problems. But too much information — what we call "Infobesity" — made it challenging to separate "signals" from "noise". **Netflix** navigated Infobesity with advanced machine learning — artificial intelligence that enables computers to "learn" without being explicitly programmed — to predict what each of its 65+ million subscribers would want to watch next. *More than half of the programs viewed on Netflix began with a system-generated recommendation*.

Historically, it was difficult, if not impossible, to access analytics that measured the effectiveness of a course or education product — let alone on a real-time basis or in a way that was predictive or prescriptive. Powerful software that gave teachers, parents, and students real time information about how well you understood a subject — as well as timely prescriptions to fill gaps and optimize learning — were a game changer. Algorithms that could predict the best paths to learning enabled truly *adaptive*, individualized technologies that drove superior student outcomes.

Adapting to "Just for Me" Learning

"Recommendation Engines" are so ubiquitous that they have become an "invisible technology." **Google** uses recommendations to show you websites that people with the same search terms clicked on. **Amazon** recommends products based on the activity of people who have bought the same items. **Spotify** suggests songs by mapping the music you like to similar listeners. **Sailthru** provides personalized marketing solutions by automatically selecting people to communicate to, leading to more targeted and effective marketing campaigns. The more you and other people use these products, the better the recommendations get. Adaptive Learning technology applies this principle to education. In the old model, everyone learns from the same materials at the same pace. In an adaptive model, students are presented with learning activities based on what they know, what they need to know, and what has worked for other students like them.

When it comes to medical services, people expect to be diagnosed precisely and prescribed a treatment that specifically addresses their malady. Nobody is satisfied with a "partial" recovery. Adaptive learning technologies apply this same standard of precision and personalization to education. In retrospect, "one size fits all learning" seems Medieval, similar to how leeches were used as a catch-all cure for various medical conditions.



Turning Big Data Into Smart Data

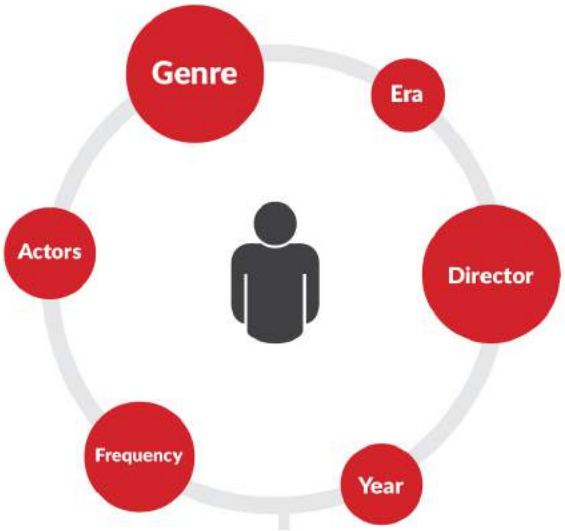
Adaptive Technologies
Adapting to Who I Am

+

Diagnostic Technologies
Knowing Who I Am

NETFLIX

Unique Patterns + Recommendations



23andMe

Individualized DNA Profiles



Personalized Learning Technology

Education has the potential to turn the enormous amount of Big Data provided by every click from a student into Smart Data with transformative applications. Combining adaptive software with diagnostic technology enables powerful personalized learning.

The Anatomy of Adaptive Learning

Early Intervention + Targeted Treatment

TEACHER

Diagnosis

Diagnostic Assessment

If a student is beginning an adaptive Algebra lesson, they start with a diagnostic test to assess their skills. Then, the system mines all of its content to find the one video, reading assignment, game, or other exercise that is best suited to address the most important concepts the student needs to work on.

Personalized Prescription

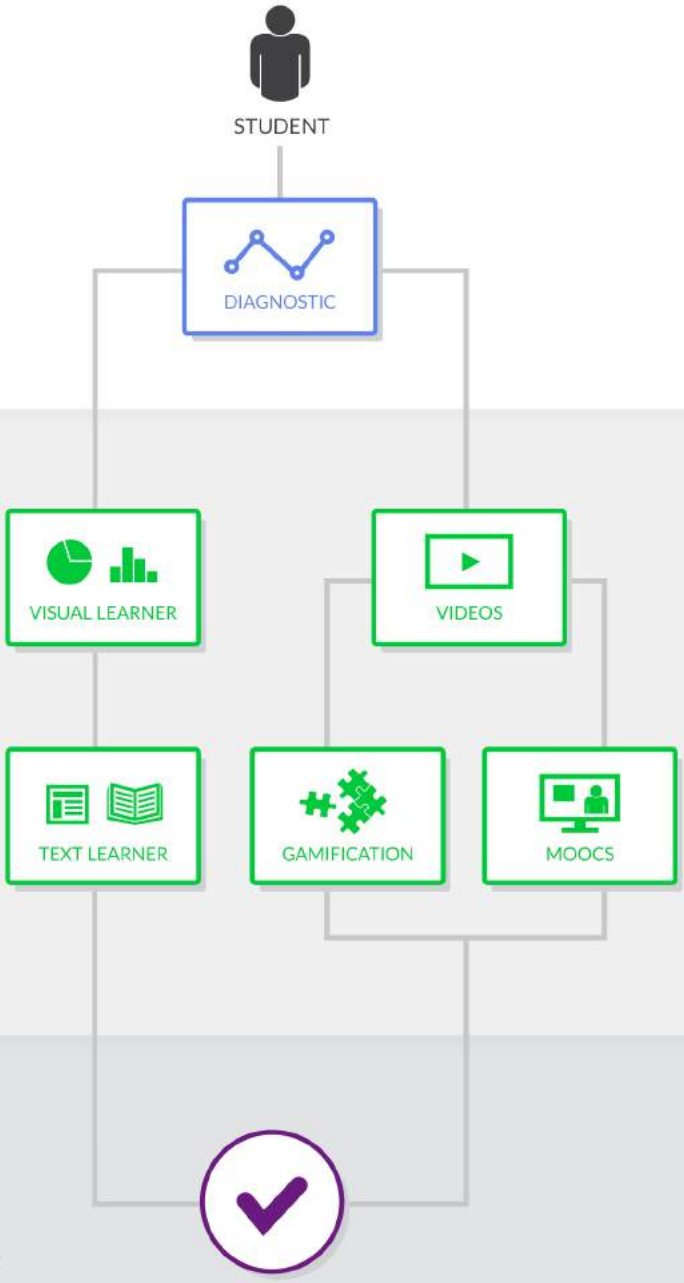
Adaptive Learning Pathway

After a student finishes their first exercise, the system gives them another mini-assessment to determine if they have mastered the concept. If they have, the student advances to a higher order concept. If they haven't, the system presents a slightly easier exercise, repeating the process until it finds a match. All of this happens with minimal teacher involvement. As students complete exercises, the system continues to "learn" which materials work best for different types of people, continuously improving its recommendations.

Prognosis + Perfect Health

Concept Mastery

In an adaptive system, students are "finished" with a lesson when they have mastered concepts as measured by diagnostic or "formative" assessments. Progress is not tethered to an arbitrary pace imposed on an entire class. This approach has profound implications for how schools and learning environments are designed. Teachers must evolve into "coaches" and "facilitators". Grade levels become an artifact as they have nothing to do with what students know and when they know it.



McKinsey estimated that increasing the use of student data in education could unlock between $900 billion and $1.2 trillion in global economic value. Upward of $300 billion of that would come from improved instruction. A study tracking 6,000 students, who were given personalized learning tools as a complement to teacher-led instruction in 15 public schools across the United States, showed that the students *gained an average of 1.5 years of progress in math in just one academic year* — 47 percent higher than the national average. Students who began the year below grade level made gains that were 81 percent higher than the national average.[7]

SMART EDUCATION DATA

Five Key Categories of Education Data that Power Personalized, Adaptive Learning Technologies

Data Element	Description
1. Identity Data	Who are you? What school and district are you in? What is your demographic information?
2. User Interaction Data	User interaction data includes engagement metrics like click rates, page views, and bounce rates. These metrics have long been the cornerstone of Internet optimization for consumer web companies, which use them to improve user experience and retention.
3. Inferred Content Data	How well does a piece of content "perform" across a group or subgroup of students? What measurable student proficiency gains result when a certain type of student interacts with a certain piece of content? How well does a question actually assess what it intends to?
4. System-Wide Data	Rosters, grades, disciplinary records, and attendance information are all examples of system-wide data. At large scale, this data can be used to draw inferences about key learning trends.
5. Inferred Student Data	Exactly what concepts does a student know, at exactly what percentile of proficiency? Was an incorrect answer due to a lack of proficiency, or distraction, or a poorly worded question, or something else altogether? What is the probability that a student will pass next week's quiz, and what can the student do in real-time to increase it?

Source: Knewton, GSV Asset Management

Privacy issues are serious, but are appropriately addressed by clear policies and protocols that have been applied across a variety of industries that manage sensitive data, from healthcare to finance. Big Data is a key fundamental for other important Megatrends, including ROE and Knowledge-as-a-Currency.

[7] McKinsey (*Protecting Student Data in a Material World*, 2015)

Pioneers of Big Data in education applied the power of advanced analytics to practical learning applications. **Knewton** tracked student progress through any publisher or teacher's educational content, analyzing their actions and aptitudes to adapt the sequence of information presented to align with what they most needed to learn.

DreamBox Learning created an adaptive mathematics learning platform that offered millions of pathways through the same exercises, tailored to each student. **Declara** built an adaptive, social-learning platform that enabled organizations and corporations to develop knowledge quickly and continuously. Additional leaders in adaptive education technology included **Acrobatiq**, **Cerego**, **Smart Sparrow**, **ALEKS** + **LearnSmart**, (McGraw Hill), and **MyMathLab** (Pearson).

Meaningful data would ultimately be embedded in everything, driving decisions on *what works and what doesn't… who keeps their job and who doesn't… who gets funded and who doesn't*.

6. MOBILE

By 2015, nearly 90 percent of high school and college students owned a smartphone. It was effectively an appendage — the first thing they looked for when they woke up and the last thing they saw before going to sleep. A 2015 survey across Chegg's 15 million user network found that 97 percent of young people would rather lose every other possession before giving up their smartphone.

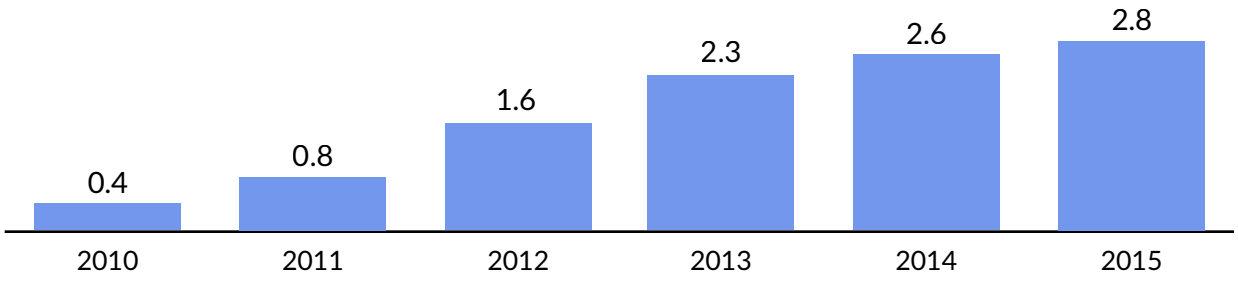
In 2008, the average American spent 2.7 hours per day on digital media. By 2015, we spent 2.8 hours per day on smartphones *alone* — more time than we used to spend on desktops, laptops, mobile, and other connected devices combined.

Ubiquitous smartphones were becoming a digital center of gravity, helping us find, connect, solve, and discover, making *anytime-anywhere learning* a reality. Powerful and portable, *smart* phones would be a key ingredient to keep people *smart*. Apps that delivered education content and services or helped people share knowledge

were exploding — from brain games to online courses and tutoring. Many were becoming as prevalent as **Twitter**, **Facebook**, and **Spotify**.

Smartphones Have our Attention

Time Spent on Smartphones Per Day Grows at a 134% CAGR, 2010-2015

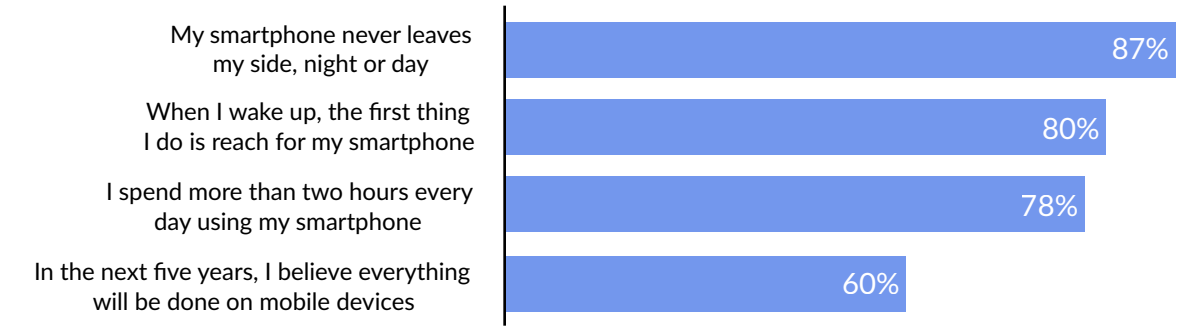


Source: KPCB, eMarketer

Education that wasn't made for mobile increasingly resembled early TV programs, which were little more than radio programs captured on camera. *Imagination trailed the technology*. The new mobile medium required fresh design and an understanding of how smartphones could best enhance learning.

Millennials = Love Their Smartphones...

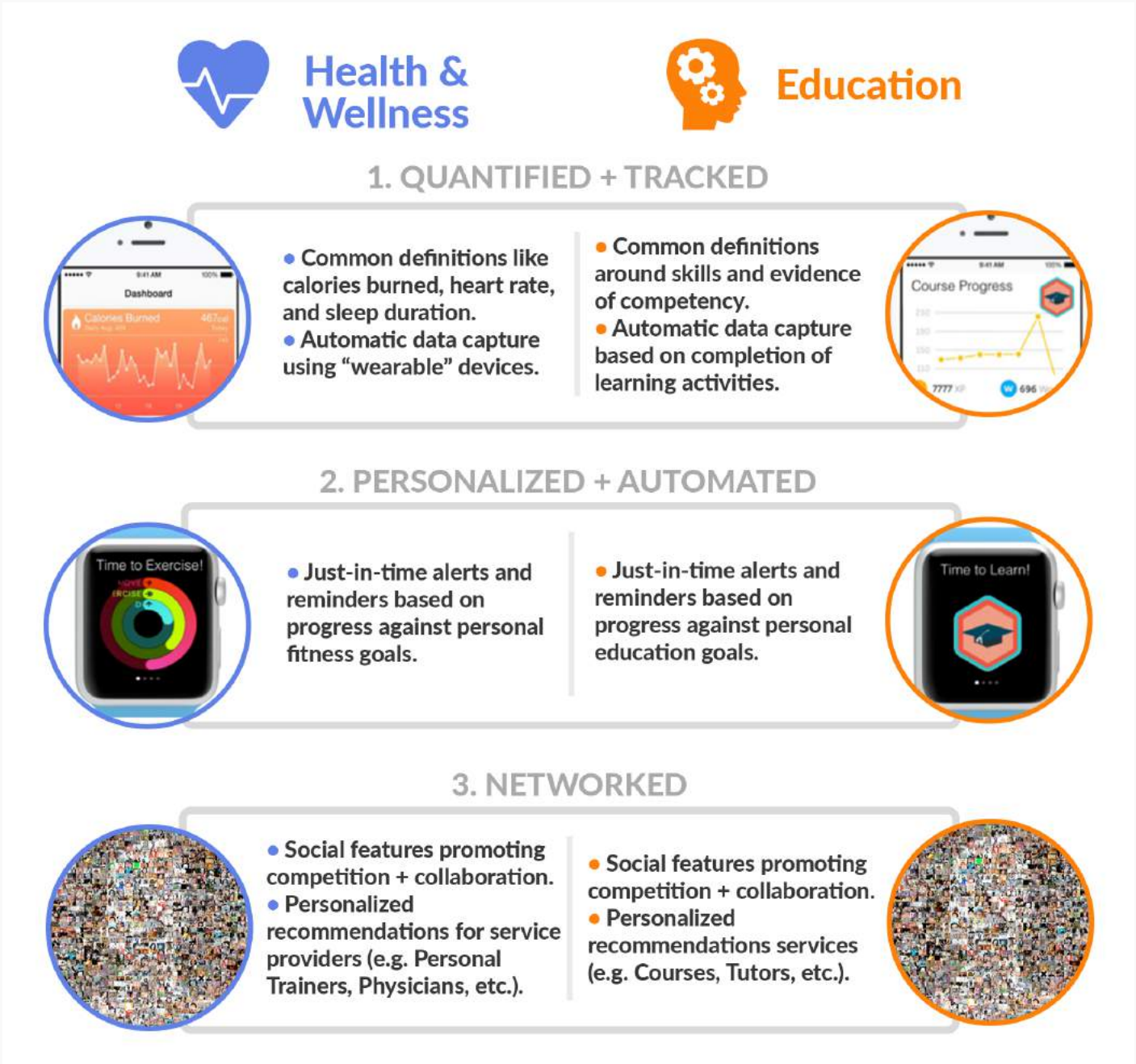
87% = "Smartphone Never Leaves My Side"



Source: KPCB, Zogby Analytics

The proliferation of smartphone-linked *wearable* technologies provided an important example of how this might happen. “FitBits” told us how many steps we walked and how well we slept. They continuously collected, monitored, and benchmarked our data against healthy adults, prescribing personalized training activities and coaching tips. If sitting was the new cancer, learning would be the next workout. Learning “Fitbits" were on the way and here is how they worked.

HEALTHY LIVING AS A MODEL FOR LIFELONG LEARNING



7. MIND, BODY, SOUL

Breakthroughs in brain research and cognitive science were providing insights into how the mind worked and how we learned. Interestingly, these two complimentary disciplines were isolated in their own silos as if how the brain functions was distinct from learning. It would be as if ear research was separated from hearing.

What was found was that the brain was influenced by numerous factors, including physical fitness, happiness, diet, and overall wellness. Accordingly, understanding the interconnected relationship between the Mind, Body, and Soul was fundamental for optimizing learning.

"Mindfulness" had been shown to have all sorts of amazing benefits for the Mind, Body, and Soul, including reducing stress, protecting your heart, and improving learning. Goldie Hawn's Foundation developed *MindUP*, which was used in schools in North America to incorporate mindfulness principles into the classroom. Researchers found that students in the *MindUP* program had 15 percent better math scores and 24 percent more social behaviors than students not in the program.

If you want to be happy, set a goal that commands your thoughts, liberates your energy, and inspires your hopes.

ANDREW CARNEGIE

Not surprisingly, Silicon Valley was at the forefront of this trend, incorporating Zen practices into the workplace for a holistic approach for employees being all they could be. **Google**, habitually ranked as the #1 Corporation to work for in America, put on classes for its employees, such as "Search Inside Yourself," "Neural Self-Hacking," and "Managing Your Energy."

The #1 class in the four-hundred year history of Harvard College is "Positive Psychology," taught by Tal Ben-Sharar. It might seem counterintuitive that in a cohort of insanely ambitious, brilliant, "never-weren't the best-at-anything-they tried" group of young adults, the thing they most craved was to find happiness. Similarly, the #1 course on *iTunes U* was "Mindful Meditations," out of UCLA.

Sure, some of it could be driven by other Harvard studies, which showed happy workers were 37 percent more effective at sales, 31 percent more productive, and 19 percent more accurate in their work, but this was a strong signal that something much more important was going on. Superstars needed to find happiness and meaning.

Accordingly, "success" wasn't defined by how much money you made. It was a function of sustainable happiness. This was achieved by having a life with meaning — not only what you did, but *how* you did it. Building relationships was at the core of finding significance and meaning.

One of our favorite companies at the center of this theme was **SoulCycle**. Founded in 2006 by Elizabeth Cutler and Julie Rice, SoulCycle offered a window into the power of Mind, Body, Soul — an emerging desire across demographics to have a healthier and more fulfilling life.

There is nothing about what SoulCycle does that can be patented. The casual observer might even mistake it for a "spinning class." But when you study SoulCycle, you realize that its monster success derives from doing a hundred little things better than anybody else.

The bikes are specially designed for SoulCycle to develop your "core." The program emphasizes every muscle in your body, so that after 45 minutes, you're wiped. The instructors are trained to be both inspirational and aspirational. The music is perfectly choreographed. Despite the heavy sweat, SoulCycle studios sparkle and smell fresh. And there is plenty of cool SoulCycle swag, so you can proudly display that you're a member of the tribe.



SOULCYCLE

FOUNDED: 2006

WHAT IT IS

In SoulCycle, Co-Founders Elizabeth Cutler and Julie Rice have created a community that wants to be healthier and happier, and to make a bigger impact on the World. To paraphrase Rudyard Kipling's poem, The Law of the Jungle, the power of the experience is in the power of the "Pack." The spinning, push-ups, dancing, stretching, and dumbbells work, which all take place on a bike, are physical activities that are complemented by a spiritual and mental "workout" facilitated by highly trained instructors.

Headquarters: New York, NY

Investors: Majority Owned by Equinox (Filed for 2015 IPO)

Capital Raised: Undisclosed

WHY IT'S A WINNING MODEL

Talent Development: SoulCycle talent development includes a 12-week training program for instructors covering everything from how to create "emotional peace" during workouts to music appreciation. Corporate headquarters features "SoulUniversity," a mock front desk where employees practice greeting clients.

Disciplined Model: SoulCycle classes are choreographed and consistent. Over 45 minutes, participants are shepherded through a sequence of strength and endurance exercises under the guidance of charismatic instructors.

Inspiration + Perspiration: By creating passion around a carefully cultivated mission, SoulCycle has transformed exercise into a transcendent experience. The power of the community pushes people to accomplish more than they would on their own, which ultimately becomes a positive feedback loop.

The education equivalent of SoulCycle is **KIPP**. Like SoulCycle, nothing KIPP does is patented. To the casual observer, it can be mystifying why the school is such a big deal and how they consistently achieve the results they do. It's a case of doing a hundred little things better than others. It's a focus on giving great training and support to teachers and treating them like professionals. KIPP has also created a loyal "tribe" of teachers, students, alumni, and parents.



KIPP

FOUNDED: 1994

WHAT IT IS

Former *Teach for America* educators **Mike Feinberg** and **Dave Levin** created the Knowledge Is Power Program (KIPP) because they realized that having a lasting, positive impact on underserved students required more engagement than classroom time from 8AM to 3PM for half of a year. So, in 1994, starting with a single classroom in Houston, Feinberg and Levin created a holistic, intensive learning environment to prepare students for a lifetime of success. There were no shortcuts. Extending the school day and year, one of KIPP's founding pillars was simply, "More Time." In 2000, Feinberg and Levin created the KIPP foundation, in partnership with **Donald and Doris Fisher** (founders of **the Gap**) to expand the model. Today KIPP counts over 3,800 teachers serving 70,000 students in 183 schools across the country.

Key Funders: The Doris & Donald Fisher Fund, The Walton Family Foundation, Arthur Rock & Toni Rembe, Reed Hastings & Patty Quillin, the Robertson Foundation, the Broad Foundation, the Arnold Foundation, the Dell Foundation, the Gates Foundation, the Atlantic Philanthropies

WHY IT'S A GAME-CHANGER

Mind: Almost all KIPP classrooms outperform local districts by the end of the 8th grade, including 84 percent in middle school reading and 90 percent in middle school math. More than 94 percent of KIPP middle school students have graduated high school (compared to 74% of low-income students) and over 45 percent complete a four-year college degree (compared to nine percent of low-income students).

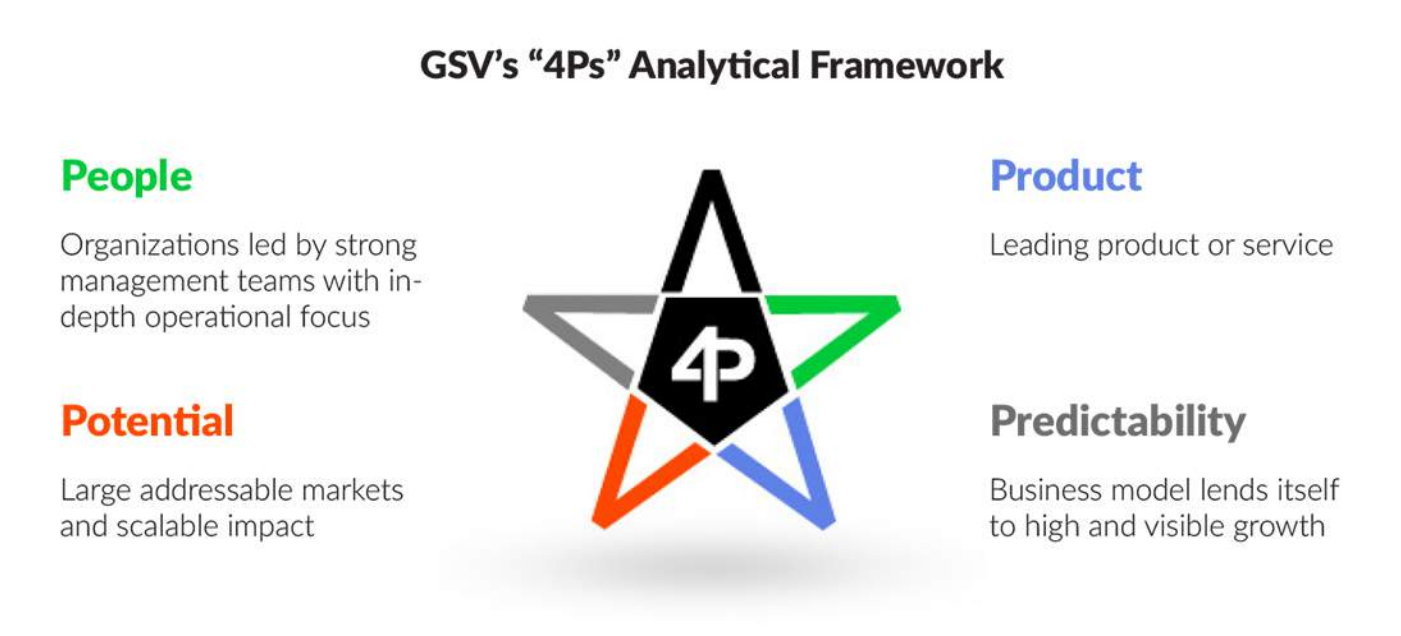
Body: The health and wellness of students is a priority at KIPP. Through *KIPP Care*, a partnership with Legacy Community Health Services, KIPP students can receive high quality, affordable pediatric and behavioral health + wellness services.

Soul: KIPP has a longstanding motto: "Work hard. Be nice." The development of character and accountability is just as important as mastering academic skills.

Pushing the Mind, Body, Soul concept to new boundaries in 2015, top Neuroscience researcher, Dr. Adam Gazzaley, created *Body Brain Trainer*, a brain game that interlaced cognitive challenges with increasingly strenuous physical activity, effectively throwing a new light on PE class. Exercise, eating right, getting enough sleep, and listening to music were all showing positive correlations with learning more effectively, getting smarter, and retaining more information. The holistic integration of the Mind, Body, and Soul was a huge wave to ride to improve learning for all.

The Four Ps

We evaluate innovative solutions for the education market through a lens that combines the Megatrends that we highlighted with company-specific attributes. We call this approach the "4 Ps" and we use it to analyze companies highlighted in case studies throughout our 2020 Vision report.



The first "P" is for "People" and it is the most important "P" by far. There is no shortage of interesting ideas, but it's always the People's ability to execute against the opportunity that determines success or failure. Most companies don't have

long histories, but the people running the company typically do. Our experience is that "winners" find a way to win and attract other winners.

The Second "P" stands for "Product." We want to support companies that are leaders in what they do, have a proprietary product or service, or better yet, a "one-of-a-kind" type of business. Said another way, a company needs to have a claim to fame. "Me too" companies are of no interest to us. Technology, in general, and the Internet, in particular, are all about disproportionate gains to the leader in a category. We want to back businesses that not only "survive," but "thrive," during their corporate evolution.

The race isn't always to the swift nor the battle to the strong, but that's the way to bet.

DAMON RUNYON

The Third "P" is for "Potential" — how big can the company become? Determining total future market potential is a pillar of our research. Megatrends influence our analysis as they provide "tailwinds" to accelerate growth. Often, the companies with the most potential are where the biggest problems are —the bigger the problem, the bigger the opportunity.

The last "P" is for "Predictability" — how visible is the company's growth and what kind of operating leverage does it get with scale? For most new enterprises, having any degree of confidence in the forecast is a challenge. But we are looking for business models that create predictability, whether it's through recurring revenue or a clear articulation of operating metrics that drive the business.

As we search for the education technology companies that would have the greatest scale impact, they are the ones that benefit from the aforementioned Megatrends and get a "4.0" on the 4 Ps.

TEN SIGNPOSTS

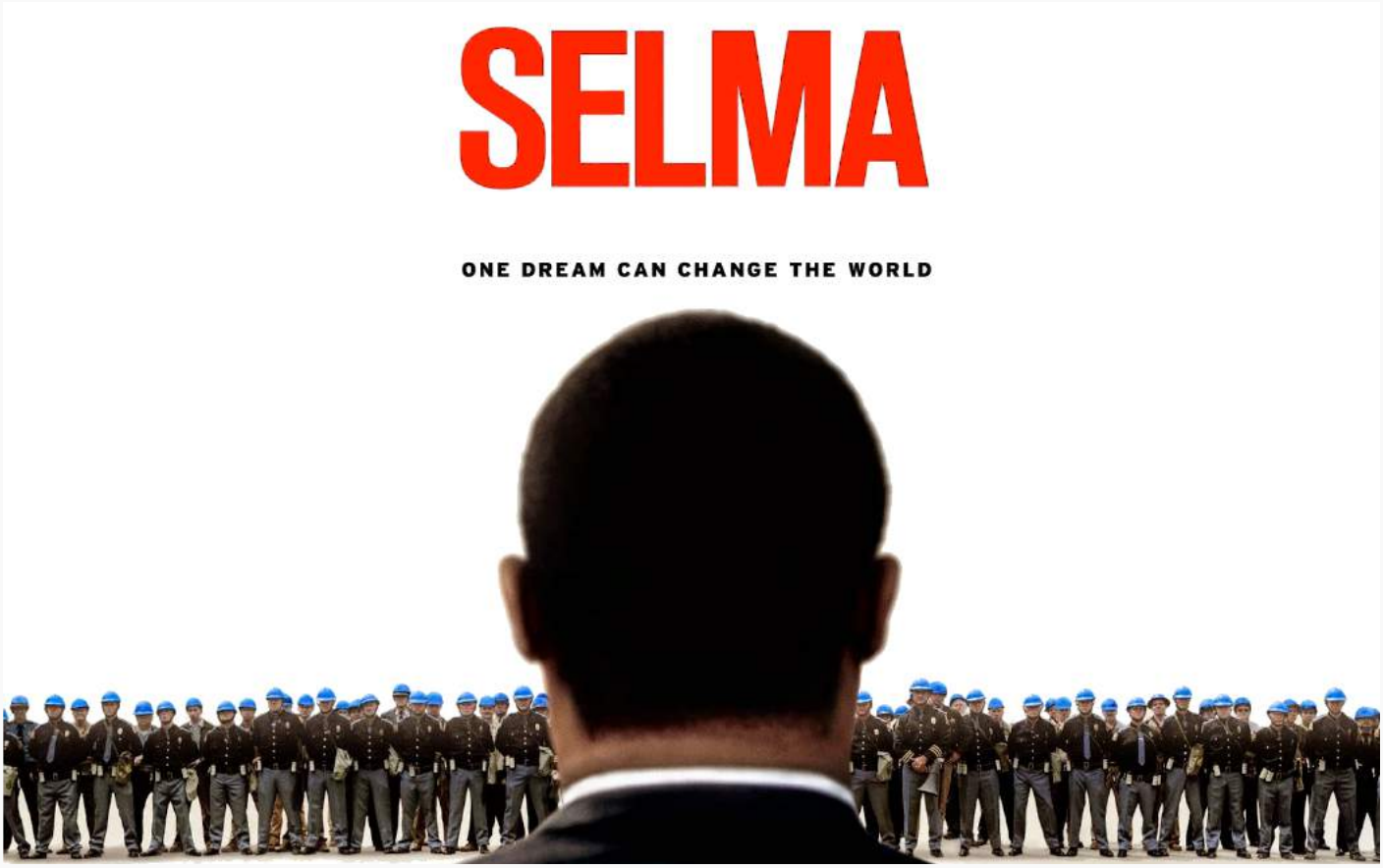


Vision without execution
is hallucination.

THOMAS EDISON

EVOLUTION AND REVOLUTION

Historically, people march when they want change and attention to their cause. The movie *Selma* did a phenomenal job of telling the story of injustice and prejudice that African Americans experienced in the South, and how the Selma to Montgomery March catalyzed the *Voting Rights Act of 1965*. My suspicion, going back to our "Hollywood Meets Harvard" Megatrend, is that the people who saw the movie *Selma* had a much greater appreciation for the Civil Rights Movement of the 1960s and the importance of the Selma March.



The documentary *Waiting for Superman* exposed a broader population to the key Civil Rights issue of today — equal access to quality education. The reality is that if a student attends a bad school, it's probable they will not have the education they

need to get into college or succeed in life. Regrettably, many of our nation's children of color are assigned to schools that have proven to be failures. This fundamental inequality has been a catalyst to promote change.

MARCHES THAT CHANGED THE WORLD

March	Objective	Outcome	Year
Boston Tea Party	Protest of the Tea Act which gave a British-government-controlled company an effective monopoly; around 100 Patriots dumped an entire shipment of tea into the Boston Harbor	Key Precursor to the American Revolution	1773
Storming of the Bastille	In a protest against abuses of the monarchy, over 900 Parisians descended upon the Bastille prison, a symbol of royal authority and beheaded its governor	Major Catalyst of the French Revolution	1789
The Salt March	Protest of British taxation over salt; Ghandi led over 60,000 protestors on a 240 mile march to the coast of India to collect their own salt	Turned World sympathy towards Indian interests	1930
Civil Rights March on Washington	Martin Luther King, Jr. delivered his "I Have a Dream" speech from the steps of the Lincoln Memorial to a 250,000 person crowd demanding equal rights	Led to the passage of the Civil Rights Act of 1964	1963
1969 Vietnam War Protest	Protest of U.S. involvement in the Vietnam War; Over 500,000 people marched on Washington	Demonstrated the anti-war movement embodied more than just politicized youth; won people over to the anti-war cause	1969
Soweto Uprising	Protest of the Apartheid government's enforcement of Afrikaans as the language of instruction; 20,000 student protestors marched peacefully and were met with heavy government opposition; over 150 were killed	Led to an international revulsion against South Africa, gave impetus to the anti-Apartheid movement	1976
Tiananmen Square	Call for democratic reform; around 1 million student-led protestors occupied Beijing's Tiananmen Square for 7 weeks; hundreds were killed by government officials	Massacre became a global symbol, impacted Chinese foreign relations	1989
Alexanderplatz Demonstration	Protest against the government of the German Democratic Republic; an estimated 1 million participated in pro-democracy demonstration in East Berlin's main square	Led to the fall of the Berlin Wall and German Reunification	1989
Occupy Wall Street	Protest of social and economic inequality, beginning with 3,000 people who assembled to occupy Wall Street	Branding of the 99% message, which resonated and spread to cities around the World	2011
Tahrir Square	Protest of the regime led by President Hosni Mubarak; over 1 million people gathered to overthrow the President and demand political rights	Focal point of the Egyptian Revolution of 2011; Mubarak resigned	2011

Occupy Wall Street ("OWS") and adjacent uprisings have powerfully demonstrated that a large and growing segment of American society doesn't believe that it is participating in the future. As Aristotle observed, "Inequality is the parent of revolution."

The "1 percent vs. 99 percent" that OWS blamed for all of America's troubles actually contained a substantial kernel of truth. The top one percent of earners in America owned 43 percent of the country's financial assets, while the top five percent owned 72 percent.

CEO pay in the United States had increased more than 300 percent in the 20 years leading to the protest, while average workers' total take-home pay had essentially flat-lined. With historically high-paying jobs being outsourced, outmoded, and outdated, a significant part of the population could sense that they were being left behind. In 2015, we committed to channel our energy, angst, and hopes into a "20 Mile March" based on ten core strategic policy pillars.

The Race to the South Pole

Jim Collins' signature methodology of research is to examine "matched pairs" of great and not-so-great leaders who faced similar circumstances but achieved significantly different results. Fittingly, Collins was effectively his own case study in matched pairs, as he moved to the Haight Ashbury district of San Francisco from Colorado in the first grade.

In the mid-1960s, when Collins moved to "the Haight," it was at the center of the free love, drugs, and rock and roll movement. Great schools were not the signature of the Haight, and when he moved back to Colorado in the fourth grade, he was a full grade behind.

JIM COLLINS

Business Strategy Luminary + Author of ***Built to Last***, ***Good to Great***, ***Great by Choice***



Collins recognized that he was effectively his own "Trading Places," and had his own environment not changed, then his personal story would be very different. It's a pretty good bet we would have never heard of Jim Collins, and the World would have been deprived of one of the great business thinkers of all time.

To illustrate how significant achievement is garnered by a disciplined mind and actions over time, Collins tells the story of the "20 Mile March" and the matched pair of Roald Amundsen and Robert Falcon Scott, who were racing to get to the South Pole first.

The year was 1911 and expeditions to discover territories where no man had gone before were both a source of national pride and individual reward. Despite numerous attempts, nobody had ever made it to the South Pole. The race to get there pitted the Norwegian, Amundsen, against the Brit, Scott, and the journey covered 1,400 miles — approximately the distance between Boston and Miami.

Despite having the same objective, the two parties prepared for the challenge very differently. Amundsen apprenticed with Eskimos , using sled dogs and skis for the journey, as the locals did. Scott relied on his previous exploration experience, bringing horses (which quickly froze) and motorized sleds (which quickly broke).

The biggest differences between the two?

Scott's Journal entry during a snow storm: "I doubt if any party could travel in such weather." His strategy was to hunker down in bad weather and make up time when the sun was shining.

TOUGH SLEDDING: A MATTER OF PERSPECTIVE

Journal Entries from South Pole Explorers Sir Robert Falcon Scott (United Kingdom) and Roald Amundsen (Norway) on December 5, 1911

Robert Falcon Scott



"I doubt if any party could travel in such weather."

—JOURNAL ENTRY, DECEMBER 5, 1911

Roald Amundsen



"It has been an unpleasant day... storm, drift, and frostbite, but we have advanced closer to our goal."

—JOURNAL ENTRY, DECEMBER 5, 1911

Amundsen's Journal entry on the very same day read: "It has been an unpleasant day… storm, drift, and frostbite, but we have advanced closer to our goal".

While Scott took what the weather gave him, Amundsen's strategy was to move forward 20 miles, whatever the conditions. What was the result? Amundsen (and the Norwegians!) were the first to make it to the South Pole, on December 14th, 1911.

As for Robert Falcon Scott? He and his entire party perished.

The moral of the story is that big accomplishments can be achieved by relentlessly making progress towards a goal every day. Obstacles are no excuse for not getting there. Our 20 Mile March began with the objective of giving every person an equal opportunity to participate in the future. *One step at time, we followed the Ten Signposts.*



1

BABY STEPS

Equal Access to Early Learning

We provided universal access to high-quality education for all children aged 0 to 5.

Problem

One third of American children were not ready for kindergarten when they enrolled. They were disproportionately from low income and minority families. Starting from behind stacks the odds against you for life. Students that entered kindergarten unprepared were over 25 percent more likely to drop out of high school, 60 percent more likely to skip college, and 70 percent more likely to be arrested for a violent crime. *Despite the fact that 85 percent of cognitive development occurred before the age of five, over 98 percent of education funding was directed to children age five and older.*

MODELS THAT WORK

- **Public Pre-K + Home Visits**: High-quality public programs as pioneered in Oklahoma, New Jersey, and Chicago + targeted home visits *(e.g. Ounce of Prevention Fund; The Maternal, Infant, and Early Childhood Home Visiting Program)*
- **Virtual + Mobile Early Learning**: Research-based programs and content to promote core cognitive and non-cognitive abilities *(e.g. Waterford Research Institute, Speakaboos, ABC Mouse, Fingerprint Play, Kidaptive)*
- **Parent Support Resources**: Services and apps that engage parents in the early cognitive development of their children *(e.g. Reach Out and Read, Vroom App)*

SOLUTION

1. **Universal Pre-K**: Access to high quality Pre-K programs for all U.S. three- and four-year-olds
2. **Early Learning on Demand**: Family access to a foundational set of high quality, digital early learning resources at no cost to help children develop key skills at home; Cognitive development monitoring + reading "prescriptions" by Medicaid pediatricians
3. **Digital Assistants for Parents**: Mobile *Head Start* app expanding on *Vroom* (Bezos Family Foundation app) + digital "home visits" (expanding existing home visiting programs to serve all families living in extreme poverty with children younger than age five)

Fundamentals	2015
U.S. Children Ready for Kindergarten by Age 5	64%
U.S. Children Ready for Kindergarten by Age 5 (Moderate + High Income)	75%
U.S. Children Ready for Kindergarten by Age 5 (Low Income)	48%
Increased Likelihood of High School Dropout if Unready for Kindergarten	20%
Increased Likelihood of Teen Parenthood if Unready for Kindergarten	40%
Increased Likelihood of Skipping College if Unready for Kindergarten	60%
Increased Likelihood of Arrest for a Violent Crime if Unready for Kindergarten	70%
U.S. Population, 3-Year-Olds	4 million
U.S. Preschool Enrollment, 3-Year-Olds	41%
U.S. Global Rank, Preschool Enrollment, 3-Year-Olds	24th
U.S. Population, 4-Year-Olds	4 million
U.S. Preschool Enrollment, 4-Year-Olds	66%
U.S. Global Rank, Preschool Enrollment, 4-Year-Olds	26th
U.S. Global Rank, Average Pre-K/Preschool School Starting Age	22nd
U.S. Global Rank, % of GDP Spent on Pre-K/Preschool	21st
U.S. Global Rank, Teacher to Child Ratio, Pre-K/Preschool	15th

Source: Brookings Institution, U.S. Census Bureau, OECD, Ounce of Prevention Fund

Weapons of Mass Instruction: Early Learning



Company	Founded	Type	Impact
ABC Mouse *Age of Learning*	2010	Interactive Learning (Multi-Subject)	1M+ subscribers, 5K+ individual learning activities; 1B+ activities completed
BookFlix *Scholastic*	2007	Interactive Literacy Learning	Distributed through thousands of U.S. schools and libraries
Duck Duck Moose	2008	Mobile Game-Based Learning (Multi-Subject)	3.5M+ downloads
Fingerprint Play	2010	Game-Based Learning + Entertainment (Multi-Subject)	1K+ apps used by 3M+ families
Imagicademy *Disney*	2014	Game-Based Learning for Non-Cognitive Skills + Analytics	#1 iOS app for early education in 41+ countries
Kidaptive	2012	Game-Based Learning for Non-Cognitive Skills + Analytics	1M+ downloads
MeeGenius *Houghton Mifflin Harcourt*	2010	Interactive Literacy Learning	2M+ users
Reading Rainbow	2011 *Re-Launch*	Interactive Literacy Learning	16M+; record $6.4M raised on Kickstarter in 35 days; Netflix Distribution
Speakaboos	2008	Interactive Literacy Learning	1M+ users; Disproportionate capture of children users' screen time (iOS: 27%, Android: 35%)
Tinybop	2011	Game-Based Exploration of Real World Phenomena	5M+ downloads for "Human Body" app; iTunes store "Editors Choice" award
Toca Boca *Bonnier Group*	2010	Mobile Game-Based Learning (Unstructured Play)	100M+ downloads
UPSTART *Waterford Institute*	2009	Digital Kindergarten Readiness Curriculum	13K+ families served; 99%+ would recommend to other families
Vroom *Bezos Family Foundation*	2014	Parent Support App Emphasizing Early Child Engagement + Learning	U.S. partnerships, including Oregon Department of Education, to drive early adoption

In his brilliant book, ***Outliers***, Malcolm Gladwell examines why 40 percent of the elite hockey players in Canada are born in January, February, and March. He also looks at the corollary… if you were born in November or December, you might as well find another sport because, statistically, *there is almost no possibility of becoming an elite player*.

Gladwell theorizes that hockey success hinged on the month of your birthday because in Canada, children are grouped by birth year in youth leagues. For example, any player born in 2000 falls into the "minor midget" division of Canadian youth hockey.

At five-years-old, January-born minor midgets are, on average, bigger and stronger than December-born players. This makes sense, as they have lived roughly 20 percent longer. Gladwell argues that this head start gives players born in the first months of the year a lifelong advantage. They get more ice time and better coaching from the start, and are more likely to be chosen for top tier competitive teams.

Starting ahead allows kids to stay ahead, and even widen the gap. But for those would-be Wayne Gretzkys that start behind, the odds of leap-frogging to the front are long. Frustrated and told they're "not good enough," the natural response of many is to give up.

Most people, and especially Puck Parents, would say that this system is structurally unfair, and of course it is. The consequences, however, are trivial in comparison to to a school system designed with similar structural inequities.

IN CANADIAN HOCKEY, THE EARLY BIRD GETS THE WORM

From "Midgets" to Legends, Early Birthdays are a Golden Ticket in Canadian Hockey

Birth Month	% of NHL Players
JANUARY	10.6%
FEBRUARY	9.4%
MARCH	9.8%
APRIL	9.4%
MAY	8.4%
JUNE	8.1%
JULY	8.2%
AUGUST	7.2%
SEPTEMBER	7.7%
OCTOBER	7.3%
NOVEMBER	6.7%
DECEMBER	6.6%

NHL Legends

Wayne Gretzky



Birthday: Jan 26, 1961

Nicknamed "The Great One", Gretzky won four Stanley Cup championships, was named the NHL's MVP nine times, and holds the all-time record for points scored by a wide margin.

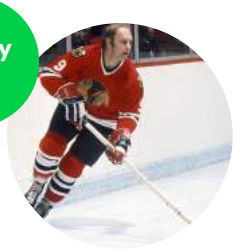
Gordie Howe



Birthday: March 31, 1928

Known simply as "Mr. Hockey", Gordie Howe was a 23-time NHL all-star and a four-time Stanley Cup winner. He held most of the NHL's scoring records until they were broken by Wayne Gretzky.

Bobby Hull



Birthday: Jan 3, 1939

"The Golden Jet" was one of the fastest players ever to take the ice. His Hall of Fame career included two MVP awards and three scoring titles, along with a 1961 Stanley Cup championship.

Mark Messier



Birthday: January 18, 1961

Mark Messier dominated the NHL for 25 years, taking home six Stanley Cups. He is the only player to captain two different teams to championships and was twice named the NHL's MVP.

Bobby Orr



Birthday: March 20, 1948

Bobby Orr is the only defensemen ever to win a scoring title, blending speed and toughness to revolutionize the position. He was twice named the NHL's MVP and won two championships.

Source: ESPN, QuantHockey

Problem

In 2015, less than half of children from low income families were ready for kindergarten by age five. But this wasn't just a "poor kid" issue. Only 25 percent of children from moderate or high income families began kindergarten without the basic skill set to succeed. The net result was that *one third* of American five-year-olds were at risk from the moment they started school.

Ability is nothing without opportunity.

NAPOLEAN BONAPARTE

Decades of research demonstrated that cognitive gaps were forming well before kindergarten. And these gaps opened along socio-economic lines. Early vocabulary development, for example, was a cornerstone of kindergarten readiness that was driven largely by the volume of words young children heard from their parents.

By the age of three, children born into families earning above median income could expect to hear *32 million more words* than those from low income families.

Play it forward and students who entered kindergarten unprepared to learn were over 25 percent more likely to drop out of high school, 60 percent more likely to skip college, and 70 percent more likely to be arrested for a violent crime. *Starting from behind stacked the odds against you for life*.

How You Get Locked Out of the Future by Age 4



FUTURE STUDENT

- I live with both of my parents.
- My parents are college educated.
- My family's income is in the top 10%.



NO FUTURE STUDENT

- I live with my mom—dad is not in the picture.
- My mom is a high school dropout.
- My family is on welfare.

STEP 1

Amount my parents spend per year on products and activities that stimulate my MIND, BODY, and SOUL.

$6500 PER YEAR

$1000 PER YEAR

STEP 2

Time my parents spend with me per day on child care activities.

130 MINUTES

90 MINUTES

STEP 3

My parents value instilling "Self-Reliance" in me over "Obedience".

70%

19%

STEP 4

The number of verbal "Encouragements" vs. "Discouragements" I hear from my parents per year.

166K ENCOURAGEMENTS vs **26K** DISCOURAGEMENTS

26K ENCOURAGEMENTS vs **57K** DISCOURAGEMENTS

STEP 5

Words I hear per year + my vocabulary by age 3.

19M WORDS/YEAR | **1,100** WORD VOCABULARY

5M WORDS/YEAR | **500** WORD VOCABULARY

Starting from behind stacks the odds against you for life.

Students that enter kindergarten unprepared are up to 4x more likely to drop out of high school, 40% more likely to become a teen parent, 60% percent more likely to skip college, and 70% percent more likely to be arrested for a violent crime.

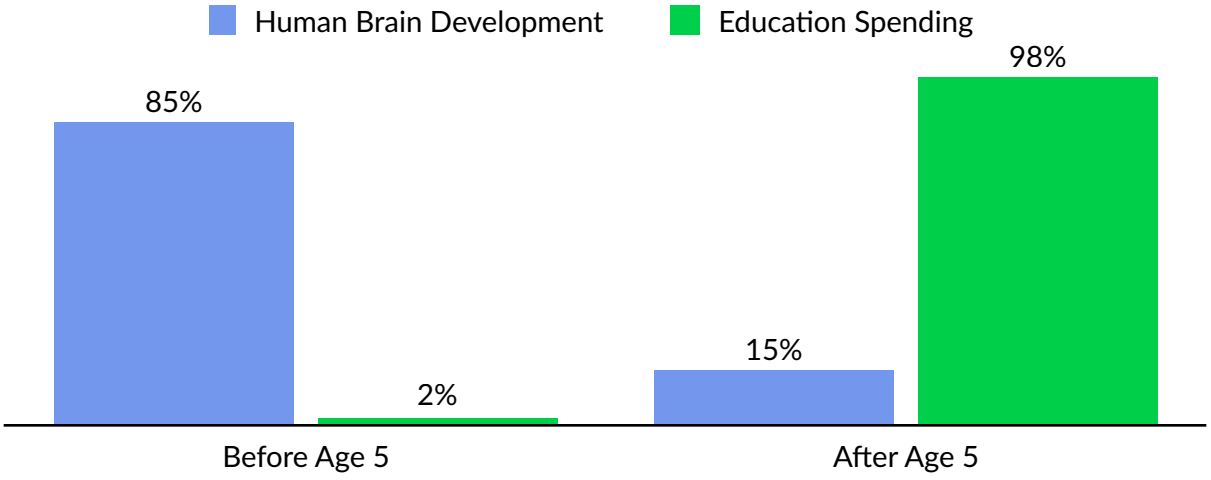
Source: GSV Asset Management, Faith Matters, Hart & Risley ("Meaningful Differences in the Everyday Experience of Young Americans"), Kornrich & Furstenberg ("Investing in Children"), Journal of Marriage and Family

Worse, while we knew that 85 percent of cognitive development occurred before the age of five, *over 98 percent of education funding was directed to children age five and older*.[8] Despite the spending imbalance, problems actually accelerated as students progressed through the education system.

It was a feedback loop. If you lacked key skills on day one of kindergarten, you learned at a slower pace, falling further behind. As the cycle repeated, the academically "rich" became richer and the "poor" become poorer.

Education Spend is Out of Sync with Brain Development

Human Brain Development before Age 5 vs. Education Spending on Children Age 5 or Younger



Source: U.S. Census Bureau, The Race Between Education and Technology (2008)

KEY TAKE-AWAYS

While 85 percent of cognitive development occurs before the age of five, over 98 percent of education funding was directed to children age five and older. It is easier and more effective to influence a baby's developing brain than it is to rewrite it as an adult.

[8] *A Path Appears* (Nicholas Kristof + Sheryl WuDunn, 2014), GSV Asset Management

MODERN FAMILY

In 1960, most American families consisted of a breadwinner dad and a homemaker mom, with an average of 2.3 kids. Nearly 90 percent of children lived in a two parent household, with over 40 percent of moms staying at home to raise their children. Divorce was uncommon and births outside of marriage were just four percent overall.[9]



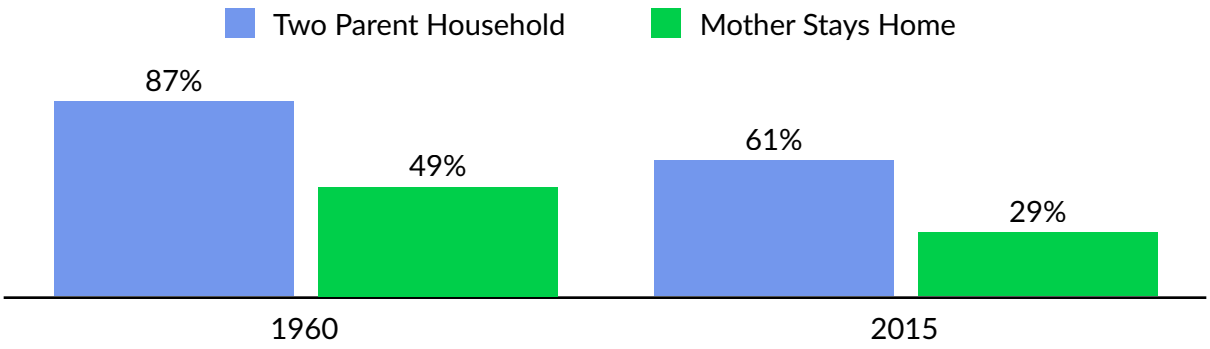
Source: ABC

By 2015, the model looked very different. For married couples, dual incomes became the norm, as only 29 percent of moms stayed home. More importantly, over 40 percent of all new births were to unmarried mothers — highest among developed nations — including 72 percent of African American children and 53 percent of Hispanic children. Only nine percent of single mothers were able to stay at home with their children.

[9] *Our Kids: The American Dream in Crisis* (Robert Putnam, 2015), Pew Research Center

Rapid Rise of Single Parent Families + Working Mothers

Family Structure, 1960 vs. 2015



Source: Pew Research Center

KEY TAKE-AWAYS

In 1960, 87 percent of children lived in two parent households and 49 percent of mothers stayed home with with their children. By 2015, just 61 percent of children lived in two parent households and only 29 percent of mothers stayed home.

THE LOTTERY OF BIRTH

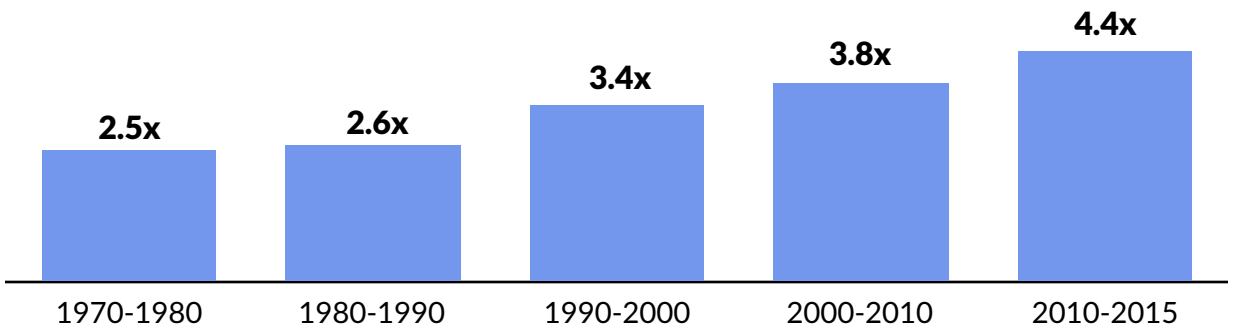
Picking the right parents made all the difference.

Between new family structures and income inequality that had risen steadily since the 1970s, two powerful poles in America's social landscape emerged. In the upper-income, college-educated third of American society, most kids lived with two parents, both of whom had jobs. In the lower-income, high-school-educated third, most kids lived with one of their biological parents, at most, and unemployment was rampant.

Not surprisingly, wealthier educated families had more flexibility to invest in their children. From 1970 to 1980, the wealthiest tenth of American families spent 2.5x more on education and childcare services than families from the bottom tenth. By 2015, the gap had widened to 4.4x.

Wealthy Families Accelerate Spending on Young Children

Amount Spent by Top 10% Income Families on Child Care + Education vs. Bottom 10%



Source: U.S. Census Bureau, Investing in Children (Kornrich + Furstenberg, 2013), GSV Asset Management

But money didn't tell the whole story — at least not directly. For children aged zero to four, good parenting and quality care were the difference between participating in the future or being locked out.

In 1995, University of Kansas researchers Betty Hart and Todd Risley released a study titled *The Early Catastrophe: The 30 Million Word Gap by Age 3*. They found that children born into families on welfare heard about 3 million words spoken per year, a working-class child about 6 million words a year, and a child of professionals about 11 million words annually.

Family income, in other words, determined how many words your parents could spare. *And words were worth more than money*.

Beyond *how much* you heard from your parents, *what* you heard and *how* you heard it was equally important. Key "Non-Cognitive" abilities — character attributes like perseverance, motivation, self-esteem, and self-control — were developed through nurturing interactions and environments, including consistent positive reinforcement.

Here again, the lottery of birth made all the difference. Working professionals, for example, delivered 166,000 "encouragements" versus 26,000 "discouragements" to their children per year through age three. For parents on welfare, the math flipped. They provided just 26,000 "encouragements" per year, versus 57,000 "discouragements."

If you want your children to be intelligent, read them fairy tales. If you want them to be more intelligent, read them more fairy tales.

ALBERT EINSTEIN

By 2015, we knew that the interplay of cognitive and non-cognitive abilities were critical to a child's prospects for success in the classroom and beyond. We also knew that we were on the clock. Children who failed at effectively developing these skills by age five faced long odds to participate in the future.

PARENT INTERACTIONS AND CHILD VOCABULARY DEVELOPMENT

Long Term Cognitive Abilities Are Heavily Determined by How Many Words You Hear by Age Five

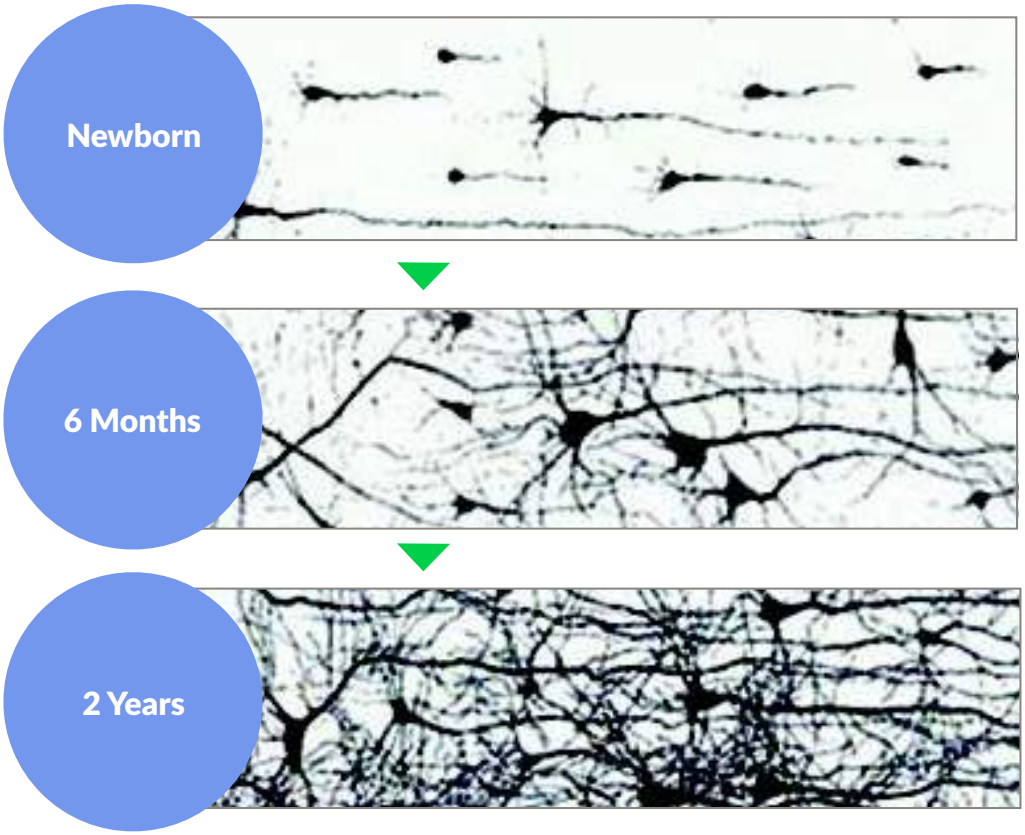
Child Engagement	Family Employment & Income Type		
	Welfare	Working Class (Wage)	Professional
Words Heard Per Year	5M	11M	19M
"Encouragements" Received Per Year	26,000	62,000	166,000
"Discouragements" Received Per Year	57,000	36,000	26,000
Vocabulary at Age 3	500 words	700 words	1,100 words

Source: Hart & Risley

In the first few years of life, 700 new neural connections are formed *every second* in a child's brain. Neural connections are formed through the interaction of genes and a baby's environment and experiences. But as the maturing brain specializes to assume more complex functions, it is less capable of reorganizing and adapting. By the age of five, over 85 percent of a child's cognitive development is complete.

If You Start Behind, You Stay Behind

Brain Development and Neural Connection Formation by Age Two



Source: Harvard Center on the Developing Child

KEY TAKE-AWAYS

The early life of the mind is critical to a child's future success as, 85 percent of brain development occurs before age five. During this period, 700 new neural connections are formed per second. These connections, which are influenced by genes, environment, and experiences, build brain architecture, the foundation for all future learning and behavior.

As the brain specializes for its environment, it prunes away unused circuits. Those that remain become stronger and increasingly difficult to alter. In this sense, the biology is unambiguous. It is easier and more effective to influence a baby's developing brain than it is to rewrite it as an adult — a fact we understood from practical experience. From learning new language, to playing golf or even tying your shoes, it's easier to learn when you're young.

Models that Work

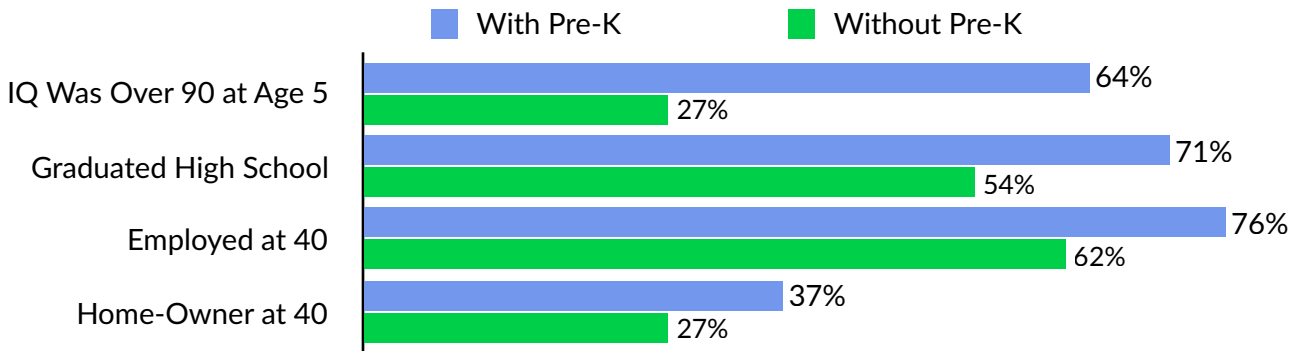
By 2015, the science was effectively unanimous. Waiting until age five to begin formal education was too late for anyone — especially disadvantaged children. But there were models all around us — both new and long established — that could contribute to a solution.

UNIVERSAL PRE-K

Remediating the effects of inequitable early skills development was not as effective or cost efficient as solving the problem before it started. To this end, high quality Pre-K programs offered a compelling return on investment. By improving early literacy, language, and math skills — as well key qualities like perseverance, motivation, and self-control — Pre-K programs reduced the odds that students would repeat grades, require special education services, or drop out of high school.

Quality Pre-K is a Game-Changer for At-Risk Students

Pre-K Benefits for Students from Low Income Families at Age 40 (HighScope Perry Preschool Study)



Source: The High/Scope Perry Preschool Study

KEY TAKE-AWAYS

Initiated in 1965, the HighScope Perry Preschool study was conducted over four decades, providing breakthrough data on the long-term benefits of quality early education for children from low income families. Compared to peers who began school in kindergarten or later, students in the Perry program had far superior education, career, and life outcomes.

For students from underserved communities, access to Pre-K education was transformational. Despite this, just 54 percent of our eight million three- and four-year-olds were enrolled in Pre-K, trailing 28 of the 34 OECD countries reporting data.[10]

America's major early learning initiative, *Head Start*, made Pre-K available to nearly one million kids from low-income families. While critics claimed that academic gains from the program faded over time, *Head Start* was a critical stopgap that prevented at-risk children from being shut out of the future by age five.

Highly effective State programs that provided universal Pre-K offered a blueprint for expanding on *Head Start's* foundation. And parent demand was widespread. In its second year of operation, for example, New York City parents enrolled 22,000 children in public Pre-K *on the first day of registration*, over three times the number that signed up when it launched in 2014.

High Impact, Pre-K Programs

Program	Description	Impact	Lessons
Oklahoma Public Schools	Fully-funded State Pre-K for all four-year-olds	• Reading skills nine months ahead of peers upon entering kindergarten • Writing skills seven months ahead • Math skills five months ahead	Power of universal access + high quality teachers (college degree & early childhood education required)
Perry Preschool Project	1962 trial program for three- and four-year-old impoverished African Americans from Michigan	• 44% improvement in high school graduation rate vs. non-participants • 46% less likely to be incarcerated • 42% increase in annual earnings • 3x more likely to own a home	Small pilot but definitive improvement in outcomes as participants were studied over 40+ years
Abbott Preschool Program	Fully-funded Pre-K network for New Jersey's highest poverty districts	• 25% improvement in Basic Number Concepts vs. non-participants • 26% improvement in vocabulary • 61% improvement in print awareness	Power of high quality Pre-K + wraparound services for parents

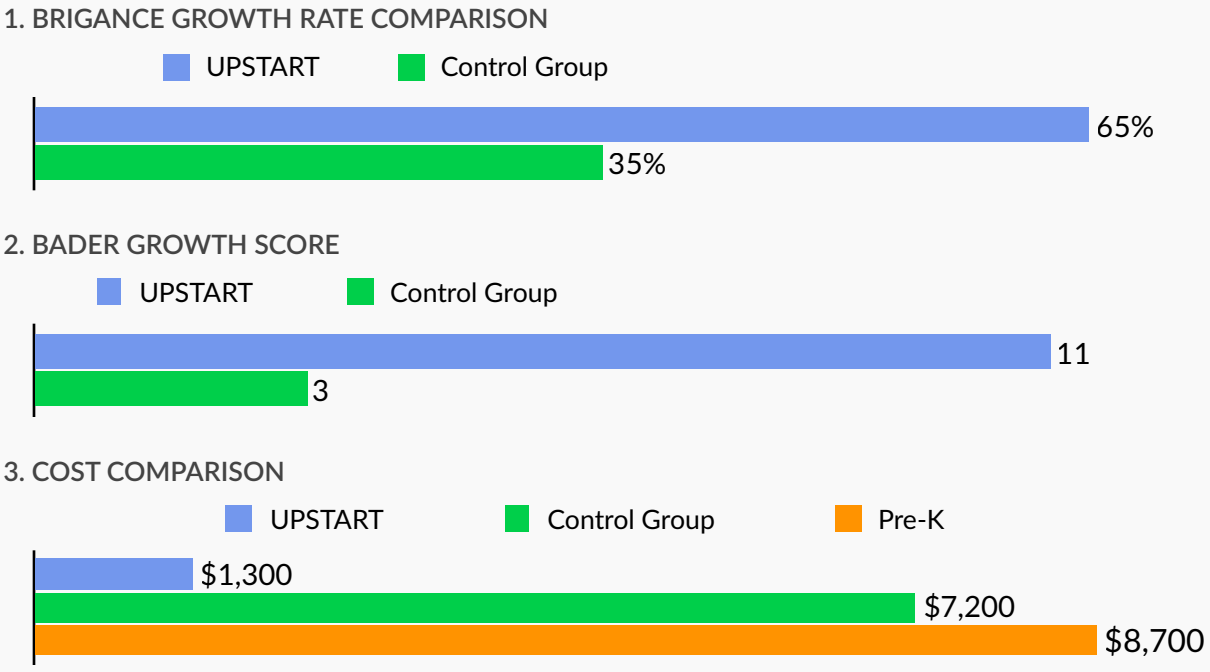
Source: Oklahoma Public Schools, Brookings Institution

[10] *OECD*, "Education at a Glance" (2014)

But models were also emerging that lowered cost and expanded access at scale. By 2015, Internet connectivity was effectively universal and over 70 percent of American families owned smartphones or tablets. Over half of children aged three to five had taught themselves to operate mobile apps.[11] Organizations like the **Waterford Research Institute** capitalized on these fundamentals to offer a web-based Pre-K curriculum called *UPSTART* that adapted to student learning needs with every click. It delivered measurable learning gains at a tenth of the cost of in-person programs.

Using two standardized early childhood assessments, known as *Brigance* and *Bader*, an external evaluator found that *UPSTART* children performed significantly better than control groups. It fact, many students scored at kindergarten, and even first grade levels, meaning that when UPSTART students started school, they started ahead.

The Case for Waterford's UPSTART Program in Three Charts



Source: The Waterford Institute

[11] iKids (*Beyond VOD*, 2014), Nielsen (*Mobile Millennials*, 2014)

Importantly, *UPSTART* was highly cost effective. On average, the cost per participant — *including providing a computer and Internet to homes without them* — was one-fifth that of Head Start and center-based Pre-K. As it scaled, the average cost continued to decline.

GAME CHANGERS



UPSTART PROGRAM

FOUNDED: 2009

WHAT IT IS

The Waterford Institute's *UPSTART* program combines research-based early learning curriculum with a cost effective digital delivery model to make high quality school readiness programming available at scale. *UPSTART* uses award-winning adaptive software to provide preschool-age children with individualized reading, math, and science skill building activities. Starting with the basics, *UPSTART* lessons are personalized to the specific needs of each child.

WHY IT'S A GAME-CHANGER

Personalized: Waterford's software constantly monitors each student's mastery of skills and adapts instruction to meet individual needs. On-demand reporting gives teachers and parents insights into the learning process.

Cost Effective: On average, the cost per participant (including providing a computer and Internet to homes without them) is one-fifth that of Head Start and center-based Pre-K. When scaled for more students, the average cost continues to decrease.

MOBILE MEDIA + SKILL BUILDING

While The Waterford Institute's *UPSTART* program offered a comprehensive school readiness curriculum, a variety education models were emerging that blended engaging digital media with native mobile design, making it easy to simply pick up a device and learn. **Speakaboos**, for example, created by a Dream Team of early learning and education technology pioneers, developed a highly engaging

literacy skills platform that empowered kids to take ownership of their own learning.



SPEAKABOOS

FOUNDED: 2008

WHAT IT IS

Speakaboos is a mobile education platform that helps kids learn and love to read. Led by CEO **Neal Shenoy**, the company has assembled a Dream Team of early learning innovators and education technology pioneers. Chief Learning Officer **Dr. Alice Wilder** was the former Head of Research and Testing for the critically and scientifically acclaimed children's program, *Blue's Clues*.

Headquarters: New York, NY

Investors: Advancit Capital, Kyowon Group, [212]MEDIA, Deborah Quazzo (GSV Advisors)

Capital Raised: $133 million

WHY IT'S A GAME-CHANGER

Unprecedented Engagement: Speakaboos' interactive reading platform produces unprecedented engagement, capturing 27+ percent of total *iOS* screen time and 35+ percent of total *Android* screen time for the children using its app. It also has a top-five learning channel on *YouTube Kids*, serving 40K+ educators and 1.5+ million children.

Highly Effective Learning Model: Speakaboos helps kids learn to read through interactive stories designed based on the science of learning. Importantly, it develops literacy skills while fostering a *motivation* to read. Empowering kids to discover stories on their own, each reading experience is adapted to the user's skill level and is guided by embedded supports and prompts.

Premier Content: Speakaboos' award-winning original content is augmented by partnerships with leading global publishers, including **Scholastic**, **Penguin**, and **Random House**.

Drawing on the research of Chief Learning Officer **Dr. Alice Wilder** — the former Head of Research for the children's program, *Blue's Clues*, which was acclaimed for stimulating early cognitive development — Speakaboos didn't just teach kids to read, it motivated and inspired them. The wildly popular app drove measurable

skills gains while capturing nearly 30 percent of the *entire iOS* and *Android* screen time of the kids who used it.

Families increasingly had access to a range of apps that developed key skills in an entertaining format — the foundation of our "Hollywood Meets Harvard" Megatrend. **ABC Mouse** and **Learn with Homer** engaged millions of users with games and interactive lessons built on basic math, science, and literacy concepts. **Fingerprint Play** expanded access to similar apps with a mobile platform that curated play-and-learn content from a variety of creators. It reached over one million users with more than 1,000 apps.

GAME CHANGERS



FINGERPRINT PLAY

FOUNDED: 2010

WHAT IT IS

Under the leadership of co-founder and CEO **Nancy MacIntyre**, Fingerprint Play has emerged as a powerful mobile education and entertainment platform for kids, serving over one million users with 1,000+ entertaining learning apps. Fingerprint reaches users through a proprietary platform, as well as through networks it operates for major technology and content companies, including Samsung (KidsTime), Sylvan Learning (SylvanPlay) and Astro (AstroPlay).

Headquarters: San Francisco, CA

Investors: DreamWorks, Reed Elsevier Ventures, Corus Entertainment, Deborah Quazzo (GSV Advisors)

Capital Raised: $20 million

WHY IT'S A GAME-CHANGER

Fingerprint is accelerating the creation of high quality education apps while making it easier for students, families, and teachers to find them.

High Quality "Edutainment": Fingerprint partners with developers and content creators to produce a network of edutainment kids apps that that combine learning and entertainment in a "gameified" experience. The company's apps have won more than 50 parenting and education awards.

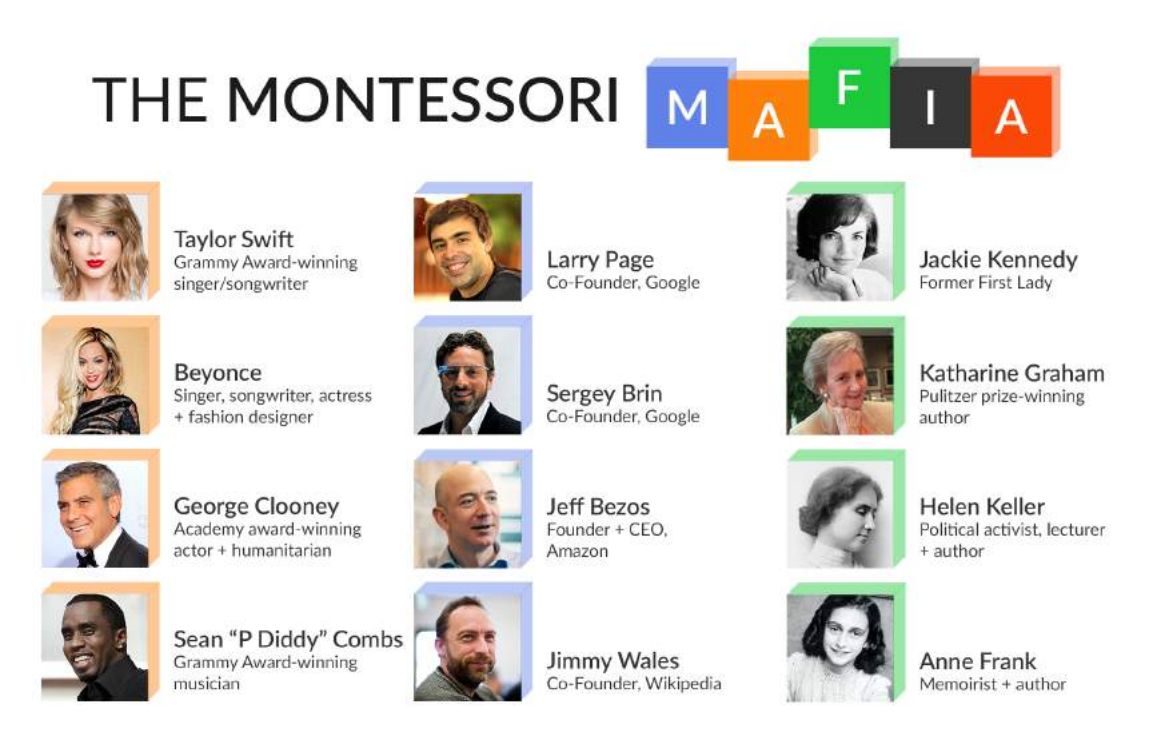
Connecting Children and Parents: The apps feature a built-in sharing platform which provides transparency around user progress and activity. Parents can provide encouragement and support through texts and audio messages that are played directly in the games.

PLAYING IS LEARNING

In the early 20th century, Maria Montessori developed the primary education system that still bears her name. Montessori schools emphasize a collaborative environment without grades or tests. Classrooms are multi-aged, with students as old as seven mingling with two-year-olds. The one "constant" was a day built around long blocks of self-directed learning and discovery.

The model churned out notable alumni, headlined in recent years by the creative elite of the Internet age — **Google** founders Larry Page and Sergey Brin, **Amazon** founder Jeff Bezos, and **Wikipedia** founder Jimmy Wales, to name a few. Members of the "Montessori Mafia" acknowledged the value of their education in no uncertain terms. Once asked about the factors behind Google's success in an interview alongside Sergey Brin, Larry Page replied, "We both went to Montessori school."

NOTABLE MONTESSORI ALUMNI



Source: Forbes, Wall Street Journal, GSV Asset Management

In a Global Knowledge Economy that valued adaptability, inquisitiveness, and innovation over easily automated skills learned by rote, Montessori was a reminder that the most effective 21st century curriculum might be no curriculum at all. Innovative gaming companies targeting children aged five and below demonstrated that the magic of Montessori could also be channeled through the web.

Minecraft was the virtual company **Lego** should have been. Played by over 100 million people World-wide, users could build almost anything out of digital "blocks" — from a replica of the country of Denmark to a pirate ship. Acquired by **Microsoft** for $2.5 billion in 2014, Minecraft founder Markus Persson turned digital blocks into gold bricks.

Opting to join forces rather than do battle, Lego struck an agreement to sell *Minecraft-themed* physical building sets. The wildly popular product line flew off the shelves, contributing to years of record profits. This was one of the rare examples of "software eating the World," with the World eating right back.



With Lego and Minecraft, **Toca Boca** made it a Swedish triple play in early learning. A fanatically entrepreneurial subsidy of the Swedish publisher, **Bonnier Group**, Toca Boca developed digital games and media to stimulate the imagination. Their only rule was to have as few rules as possible, letting kids guide their own experience. By 2015, Toca Boca apps had registered over 100 million

downloads in 160 countries, creating both a brand and network effects that drew in greater numbers of users with each launch of a new thematic app.

Duck Duck Moose, backed by Sequoia Capital and Lightspeed Venture Partners, was founded by parents who wanted to build apps that were both engaging and educational. The company tested its apps with kids across a wide range of ages to see if they passed a simple test: does the game inspire imagination, creativity, and then learning? Apps that failed any part of the test were not brought to market.

EDUCATIONAL APPS: LEARNING BY PLAYING

Toca Boca (2010)

Toca Boca develops apps that help stimulate the imagination through play. Their only rule is to have as few rules as possible, letting children guide their own experiences. Designed based on how kids play, Toca Boca games let users manipulate their environment, incorporating themes to attract all interests – from building robots to preparaing a meal. In 2015, Toca Boca recorded its 100 millionth download.

OWNER: Bonnier Group

Duck Duck Moose (2008)

Duck Duck Moose was founded by parents who wanted to build apps that were both engaging and highly educational. Led by CEO **Caroline Hu**, a former **Intuit** product manager and **IDEO** design consultant, the company works with educators in classrooms to test apps to ensure an experience that stimulates imagination and creativity.

INVESTORS: Sequoia Capital, Lighspeed Venture Partneres, Stanford University ($7 million raised)

Tinybop (2011)

Led by CEO and founder **Raul Gutierrez**, Tinybop creates immersive games that encourge exploration and creativity in children. Their core belief is that learning is powered by the processes of play, experimentation, and inquiry – key concepts that contribute to the design of its elegant iOS apps, which focus on seeing how things work (e.g. Human body, volcanos, etc.).

INVESTORS: Brooklyn Bridge Ventures, Kapor Capital ($6 million raised)

EMPOWERING PARENTS

Equally important as engaging children were models that empowered adults to become better parents. **Reach Out and Read**, for example, was a network of doctors and medical providers that “prescribed” books to young children and advised parents on reading to their kids to promote brain development.

A study measuring the impact of the program found that after an average of just four visits to a doctor participating in Reach Out and Read, 78 percent of parents from low income families read to their child more than three times a week — compared to just 46 percent of their peers. Children demonstrated measurably improved vocabularies versus those who were not enrolled. Early improvements could make all the difference for the 4.4 million children served by the program.



REACH OUT AND READ

FOUNDED: 1989

WHAT IT IS

Reach Out and Read (ROR) is an evidence-based nonprofit organization of medical providers who promote early literacy and school readiness in pediatric exam rooms nationwide by integrating children's books and advice to parents about the importance of reading aloud into child visits. Each year, medical providers at the nearly 5,000 Reach Out and Read program sites nationwide distribute 6.5 million books to children and invaluable literacy advice to parents. 4.4 million children and their families are served annually.

WHY IT'S A GAME-CHANGER

Because medical providers develop a trusted relationship with the families they serve early in a child's life, they are well-suited to emphasize the importance of language and reading. ROR makes literacy promotion a standard part of pediatric primary care.

Language Development: Reading aloud is widely recognized as the single most important activity to promote language development. It builds "word-sound awareness" in children, which leads to reading success.

Fundamentals of Good Parenting: Parents served by Reach Out and Read are 4x more likely to read aloud to their children.

Kidaptive, an adaptive learning platform for young children and parents, applied 21st Century technology fundamentals to the Reach and Read model. The company was founded by P.J. Gunsagar, who previously co-founded the computer

animation shop, **Prana Studios**, which helped create the **Disney** smash-hit *Tinkerbell* series and **Pixar's** popular film *Planes*.

Connecting Parents with Learning: **Kidaptive**

FOUNDED: 2012

HEADQUARTERS: Palo Alto, CA

ADOPTION: 1+ million downloads

INVESTORS: Menlo Ventures, NewSchools Venture Fund, Prana Studios, Formation 8

CAPITAL RAISED: $10 million

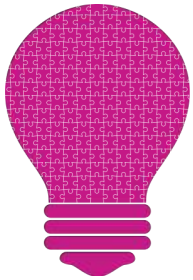
WHY IT'S A GAME-CHANGER: Founded by **P.J. Gunsagar**, Kidaptive is an adaptive learning platform that uses high production quality games to engage young learners around the "Learner Mosaic", six fundamental skills that transcend traditional subject areas: *Social-Emotional*, *Thinking*, *Character*, *Physical*, *Creative*, *Knowledge*. At the same time, Kidaptive provides a framework for parents to track their child's progress and constructively intervene, supported by personalized, system-generated recommendations.

Kids	Parents		App Developers
High Production Quality Mobile Games: Pixar-quality games that create a deep level of engagement while developing the 6 core skills of the Learner Mosaic.	Data-Driven Tracking Tools: Track child's cognitive development, skill mastery, and behavioral patterns with dashboard that use student data to create transparency.	Digital Assistant: Recurring alerts, reminders, and personalized recommendations that empower parents to promote early learning.	Platform: Open software development kit enabling 3rd parties to create apps for Kidaptive platform.









Applying the production quality of Prana and Pixar to mobile games, Kidaptive aimed to engage kids around the "Learner Mosaic", six fundamental skills that transcended traditional subject areas: "*Social-Emotional*", "*Thinking*", "*Character*", "*Physical*", "*Creative*", "*Knowledge*". The company also published an open software development kit that enabled third-parties to create apps for the Kidaptive platform, leveraging the Learner Mosaic framework. At the same time, Kidaptive provided a mechanism for parents to track their child's progress against these skills and constructively intervene.

Beyond enabling parents to track what their kids were learning, mobile apps began to emerge that effectively served as a virtual coach for parents, guiding them through best practices and activities to promote cognitive development in young children. Capitalizing on highly engaging automated communication and information delivery models used by a variety of consumer and media businesses, these apps provided a "scaffolding" to promote good parenting.

While mobile apps were designed to be engaging in their own right, they increasingly relied on recurring, timely and personalized outbound information blasts called "Push Notifications" to keep users coming back.

APPS THAT ACTIVELY "PUSH" INFORMATION TO USERS

Highly Engaging + Massive Audiences

App	Category	Notifcations	Scale
 *ESPN*	Sports Media	Scores, Developing News, Personalized Content	70+ Million Active Users
 *Facebook*	Social Media	Connections, Messages, Personalized Content	1.5+ Billion Active Users
 *FitBit*	Fitness	Fitness Goals, Progress, Reminders, Peer-to-Peer Challenge Updates	10+ Million Active Users
 *Weather*	News & Weather	Forecasts, Weather Advisories	100+ Million Active Users
 *Waze*	Travel	Traffic Notifications, Alternate Routes	50+ Million Active Users

Source: ESPN, Facebook, Fast Company, Rock Health

Push Notifications draw a blend of data aggregated from a user's device (e.g. Location, Preferences, etc.) combined with realtime data (e.g. Sports Scores), to

send timely, personalized alerts that kept people hooked. By 2015, users who opted to receive these notifications spent 25 percent more time in their apps and were twice as likely to become long term adopters.[12]

Applying these powerful fundamentals to early learning, the **Bezos Family Foundation** launched the *Vroom* app in 2014 to inspire families to turn everyday moments into brain building activities — from doing laundry, to taking a bath or having a snack.

Building on the ground-breaking research of Patricia Kuhl, the Co-Director of the Institute for Learning & Brain Sciences at the University of Washington, Vroom delivered timely push notifications that encouraged parents and caregivers to interact verbally with children and play games that stimulate cognitive development.

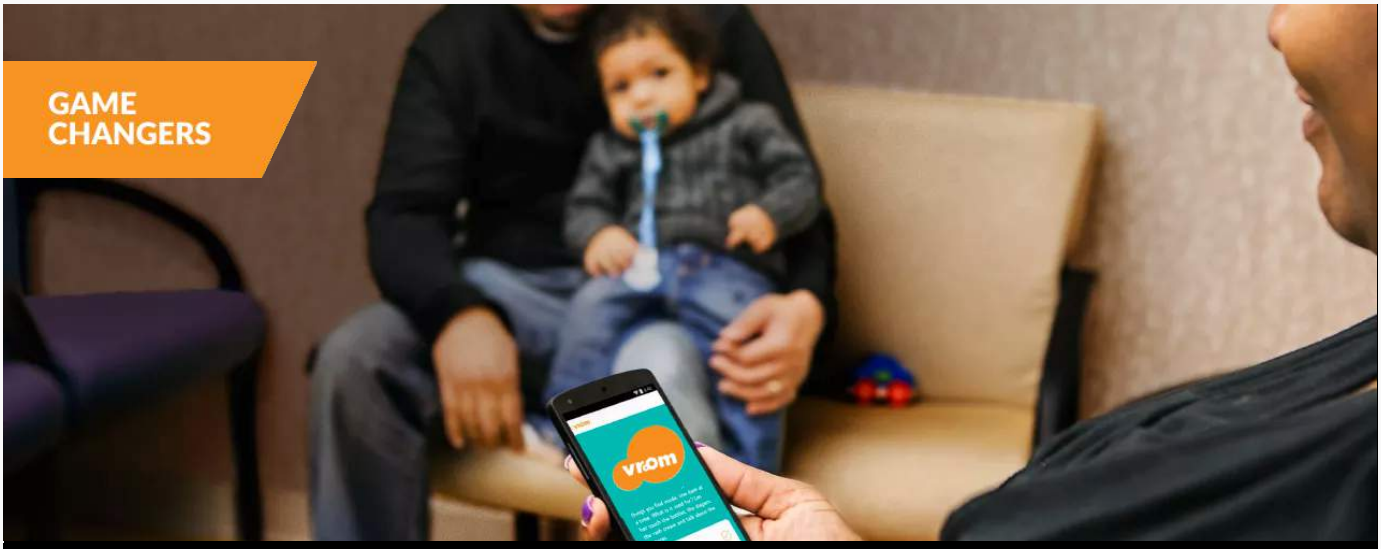
A baby's brain is not a sponge. It's built for action.

PATRICIA KUHL

Co-Director, Institute for Learning & Brain Sciences, University of Washington

Similarly, **MAMA** — the Mobile Alliance for Maternal Action — partnered with **Facebook** to launch a free mobile app used by over two million mothers across the developing World. The MAMA app provided an automated support framework for young parents, including recurring text messages, alerts, and reminders related to critical caregiving activities. The World was leapfrogging old models all around us.

[12] *Urban Airship*, "The Good Push Index", 2014



BEZOS FAMILY FOUNDATION

FOUNDED: 2003

WHAT IT IS

The Bezos Family Foundation is truly a "mom and pop" organization. Founded by **Jackie and Mike Bezos** (parents of **Amazon** CEO, Jeff Bezos) with a gift of Amazon stock, the foundation has emerged as a catalyst for innovation in early childhood development, as well as excellence in K-12 education and the development of young leaders.

Importantly, the Bezos Family Foundation blends support for ground-breaking brain research with actionable ideas to expand access to high quality early learning opportunities. From 2010-2015, the foundation has made more than $30 million in strategic grants to advance these priorities.

WHY IT'S A GAME-CHANGER

Research: The Foundation has partnered with leading learning and brain scientist **Patricia Kuhl** (Co-Director, Institute for Learning & Brain Sciences, University of Washington), to advance research and understanding around the early development of the human mind. Kuhl's lab was the first in the World to use brain-imaging technology to measure brain activity in children while they are awake and interacting.

Vroom: In 2014, building on Patricia Kuhl's research, the Bezos Family Foundation launched *Vroom*, a resource kit — including a mobile app — to help parents to turn everyday moments into brain-building activities for young children. The *Vroom* app delivers brief, recurring alerts that prompt parents to verbally interact with their children and play games that stimulate cognitive development.

To help parents find the services they needed, Khosla Ventures-backed **CareLuLu** developed a curated marketplace of trusted daycare and preschool providers. Parents could find "matches" based on location, service scope, and cost profiles, compare options, and then book directly through the app.



CORPORATE BENEFITS

High-quality, affordable, childcare had long proven to be an effective mechanism to help parents more aggressively advance their careers and grow their incomes. **Bright Horizons**, a pioneer in this field, demonstrated that services could be delivered with high efficiency by partnering with corporations to provide childcare as an integrated component of an office building.

BRIGHT HORIZONS

The Evolution of Corporate Childcare in the United States



1986: Husband-and-wife team, **Linda Mason** and **Roger Brown**, launch Bright Horizons with the goal to create a network of high-quality childcare centers servicing the employees of large corporations. Bright Horizons secures early funding from Mitt Romney-led Bain Capital.



1987: **Marguerite Kondracke** founds Corporate Family Solutions (CFS) in 1987 with backing from **Senator Lamar Alexander** (R-TN) and Bob Keeshan (better known for his role as the TV character, ***Captain Kangaroo***). CDD is an extension of Kondracke's pioneering work in corporate childcare as the Human Services Commissioner for Alexander, then Governor of Tennessee.



1997: Bright Horizons and CFS both go public in 1997. The companies operate a combined network of nearly 300 centers across the United States serving thousands of families through contracts with Fortune 500 clients.

1998 - 2015: Bright Horizons and CFS merge in 1998 to form Bright Horizons Family Solutions, the leading corporate childcare provider in the United States. In 2015, Bright Horizons serves over 900 corporate clients across the United States, Canada, the United Kingdom, Ireland and India.

Forward-thinking human resource teams recognized what a powerful recruitment tool this could be, especially for working mothers. While only seven percent of companies offered on-site childcare in 2015, over one third of those recognized on Fortune's *Best Companies to Work For* list did. **Google** even offered preferred parking spots for parents with children in tow, and added high chairs to company cafes.

What We Did About It

Building on our analysis of "Models that Work," we implemented the following initiatives to create equal access for all Americans to participate in the future.

1. Universal Pre-K

IDEA: We implemented a Universal Pre-K program for three- and four-year-olds. While program design and delivery varies, we allocated $10,000 per child per year, consistent with generally accepted levels of spending to achieve excellent early education. Our expectation, however, was that prices would continue to decline with efficiencies created around hybrid delivery models, engaging kids both at home and at school.

IMPACT: We modeled the initiative to account for each of America's eight million three- and four-year-olds being enrolled in a $10,000 per year Pre-K program (through a blend of public and private providers), yielding a total annual cost of $80 billion (not counting a variety of expected offsets, including roughly $5 billion in federal *Head Start* spending).

But Nobel Prize-winning economist James Heckman of the University of Chicago and others demonstrated that every $1 invested in Pre-K would yield at least a $7 return over the lifetime of a student. *So an $80 billion investment returned $560+ billion per year*. As Heckman has observed, when it comes to Pre-K, "Either way, you pay." We chose to invest early rather than pay more to solve problems later. Returns were generated by higher graduation rates, improved school performance, and increased lifetime earnings, coupled with decreased incarceration rates, teen pregnancies, and healthcare costs.

2. Early Learning on Demand

IDEA: We provided universal access to a foundational set of high quality, digital early learning resources so every family had the opportunity to help their children

develop key skills at home. Resources included in-depth educational programs, like the **Waterford Institute's** *UPSTART* program, as well as games and interactive learning resources offered by companies like **ABC Mouse** and **Fingerprint Play**. We also provided repositories of interactive digital books from providers like **Speakaboos** and **Capstone's** *myON*.

IMPACT: The net result was that every family, regardless of income, had equal access to highly effective, easy-to-use resources that helped promote early cognitive development. We subsidized content costs but also engaged corporate partners for in-kind content contributions, using the White House digital classroom initiative, *ConnectED*, as a model. *ConnectED* secured in-kind commitments to create technology-enabled classrooms from companies like **Apple** ($100 million), **Adobe** ($300 million), and **AT&T** ($100 million).

We also expanded on an innovative program, *Reach Out and Read*, where participating doctors encouraged early cognitive development by "prescribing" reading activities to parents and young children. In our program, pediatricians serving families under Medicaid's CHIP program integrated routine monitoring of basic child cognitive development into their visits, recommending best practices for mental stimulation, including the prescribed reading of e-books.

They were authorized to issue low-cost tablets pre-loaded with digital content for the roughly 2.5 million families with children under the age of five that lived below the poverty line. With device costs diving below $200, we set aside $500 million for this program, working with vendors to drive costs lower as we had done with *ConnectED*.

3. Digital Assistants for Parents

IDEA: We used mobile communication channels to deliver high-impact, low-cost support services to new parents in families living below the poverty line. An estimated 77 percent of new and expecting mothers from low income families in the U.S. owned smartphones, so we partnered with the **Bezos Family Foundation**

to expand adoption of its ground-breaking *Vroom* app, which provided just-in-time alerts and reminders to engage in activities that stimulate a child's mind.

We also took advantage of ubiquitous, free communication apps like **WhatsApp**, **Facebook Messenger**, **Google Hangouts**, and **Snapchat** to scale highly effective home visiting programs for families with young children. Championed by groups like the Ounce of Prevention Fund and implemented more broadly by initiatives like the federal *Maternal, Infant, and Early Childhood Home Visiting* (MIECHV) program, these programs connected parents with expert practitioners who coached them through the fundamentals of raising a stimulated, engaged child.

IMPACT: The $400 million MIECHV program served roughly 115,000, and we expanded it to serve the 2.3 million children below age five who were living in extreme poverty (*defined: annual family income less than $12,500 per year*). While MIECHV services netted out to $3,500 per student, digital expansion enabled us to move the needle at a fraction of the price.

We allocated $1,000 per child per year in the program's first year and continued to see cost declines driven by digital efficiency. Investment in parent coaching had a return profile that was comparable to Pre-K, with $6 back for every $1 invested.

FOREFATHERS

PIONEERS IN EDUCATION INNOVATION



"The future of our country is not found in our boardrooms, but in our classrooms."

Michael Milken

Founder, Milken Institute

Michael Milken has been helping education for almost 40 years, donating over $500 million towards his efforts. The Milken Educator Awards is the largest teacher-recognition program in the United States, and has awarded more than $65 million to over 2,600 of America's top teachers. The National Institute for Excellence in Teaching, founded by the Milken Family Foundation, is committed to improving educator effectiveness, and has developed programs to generate skilled, motivated, and competitively compensated teachers. Knowledge Universe, also founded by Milken, is the largest privately owned early childhood education system, operating 2,000 KinderCare learning centers. Additionally, Milken has provided significant financial support and mentoring to hundreds of college-bound students through the Milken Scholars program.

Senator Lamar Alexander

Co-Founder Bright Horizons; Former Secretary of Education; Chairman of the Senate Committee on Health, Education, Labor and Pensions

Senator Lamar Alexander has been dedicated to education throughout his political career. As governor of Tennessee, Alexander implemented successful initiatives to create school standards and incentivize teachers. Following his terms, Alexander co-founded Corporate Child Care, which later merged with Bright Horizons, and became the World's largest provider of worksite care. From 1991 to 1993, Alexander served as the U.S. Secretary of Education. He was elected to the U.S. Senate in 2002, and in 2015 became the Chairman of its Health, Education, Labor and Pensions committee.



"Put too many one-size-fits-all jackets on Americans and the place explodes."



"Education is the breakthrough strategy."

Marguerite Kondracke

Co-Founder, Bright Horizons; Former CEO, America's Alliance

During her forty-year career, Marguerite Kondracke has been both an entrepreneur and a public servant. She is the co-founder and former CEO of Bright Horizons Family Solutions, today a $3 billion public company, and the nation's largest provider of workplace child care. Kondracke also served as President and CEO of America's Promise Alliance, General Colin Powell's foundation focused on facilitating volunteer action for children and youth.



2

STEPPING UP

Develop + Elevate Transformational School Leaders

Great leaders create leverage so we invested to develop the best for our schools.

Problem

Good leadership is a force multiplier, especially in schools. Principals typically account for over 25 percent of school performance, overseeing talent acquisition and development, resource allocation, standards development, and accountability. Despite this, training for school leaders was substandard. As a consequence, principal performance was unpredictable, and worse, their compensation was rarely tied to student outcomes. Compounding the issue, the annual turnover rates for school leaders was an alarming 25 percent. High turnover translated into rudderless school strategy. The average principal tenure was less than four years, but the average school plan took five years to implement.

MODELS THAT WORK

- **Cultivate + Train Leaders**: Systematic leadership development programs emphasizing adaptability and a dedication to service *(e.g. U.S. Military Academy at West Point, Arizona State University Leadership Development Programs, New Leaders)*
- **Corporate Universities**: Embedded and bespoke "Corporate Universities" used by leading companies to cultivate business leaders *(e.g. GE, Google, Apple, Pixar, CorpU, Jack Welch Management Institute)*
- **School Management + Insight Platforms**: Digital platforms enabling school leaders to implement best of breed professional development programs; Data + analytics platforms providing timely, actionable insights to principals *(e.g. BloomBoard, School Improvement Network, BrightBytes, Panorama Education)*

SOLUTION

1. **Smarter Training + Development**: Expand principal training scope to align with top-performing schools (e.g. KIPP) using high quality, digital learning resources; Create an elite U.S. Principal Academy (USPA) combining West Point model with World-class MBA program
2. **Smarter Management Tools**: Arm school leaders with data-driven, decision-making tools to professionalize school operations and optimize outcomes
3. **Network + Elevate**: Create a dedicated peer network for school leaders modeled on the Young Presidents' Organization (YPO); Recognize the best school leaders through highly-publicized national awards

By the Numbers: School Leadership

Fundamentals	2015
Principal Impact on School Performance	25%+
CEO Impact on Company Performance	30%+
Annual Principal Turnover Rate	25%
Annual U.S. CEO Turnover Rate	14%
Timing for New Principals to Implement their School Plan with Full Impact	5 Years
Average Principal Tenure	3.5 Years
Principals that Depart in Three Years or Less	50%
Average CEO Tenure	10 Years
Total Principals	114,000
Total Public School Principals	90,000
Total Private School Principals	24,000
Avg. Salary, Public School Principal	$91,000
Avg. Salary, Private School Principal	$65,000
Completing Principal Certification Programs who Become a Principal	30%
Principals Unsatisfied with their Formal Training Program	96%
Principals who were Teachers	90%
Teachers who Graduated in the Top Third of their Class	23%

Source: McKinsey, NCES, School Leaders Network

On February 1st, 2015, two legendary coaches — New England's Bill Belichick and Seattle's Pete Carroll — faced off in Super Bowl XLIX to determine who would be World Champions. Together, they had won five Super Bowls, one NCAA National Championship, and nearly 400 games.

What most of the 200 million people watching the game didn't know was that Belichick and Carroll shared the same "football father" in Lou Holtz. Belichick's first coaching job was as a graduate assistant for Coach Holtz at North Carolina State. Pete Carroll was a graduate assistant for Coach Holtz at Arkansas.

Remarkably, the Lou Holtz family tree was also front and center in the 2015 NCAA National Football Championship. Winning Coach Urban Meyer was an assistant for him at Notre Dame a decade earlier. Meyer, himself, had sired an impressive stable of proteges, having placed no fewer than twelve active Division I Head Coaches.

The "Abraham" of this impressive coaching lineage was Woody Hayes, who owned a .750 career winning percentage. He was not only the football father of Lou Holtz, who was an assistant for him on Ohio State's 1968 National Championship team, but also of Hall-of-Famer Bo Schembechler… and thus the grandfather of LSU's Les Miles and the University of Michigan's Jim Harbaugh. Leaders set goals. Leaders drive performance. Leaders create new leaders. *Leaders create leverage*.

The cascading impact of effective leadership was evident in a variety of settings. Fairchild Semiconductor and **Hewlett-Packard** were the collective "Abraham" of Silicon Valley with their offsprings including **Intel**, **Apple**, and **Cisco**.

Steve Jobs' first summer job began with a cold call to Bill Hewlett to ask for parts for an electronics project. He ended up working on the assembly line putting screws in frequency counters. Apple, in turn, created its own powerful lineage rooted in the vision of Steve Jobs.

Bill Campbell, who once ran marketing for Steve Jobs at Apple, later became his confidante and board member, earning him the nickname “the Coach of Silicon Valley”.

BILL CAMPBELL: COACH OF THE VALLEY



Source: GSV Asset Management

The impact Coach Campbell has had on the success of the Valley is immeasurable. He was a mentor to Eric Schmidt and Larry Page before **Google** became a verb, to Jeff Bezos in the early days of **Amazon**, and to Marc Andreessen and Ben Horowitz at the omnipotent venture firm Andreessen Horowitz. If you think about it, a great coach is a hybrid teacher and leader, much like a high performing school principal.

WOODY HAYES COACHING TREE

Woody Hayes was a fiery football coach who built Ohio State into a perennial national power. In a career that spanned 33 seasons, Hayes won 5 national championships and compiled a career record of 238-72. His coaching bloodline is minted with champions.



Woody Hayes

Career Record: 238-72
5x NCAA National Champion
Ohio State University



Lou Holtz

Career Record: 249-132
1988 National Championship
University of Notre Dame

"Without winners, there wouldn't even be any civilization."



Bo Schembechler

Career Record: 234-65
6x BIG10 Coach of the Year
University of Michigan



Bill Belichick

Career Record: 232-118
4x Super Bowl Champion



Urban Meyer

Career Record: 141-26
3x NCAA National Champion
University of Florida
Ohio State University



Pete Carroll

Career Record: 180-80
Super Bowl XLVIII Champion
2004 NCAA National Championship, *USC*



Les Miles

Career Record: 131-50
2007 NCAA National Championship
LSU



Jim Harbaugh

Career Record: 78-43
2011 NFL Coach of the Year

Pioneers + Mavericks

STEVE JOBS APPLE TREE



Marc Benioff
Apple: Engineer
Founder, **Salesforce**



Tim Cook
Apple: COO
CEO, **Apple**



Ron Johnson
Apple: Head of Retail
Founder, **Enjoy**



Andy Rubin
Apple: Engineer
Creator, **Android**



Tony Fadell
Apple: Creator of iPod
Founder, **Nest**





Donna Dubinsky
Apple: Customer Experience
Founder, **Palm**



Heidi Roizen
Apple: VP Developer Relations
Partner, **DFJ**



Bill Campbell
Apple: VP Marketing & Sales
Chairman, **Intuit**



Reid Hoffman
Apple: Product Manager
Founder, **LinkedIn**

Coach Campbell's Tree



Jeff Bezos
Founder
Amazon



Dan Rosensweig
CEO
Chegg



Marc Andreessen
Co-Founder
Netscape



Larry Page
Co-Founder
Google



Eric Schmidt
Chairman
Google



Ben Horowitz
Founder
Opsware



Danny Shader
Founder
PayNearMe



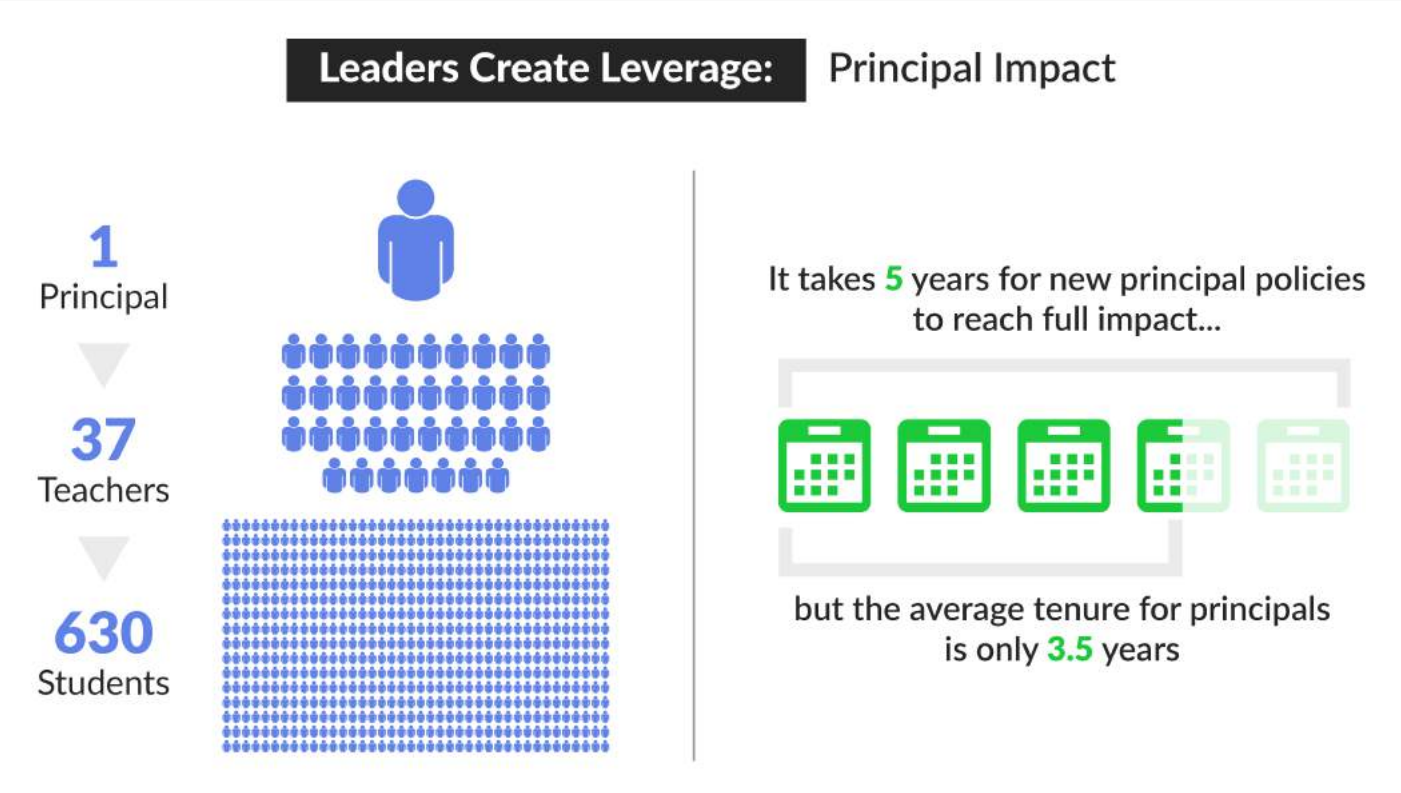
Bruce Chizen
Former CEO
Adobe



Mike McCue
Founder
Flipboard

Problem

Whether you're talking about politics, business or sports, leadership matters. Point of fact, studies have shown that CEOs drive 30 percent of corporate performance, an impact that has doubled since 1950.[13] Ranked by shareholder return delivered, the top five public company CEOs in 2015 had created $550 billion of market value during their tenure.[14]



Source: School Leaders Network ("The High Cost of Principal Turnover", 2014), GSV Asset Management

Good leadership is a force multiplier, especially in schools. Principals are responsible for talent acquisition and development, resource allocation, standards development, and accountability. Like the best coaches and CEOs, the most

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[13] Alison Mackey, PhD, *Ohio State University School of Business*, "How Much Do CEOs Influence Firm Performance — Really?" (2005)

[14] *Forbes*, "The Top 10 Best-Performing CEOs" (2014)

effective principals are strong operators who can also inspire and motivate their team. This blended skill set was the key to creating a school culture of achievement and success.

CHURN AND BURN

Yet every year, 25,000 principals, *or nearly one quarter of the entire profession*, left their schools, adversely impacting millions. For principals entering new schools, the time to develop and implement a new strategy with full impact was roughly five years. *But the average tenure was only 3.5 years*. Over 50 percent of principals left their schools in three years or less.

Only three U.S. industries have higher turnover than principals: Mining & Logging, Retail, and Hospitality… And only Hospitality workers leave more often than principals in high poverty schools.

U.S. DEPARTMENT OF LABOR

The resulting churn caused student achievement to drop in Math and ELA in the year following the vacancy, and it typically took the next principal up to three years to regain forward progress for the school. Not surprisingly, states with the highest proportion of novice principals also had the lowest graduation rates.[15]

INADEQUATE PREPARATION

In 2015, most principals entering their profession were not equipped with the fundamental skills to succeed. As Arthur Levine noted in his ground-breaking study, *Educating School Leaders*, the majority of principal development programs

[15] *School Leaders Network*, "The High Cost of Principal Turnover" (2014)

ranged from, "inadequate to appalling, even at some of the country's leading universities."[16] The problem was clear at every stage of the pipeline. Only 30 percent of those completing certified principal development programs actually went on to become principals.

When surveyed, 96 percent of those who did become principals agreed that on-the-job experiences were better than their graduate programs.[17] Principal licensure requirements were weak and inconsistent across the country — only six states even considered principal effectiveness data when renewing licenses.

Despite the complexity of their jobs, less than two percent of principals identified continued learning as a priority when outlining annual goals.

Models that Work

Jim Collins, a business strategy visionary, spent over 30 years trying to understand and elucidate how some companies are able to sustain superlative performance. In other words, what makes them great?

Of the many success (and failure) factors that Collins has identified in books including ***Good to Great***, ***Great by Choice***, and ***Built to Last***, the most important variable for companies that become great is whether or not they have a "Level Five" leader.

A Level Five leader is a highly talented executive that blends genuine personal humility with intense professional will for their organization and TEAM to achieve enduring greatness. Whether or not they have charismatic, larger-than-life personalities is irrelevant.

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[16] *The Education Schools Project*, "Educating School Leaders" (2005)

[17] *New Leaders*, "Change Agents: "How States Can Develop Effective School Leaders" (2013)

The lesson from Collins' research was that if we wanted to create a nation of great schools, we needed to cultivate Level Five school leaders.

Aiming for anything less was aiming for the status quo. Visionary, humble, willful principals could be a lever of change if we got them in the right buildings.

"Level 5" refers to the highest level in a hierarchy of executive capabilities that we identified during our research. Leaders at the other four levels in the hierarchy can produce high degrees of success but not enough to elevate companies from mediocrity to sustained excellence... Good-to-great transformations don't happen without Level 5 leaders at the helm. They just don't.

JIM COLLINS

The Level 5 leader sits atop a hierarchy of capabilities. Each of the four "personas" in the levels below is valuable in their own right, but none has the impact of a Level 5 leader. As Collins notes, "You do not need to proceed sequentially through each level of the hierarchy to reach the top, but to be a full-fledged Level 5 requires the capabilities of all the lower levels... plus the special characteristics of Level 5."

Level 5 leaders have a dual nature. They're modest and willful, understated but fearless. Abraham Lincoln was in many ways the prototype of a Level 5 leader. He was not driven by ego, but he had the ambition to hold the United States together as a single nation.

"LEVEL 5" LEADERS TRANSFORM ORGANIZATIONS

Key Organizational Talent Personas

Level	Definition
Level 1: Highly Capable Individual	Makes productive contributions through talent, knowledge, skills, and good work habits.
Level 2: Contributing Team Member	Contributes to the achievement of group objectives; works effectively with others in a group setting.
Level 3: Competent Manager	Organizes people and resources toward the effective and efficient pursuit of predetermined objectives.
Level 4: Effective Leader	Catalyzes commitment to and vigorous pursuit of a clear and compelling vision; stimulates the group to high performance standards.
Level 5: Executive	Builds enduring greatness through a paradoxical combination of personal humility plus professional will.

Source: Jim Collins, Harvard Business Review

At just over two minutes, the Gettysburg Address was a case study in modesty. Lincoln's remarks on that day followed a two hour speech from Edward Everett, a Senator from Massachusetts.

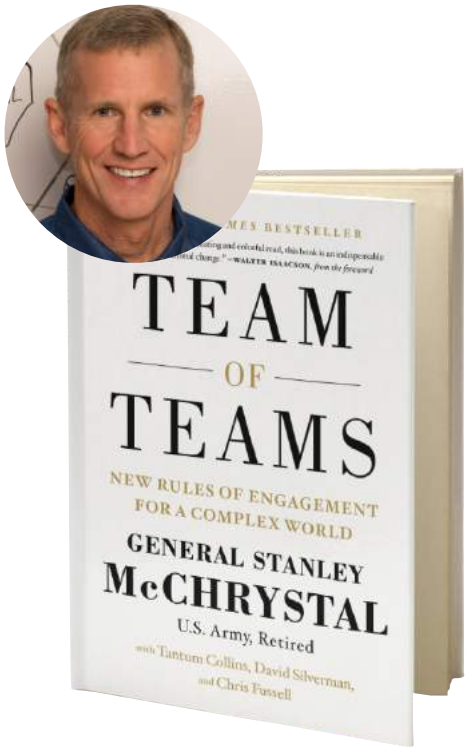
In a letter to Lincoln the following day, Everett praised the President for his pithy speech, saying, "I should be glad if I could flatter myself that I came as near to the central idea of the occasion, in two hours, as you did in two minutes." Lincoln replied that he was glad to know the speech was not a "total failure".

ADAPTIVE, ENTREPRENEURIAL LEADERSHIP

When he assumed leadership of the Joint Special Operations Task Force in Iraq — a a centerpiece of U.S. counterterrorism strategy, **General Stanley McChrystal** inherited an elite force with unrivaled training, resolve, and resources.

General McChrystal and his peers had always been taught that massing combat power decisively and efficiently would win the day. But the enemy — a dispersed and nimble network — was a different kind of force than his training contemplated.

Fighting a disaggregated enemy meant that, by definition, there could *never* be a decisive victory. You had to defeat the entire network, piece by piece. Effectively, McChrystal's operation was designed to fight one kind of war, but the enemy was fighting another.



NEW RULES OF ENGAGEMENT FOR A COMPLEX WORLD

General Stanley McChrystal is widely praised for creating a 21st century U.S. counter-terrorism organization that effectively reinvented the way military agencies interact and collaborate. ***Team of Teams***, which distills McChrystal's unconventional leadership principles, is an indispensable blueprint for organization change in education.

1.New Rules Demand New Approaches: The biggest challenge most organizations face is a lack of adaptability. Superior resources, strong personnel, and a genuine will to succeed can all be neutralized if an organization's core strategy and operating ethos are not attuned to new challenges and norms.

2. The Magic of Small Teams: Flexibility, speed and innate collaboration are the decisive advantages of the small team. For large organizations to harness this advantage, they must evolve their hierarchy into a "team of small teams", empowering fluid collaboration and decision-making within clearly defined set of broad objectives.

To prevail in this new paradigm, McChrystal scrapped most of the fundamental assumptions that defined how his force had operated in the past.

In their place, he molded an adaptable, flatter organization to align with new norms and challenges. As McChrystal observes, “It takes a network to defeat a network.”

The net result was a re-invigorated counterterrorism operation that became a blueprint for modern warfare. McChrystal was widely credited for revolutionizing the way military agencies interact and operate.

The key to McChrystal’s success was two-fold. First, he had the conviction to recognize that the environment had changed dramatically and that old approaches were no longer optimal or rational. In other words, McChrystal was adaptable. He didn’t blindly follow a prescribed approach.

Secondly, to improve efficiency and flexibility, McChrystal de-emphasized traditional management hierarchies, instead focusing on empowering small, cohesive teams across the organization. He created a “team of small teams”.

These were invaluable lessons as we created a strategy to build a network of World-class school leaders across the United States. Given a wide range of local dynamics, coupled with a quickly evolving global economy, adaptability was a priority skill to be an effective principal. Similarly, the more that we empowered networks of public schools as “teams of teams”, and less as a sub-unit of a district, the more innovation we would enable.

The United States Military Academy (USMA) at West Point, the talent engine of the U.S. Army, had long been a gold standard for developing adaptable leaders prepared to serve in challenging public posts. Founded in 1802, West Point was an elite institution but it played a critical role as a center of gravity for the U.S. Army’s best practices and core philosophy.

We needed a similar institution to anchor recruitment of the best talent into school leadership positions.



WEST POINT

FOUNDED: 1802

WHAT IT IS

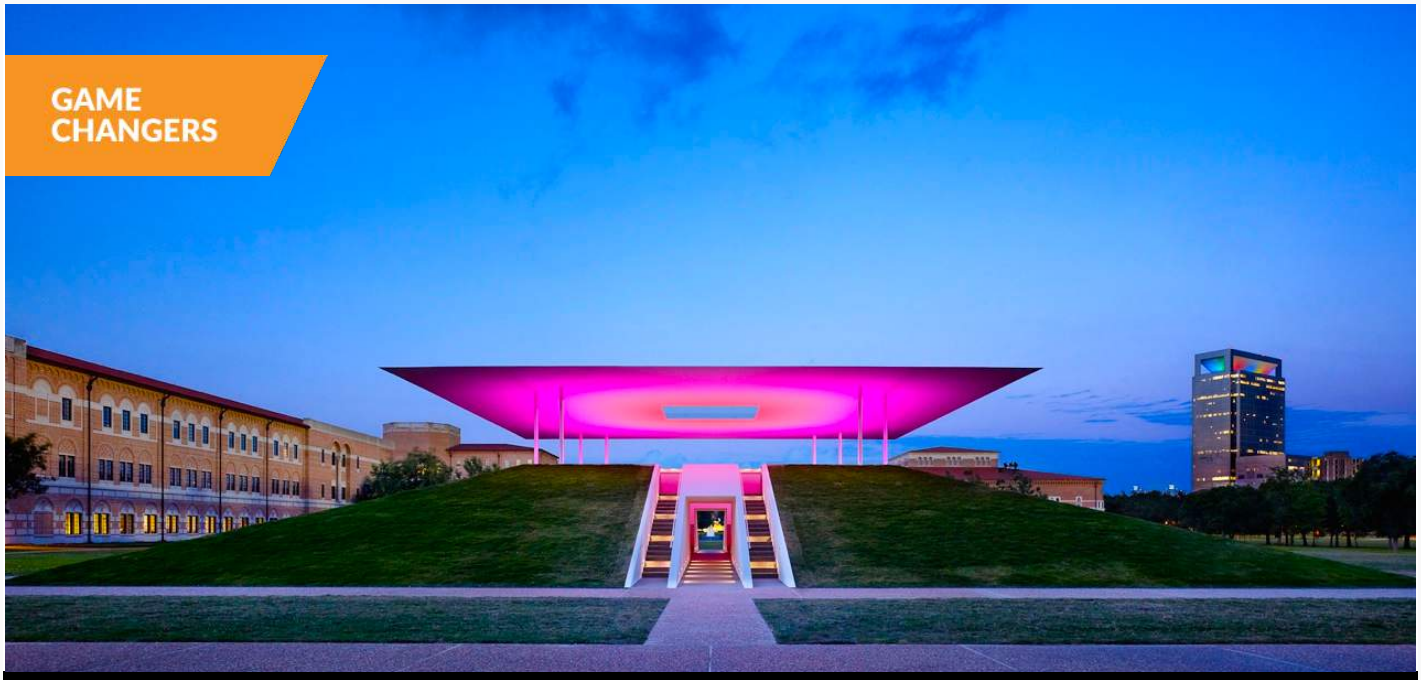
West Point provides a 47-month leader-development program steeped in academic rigor, military discipline, and physical challenges, all built upon a moral-ethical foundation. West Point's system for leader development is intended to develop cadets to meet the challenges and uncertainties they will encounter as Army officers upon graduation, when they are commissioned as second lieutenants in the U.S. Army. To effectively lead Soldiers and units in a contemporary combat environment, USMA graduates need a strong foundation of values-based leadership skills.

WHY IT'S A GAME-CHANGER

West Point combines prestige, academic rigor, and purpose to produce highly motivated and effective leaders for life.

Adaptable Leaders: West Point does not train soldiers for a specific war, but develops leaders who can adapt to whatever war might be thrust on our nation—no matter the continent, conditions, or enemy.

Mission-Centric: Graduates from West Point are instilled with a mission-centric mindset forged by a shared purpose, growth through challenges, and communal success.



DOERR INSTITUTE FOR NEW LEADERS

FOUNDED: 2015

WHAT IT IS

With a $50 million grant from **Ann and John Doerr**, Rice University is creating an academic center focused on developing young leaders. The center will be led by Retired Brigadier General **Tom Kolditz**, who previously headed leadership training at Yale and West Point and authored *In Extremis Leadership: Leading As If Your Life Depended On It*.

WHY IT'S A GAME-CHANGER

Leadership isn't innate. It's learned. To this end, the *Doerr Institute for New Leaders* has three core goals: 1) To deliver new knowledge and skills; 2) To accelerate the leadership lessons learned from experience, and; 3) To increase reflection, self-awareness and leadership identity among a diverse range of students. Participants will navigate a personalized, four-year leadership curriculum rooted in real-World experience, based on diagnostic assessments of their core skills.

With a $50 million donation from John and Ann Doerr, Rice University created the *Doerr Institute for New Leaders*, applying key lessons from West Point to a 21st century education. As John remarked at its founding, "Now more than ever, the pressing problems of our nation and World need great teams and great leaders. Ideas are easy; executing those ideas with a well-led team is paramount."

Led by retired Brigadier General Tom Kolditz, who previously headed leadership training at Yale and West Point, the institute defined three core goals: to deliver new knowledge and skills, to accelerate the lessons learned from experience, and to increase reflection, self-awareness and leadership identity among students. Importantly, the institute used diagnostics, formative assessments, and adaptive learning technology to create a personalized learning experience for each of its students. Rice committed to sharing key learnings and data from the program to advance the adoption of leadership development best practices.

No institution offered a better model for systematic leadership development than **Arizona State University** (ASU). Developing a variety of programs to create change agents across the public and private sectors — including a dedicated emphasis on education institutions — ASU made cultivating leaders a part of their DNA.

ASU's *W. P. Carey Leaders Academy* connected high-performing undergraduates with mentorship, networking, and leadership development opportunities. Similarly, working professionals in ASU's part-time MBA program could flexibly supplement core credits with training to develop communication, team-leading, and decision-making skills.

An innovative *Public Service Academy* enabled students to map their core undergraduate studies to global impact issues like sustainability and education access. Its curriculum and networking focused on empowering undergrads to apply their skills in a career dedicated to "service".

Masters and Doctorate programs in education leadership focused specifically on training "Level Five" school principles and educators who would lead from the classroom. Eating its own cooking, the *ASU Leadership Academy* provided a year-long series of trainings to ASU faculty and staff who were emerging as leaders and were committed to advancing the mission of the "New American University".

ARIZONA STATE UNIVERSITY: LEVERAGING IMPACT BY TRAINING LEADERS

ASU Leadership Development Programs, Deeply Integrated Across Its Academic Platform



CORPORATE UNIVERSITY

Stephen Covey, a devotee to the power of simple virtues, became a household name in 1989 when he published *The 7 Habits of Highly Effective People*. At a time when other management gurus were obsessed with how to build a better organization, Covey argued that personal character, purpose and self-discipline were what mattered.

Twenty million books later, Covey's ideas became the backbone of an international consulting and training business, **FranklinCovey**, that served over 75 percent of the Fortune 500. As we looked to the corporate World for lessons about how to

develop great school leaders, Covey's practical perspective rang true: "The main thing is to keep the main thing the main thing."

Pioneers + Mavericks: **Stephen Covey**



Stephen Covey became a household name in 1989 when he published *The 7 Habits of Highly Effective People*. At a time when other management gurus were obsessed with how to build a better organization, Covey argued that personal character, purpose and self-discipline were what mattered.

KEY LESSONS: We can teach leadership in plain language and scale those lessons to millions around the World. Stephen Covey's key insight is that an intuitive framework of thinking distributed to massive audiences can create outsized impact.

1. **Be Proactive**: Focus time and energy on things that can be controlled.
2. **Begin With the End in Mind**: Begin every undertaking with a clear definition of the goal.
3. **Put First Things First**: Allocate time and energy disproportionately to the highest priorities.
4. **Think Win-Win**: Solve conflicts with an "abundance mentality", opting for equity over exclusion.
5. **Seek First to Understand, then to be Understood**: Listen to understand, not reply.
6. **Synergize**: Creative cooperation and diversity of perspective yields better ideas.
7. **Sharpen the Saw**: Commit to constant renewal of the Mind, Body, and Soul.

Our 2020 Vision imagined a nation of great schools, regardless of zip code, and the “main thing” necessary to achieve this objective was finding and developing great school leaders. The World’s best “Corporate Universities” offered important lessons for systematic, longterm leadership development as their sole function was to optimize human capital potential to create longterm value.

Their design varied greatly by industry and organization because they were not beholden to any dogma about what educational design should look like. Instead, corporate universities were adapted to the specific needs of their company.

In the 1950s, Ralph Cordiner (former CEO, **GE**) determined that it was critical for GE to generate an effective corps of managers who were prepared to sustain his company's growth. GE was expanding faster than it could train or recruit high quality leaders to make the business hum. So in 1956, GE bought a parcel of leafy land about an hour north of New York City and established its famed Crotonville management training center. Much has changed in the World since then but GE continues to maintain a singular point of emphasis on training future impact leaders.

In his 21 years as CEO, Jack Welch transformed GE into the World's most admired and successful company with an innovative, practical management style. Under Welch’s leadership, revenues grew five-fold from $25 billion to $130 billion, income grew ten-fold, from $1.5 billion to $15 billion, and the company's market capitalization had a 30-fold increase of more than $400 billion. Thousands of companies around the World have adopted the “Welch Way”.

Core to Welch’s winning approach is a relentless focus on talent and leadership development that emphasizes practical insights, core business skills, and most importantly, a culture of commitment to the TEAM. In fact, Welch once wrote in a letter to GE shareholders that, forced to choose between 1) a manager who shares the company’s values but isn’t quite making her numbers, or 2) a manager who delivers the numbers but doesn’t fit the corporate culture, he’d give a few more chances to the former but immediately fire the latter.

Why? Because those who don't share a company's values, "have the power, by themselves, to destroy the open, informal, trust-based culture [needed] to win today and tomorrow."



GE GLOBAL LEARNING

FOUNDED: 1956

WHAT IT IS

In the mid-1950s, GE's CEO, **Ralph Cordiner**, decided the biggest limitation to his company's continued growth was its pipeline of leaders. GE was expanding and its supply of high-quality general managers was growing thin.

Today, GE spends $1 billion annually on training and education programs, including a systematic framework to cultivate World class corporate talent. But its singular point of emphasis remains unchanged: values.

WHY IT'S A GAME-CHANGER

GE leadership development is focused on three core areas of emphasis. Learning strategy is in lockstep with broader corporate goals, and the GE education experience is designed to efficiently communicate high-value information on an ongoing basis.

Leadership: GE's curriculum aims to inspire, connect, and develop global leaders, focusing on company culture and a spirit of service to the TEAM.

Skills: Managers are guided through a function-specific curriculum to sharpen core finance, marketing, and sales skills, depending on their role in the company.

Business: GE also tailors continuous learning around key trends in a manager's specific industry, emphasizing points of synergy across the company's diverse lines of business (e.g. Aviation, Healthcare, Financial Services).

By 2015, GE spent $1 billion per year on training and education programs for 150,000 professionals around the World. Despite advances in digital education, GE continued to operate its training center in Crotonville, investing heavily to

convene managers from around the World to complete rigorous curriculum and to inspire a shared sense of purpose.

Even during the financial crisis of the early 2000s, as many outsiders called for the company to slash this cost center, CEO Jeff Immelt made the helicopter trip from the company's Fairfield, Connecticut, headquarters to greet every new class of management trainees.

In 2011, Jack Welch launched the Jack Welch Management Institute (JWMI) at **Strayer University** in a bid to evangelize his powerful leadership philosophy and shake up the MBA market, which had remained unchanged for nearly 100 years.

Offering a 100 percent online MBA that most graduates have completed in about two years or less, JWMI focused on arming emerging managers with actionable insights, not business theory. As Welch once quipped, JWMI empowers students to, "Learn it on Monday, apply it on Tuesday, and share it on Friday."

The early returns demanded attention from the academic establishment. For $40,000, graduates increased their salary by 12-20 percent on average after program completion, thus providing a payback on their education in roughly two years.

This was in contrast to a payback time of four years or more for a top-10 school — all of which charged over $150,000 per year and required students to drop out of life to get their degree.

The key lesson from JWMI and similar programs was that high impact, practitioner-focused, executive development programs could be effectively delivered at scale through digital models. It was an important reference point for any strategy to elevate principals en masse through leadership development education.

GAME CHANGERS



JACK WELCH MANAGEMENT INSTITUTE

FOUNDED: 2011

WHAT IT IS

The Jack Welch Management Institute (JWMI) at Strayer University, led by CEO **Dean Sippel**, provides students and organizations with proven methodologies, immediately actionable practices, and respected credentials needed to win in the most demanding global business environments. Building on the management canon **Jack Welch** honed at GE — as well as insights from business strategy visionary and best-selling author **Suzy Welch** — JWMI prepares leaders to transform their companies and succeed in a Global Knowledge Economy.

Headquarters: Herndon, VA

Investors: Part of Strayer University ($600 million market cap)

WHY IT'S A GAME-CHANGER

Practical + Pragmatic: JWMI's curriculum is based on the principle that practice, not theory, should be the basis of an MBA for emerging managers. As Welch once quipped, JWMI empowers students to, "Learn it on Monday, apply it on Tuesday, and share it on Friday."

Access + Efficiency: JWMI offers a 100 percent online MBA. Students progress at their own pace, on their own time, while continuing to advance their career. Most graduates complete the program in two years or less.

Return on Education: Through recent graduate surveys, JWMI alumni report salary increases of 12-20%, thus providing a payback on their education in 2 - 2.5 years, compared to four years or more on average for a top-10 school. Most importantly, JWMI graduates are happy with their degrees, giving the company a Net Promoter Score (NPS) of over 70%.

MBA RETURN ON EDUCATION

Business School	Founded	Rank*	Annual Cost	Year-1 ROI**	Time to Payback
Stanford	1925	1	$62,000	14%	4+ Years
Harvard	1908	2	$59,000	15%	4+ Years
Penn *Wharton*	1881	3	$62,000	6%	4+ Years
Chicago *Booth*	1898	4	$62,000	18%	4+ Years
MIT *Sloan*	1914	5	$63,000	15%	4+ Years
Northwestern *Kellogg*	1908	6	$62,000	10%	4+ Years
UC Berkeley *Haas*	1898	7	$52,000	16%	4+ Years
Columbia	1916	8	$63,000	13%	4+ Years
Dartmouth *Tuck*	1900	9	$62,000	21%	4+ Years
Virginia *Darden*	1955	10	$52,000	19%	4+ Years
Jack Welch Mgmt Inst.	2009	N/A	$20,000	20%	2 Years

*Source: The Economist, Inc., GSV Asset Management *U.S. News **Year-1 Salary Gain Post Graduation Divided by MBA Cost + Foregone Salary*

For organizations that wanted to replicate aspects of the GE education model without investing $1 billion per year, **CorpU** had an answer. Partnering with leading business schools to develop impactful digital curriculum, CorpU delivered high value executive education in a scalable model. Top leadership courses included *Leading Breakthrough Change* (University of Pennsylvania), taught by business strategy luminary **Dave Pottruck** (Former CEO, Charles Schwab), *Positive Leadership* (University of Michigan, Ross School of Business), *Built to Win* (Harvard University), and Leading an Adaptive Organization (University of Pennsylvania).

Forward March: **CorpU**

ROE

CorpU is transforming talent development for the 21st century through research, advice, and education. A partner with the World's leading businesses and academic organizations, CorpU is pioneering new approaches to virtual learning communities that connect people to capture knowledge, solve problems, generate ideas, teach and learn.

FOUNDED: 1997

HEADQUARTERS: Mechanicsburg, PA

ADOPTION: CorpU is used by leading brands including Coca-Cola, MasterCard, Boeing, Oracle, Mars, Aetna, and Farmers.

INVESTORS: GSV, Red Eagle Ventures, Penn Venture Partners, and Corporate Executive Board

CAPITAL RAISED: $20 million

MEGATRENDS
GLOBALIZATION, SOCIAL, KAIZENEDU, KNAAC, BRANDS, ROE

GSV 4Ps ANALYSIS

People

CEO **Alan Todd** is a pioneer in the corporate learning industry and was named Inc. Magazine / E&Y Entrepreneur of the Year for technology. COO **Mike Barger** was a founding member of JetBlue Airways and led their corporate university.

Product

CorpU unlocks the potential of an organization's talent and teams by providing leadership development training and best-in-class online executive education.

Predictability

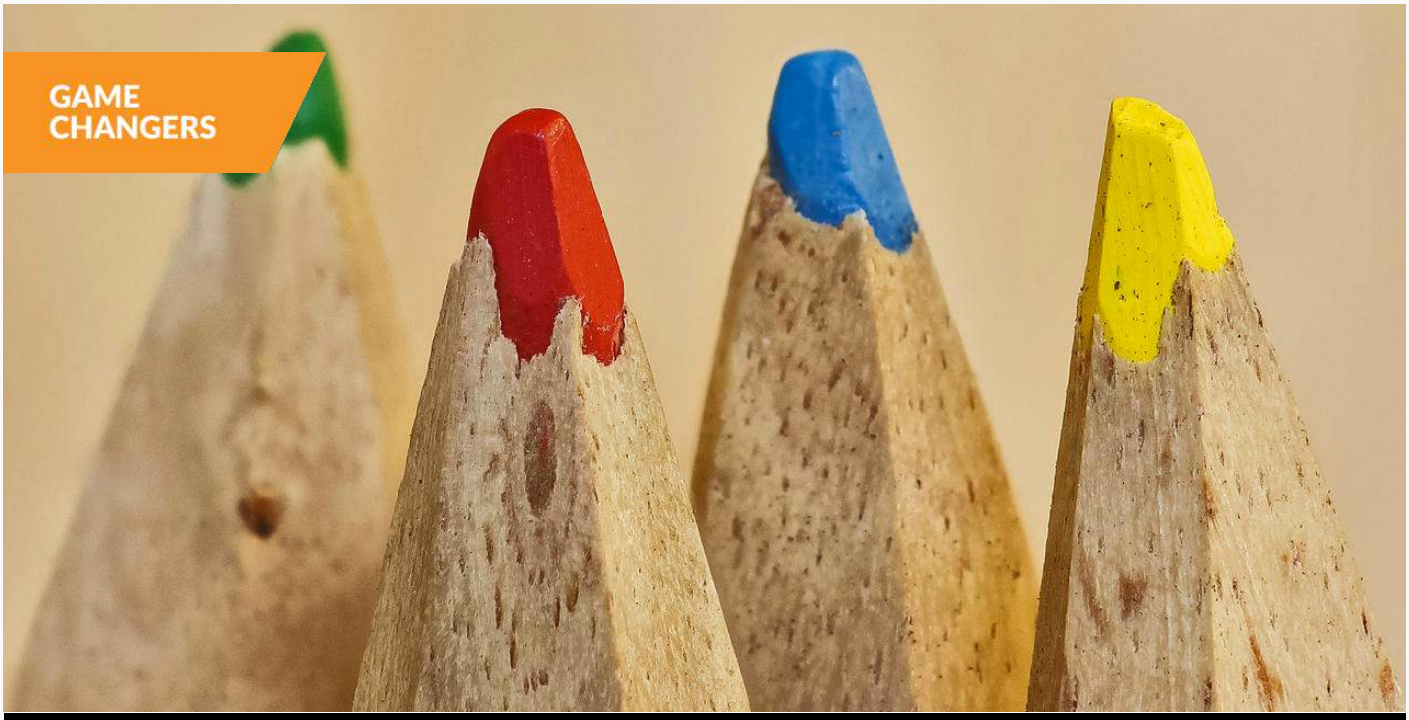
CorpU has built one of the premier brands in the corporate learning World. It continues to grow its business with existing customers and add new clients due to strong market demand.

Potential

Global corporate learning is a large and growing market. Knowledge based industries account for a majority of jobs in the U.S. economy and CorpU is effectively training knowledge leaders.

CORP/U

Google reimagined the model altogether, launching an "invisible" corporate university that delivered personalized, just-in-time information to employees based on their job function and performance.



GOOGLE UNIVERSITY

WHAT IT IS

Effectively, Google operates an "invisible" corporate university, delivering personalized, just-in-time information to employees based on their job function and performance. Curriculum, points of emphasis, and dedicated training activities evolve continuously based on multiple sources of data.

Google recognizes that the pace of innovation is moving too fast to create hard-coded curriculum. By the time they develop company-wide or even function-specific learning tracks, many would already be obsolete. Instead, Google has opted to create a learning infrastructure that delivers relevant information when it is needed.

WHY IT'S A GAME-CHANGER

Peer-to-Peer: The "Googler-to-Googler" program places employees from across departments into teaching roles that would otherwise be filled by the HR department. By giving employees the opportunity to teach, Google makes learning a part of the way employees work together, rather than a separate activity.

Timely Micro Training: Instead of giving new employees a training manual, Google provides bite-sized tutorial information just before it is needed. For example, managers are given guidance on how to complete performance reviews shortly before it's time to complete them.

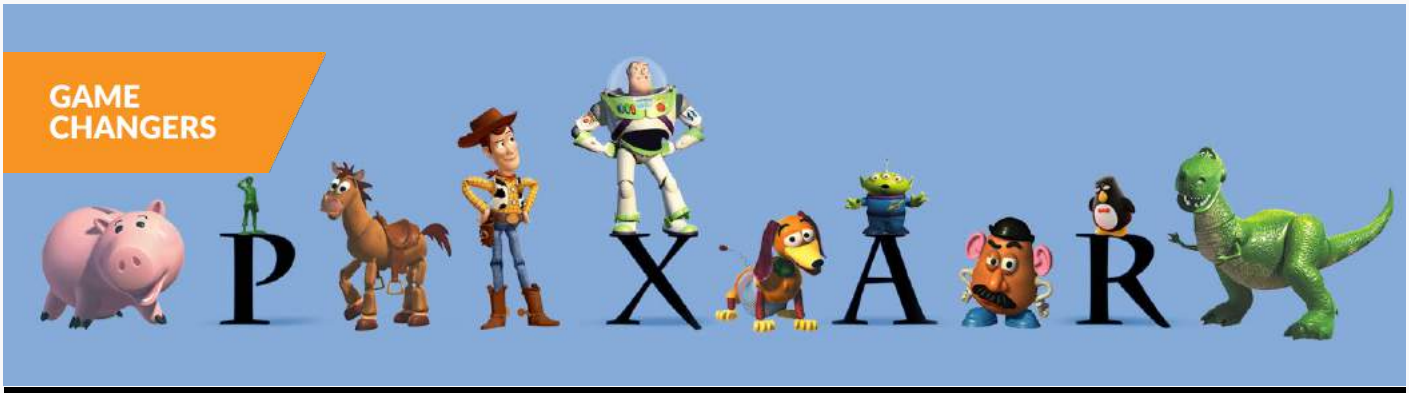
Recognizing that the pace of innovation was moving too fast to create hard-coded curriculum, Google avoided cumbersome company-wide or even function-specific learning tracks that were likely to be obsolete from the moment they were launched. In the old model, for example, you might train a new manager about corporate performance evaluation process as part of their on-boarding. In the Google model, managers were prompted to explore video-based trainings the week before performance reviews began.

Pixar developed a highly unconventional corporate university with the aim to cultivate enthusiasm and collaboration among employees. As the former "Dean" of Pixar University, Randy Nelson, once observed, "If you could create good filmmakers who would work here for 25 years, their first five years of film would be really good; their next five years would be amazing. By the time these people worked together for 25 years, you would just not believe the things that would happen."

Pixar offered the equivalent of an undergraduate education in fine arts and the art of filmmaking to every employee — whether an animator, technician, production assistant, accountant, marketer or security guard. Although innovative technology was critical to Pixar's model, great stories were the secret to creating successful movies.

Accordingly, Pixar developed its own framework for creative design and ideation based on lessons from producing early hits that broke the mold for "cartoon movies". Everyone was encouraged to devote up to four hours a week, every week, to their education.

Pixar University even had its own official "crest", complete with Latin inscriptions. The first, "Alienus Non Dieutius" spoke to the mission of the company: "**Alone no longer**". The second, "Tempus Pecunia Somnum" offered practical wisdom: "**Time, Money, Sleep**".



PIXAR UNIVERSITY

WHAT IT IS

Pixar developed the equivalent of an undergraduate education in fine arts and the art of filmmaking… their way. Every employee — whether an animator, technician, production assistant, accountant, marketer or security guard — is encouraged to devote up to four hours a week, every week, to his or her education. The company is cultivates passion, loyalty, and creativity through a program that values learning for the sake of learning.

WHY IT'S A GAME-CHANGER

Culture of Learning: Pixar University expands the concept of leadership development by applying the model of a more general fine-arts education. Employees can choose from a full palate of general classes — about 14 per week — which they are allowed to attend in lieu of "work".

Proprietary Content: Although innovative technology is critical to Pixar's model, what makes a movie successful is the story that brings people in to see it. Accordingly, Pixar has developed its own framework for creative design and ideation based on lessons from producing early hits that broke the mold for "cartoon movies".

Reflecting on these varied models, from GE, to Pixar, and other sophisticated models like **Apple University,** we saw an opportunity to create a talent development model that was fine-tuned to the unique demands of being a highly effective school leader.

DEVELOPING + EMPOWERING SCHOOL LEADERS

Another key opportunity was to replicate and scale innovative existing programs that focused on developing and empowering entrepreneurial school leaders. Founded in 2000 by a team of social entrepreneurs led by **Jon Schnur**, **New Leaders** offered rigorous training programs focused on school transformation.

Targeting talent from inside and outside the education system, New Leaders provided immersive training to prospective principals with a specific aim to turn around chronically underperforming schools.

GAME CHANGERS

New Leaders

NEW LEADERS

FOUNDED: 2000

WHAT IT IS

Strong school leaders have a powerful multiplier effect, and New Leaders aimed to make this math work for students. Founded by a team of social entrepreneurs including **Jon Schnur** (Former Education Policy Analyst for President Bill Clinton and advisor to President Barack Obama), **Ben Fenton** (McKinsey),**Mike Johnston** (State Legislator, CO), **Allison Gaines** (NYC Public Schools), and **Monique Burns** (President, Teach Plus), New Leaders offered rigorous training programs focused on cultivating transformative school leaders who can dramatically improve the quality of teaching and raise student achievement.

WHY IT'S A GAME-CHANGER

Principal Training: New Leaders' signature program trained principals through a rigorous, hands-on curriculum to turn around underperforming schools. The program recruited participants from inside and outside the education industry.

"Emerging Leaders" Training: The Emerging Leaders Program strengthens the leadership skills of talented teachers, coaches and assistant principals in partner districts and charter management organizations, putting participants on the pathway to principalship.

New Leaders coupled this program with a curriculum for current teachers and administrators, emphasizing actionable strategies that could be implemented to improve the effectiveness of their schools. By 2015, New Leaders had installed 1,600 leaders nationwide, impacting over 350,000 students. Students in New Leaders schools consistently achieved higher grades than their peers, graduating from high school and enrolling in college at higher rates.

Beyond educational programs, developing and empowering transformational school principals hinged on the ability to arm them with data-driven decision-

making tools like **BrightBytes**, **Panorama Education**, and **MasteryConnect**. These platforms helped them understand key trends in their organization, while informing strategic decisions around procurement, curriculum, and staffing. Removing the guesswork from decision-making, a basic expectation of CEOs in almost every major industry, would make principals more effective, efficient, and confident as they developed and executed against school plans.

DATA-DRIVEN DECISION-MAKING PLATFORMS

Panorama Education (2012)

Co-founders **Aaron Feuer** (CEO) and **Xan Tanner** (Director of Operations) have created a K-12 data analytics company that enables schools, districts, charter networks, and state governments to efficiently conduct surveys across students, parents, teachers, and staff. Panorama analyzes results data, presenting teachers and administrators with constructive feedback that can be used to improve teaching, school design, and strategy.

INVESTORS: Google Ventures, SoftTech VC, SV Angel, Mark + Priscilla Zuckerberg, Deborah Quazzo – GSV Advisors ($16 million raised)

BrightBytes (2012)

Led by CEO **Rob Mancabelli**, BrightBytes is a deep analytics platform that empowers school leaders to understand key issues in their organization and create data-driven strategies to optimize outcomes. Using the company's flagship business intelligence product *Clarity*, principals and administrators gain actionable insights about student performance trends, risk factors driving dropouts, the effectiveness of technology procurements, leadership effectiveness, and everything in between.

INVESTORS: Bessemer Venture Partners, Insight Venture Partners, Learn Capital ($52 million raised)

Principals also needed the ability to create an infrastructure of accountability at every school in America. Assessing teacher performance based on student scores on summative assessments wasn't enough. School leaders needed a toolkit to objectively review and coach core teaching skills and strategies long before test day.

In 2009, the **Bill & Melinda Gates Foundation** launched the Measures of Teaching Effectiveness (MET) project, a three-year study that aimed to determine how to best identify and promote great teaching. Among the core conclusions was that classroom observations were critical to the process. While traditionally an irregular activity that was difficult to replicate, innovative evaluation platforms like **Teachscape** and **BloomBoard** offered a pathway to scale and repeatability.

21ST CENTURY PROFESSIONAL DEVELOPMENT + EVALUATION PLATFORMS

Using Technology to Create the Infrastructure of Accountability and Continuous Improvement

Company	Founded	Description
BloomBoard	2010	Web-based platform to develop, track and evaluate teacher progress against professional goals; Integrated marketplace for third party professional development content.
CaseNEX *Longleaf Solutions*	2002	Case-based approach to professional development and teacher training, emphasizing problem solving and scenario-specific strategies.
EdThena	2011	Online, video-centric teacher observation and feedback platform creating efficiencies around performance review, coaching, and collaboration.
Frontline	1998	Human resources and professional development management platform for K-12 education.
PeopleAdmin	2000	End-to-end talent management platform for K-12 and postsecondary institutions (Candidate Engagement, Applicant Tracking, Employee Evaluations + Records Management).
School Improvement Network	1991	On-demand professional development platform, including comprehensive digital learning and classroom support resources, as well as management/implementation tools.
TeacherMatch	2011	Research-based K-12 talent management solution that helps schools identify, hire and develop effective teachers using predictive analytics.
Teachscape	1999	Pioneering, end-to-end teacher evaluation and professional development platform, focused on using video to create efficient performance review and coaching processes.
Truenorthlogic	2000	Educator and school leader professional development platform, digital content, and talent management.

What We Did About It

Building on our analysis of "Models that Work," we implemented the following initiatives to create equal access for all Americans to participate in the future.

1. Smarter Training + Development

IDEA: We created an elite academy for aspiring school leaders modeled after the *U.S. Military Academy* (USMA) at West Point to establish a highly visible tradition of excellence in the school leadership profession. *The United States Principal Academy* (USPA) recruited top-tier participants from a variety of disciplines, including education, business, and the military. We developed a rigorous curriculum focused on effective management practices and proven models for outcome-oriented education leadership. Graduates were awarded a principal certification to fulfill industry requirements, but they also received a Masters in Business Administration (MBA).

While enrollment at the USPA was limited, we developed a track of free, on-demand courses, aligned to the multi-year career path of a school leader. We made all content available for distribution through highly effective online learning platforms like the **Jack Welch Management Institute** (JWMI), **EdX**, and **Coursera**. We encouraged these providers to develop their own credential programs, adding their unique perspective to the baseline content we shared (e.g. "Using the GE Way to Create a Great School").

IMPACT: Research from the School Learning Network indicated that improving the performance of all "ineffective" public school principals (25th percentile performance or lower) to "somewhat effective" (50th percentile) — combined with a reduction in principal turnover by just 10 percent — would create an economic return of $6,500 per student per year (e.g. Improved Students Outcomes, Reduced Public Service Costs, Improved Student Earnings Power, etc.).

KIPP charter schools invested what was considered to be an extraordinarily high sum of $150,000 per principal in training and development. While this no doubt contributed to the quantifiably superior performance of their schools versus peers, it also increased principal retention by 41 percent, driving continuity in vision, strategy, and execution — benefits that ultimately cascaded to students in the form of a higher quality education.

It would cost $14 billion to make a $150,000 annual training investment in principals across all public schools in the United States… but if it moved the needle even just from "ineffective" to “somewhat effective”, *the return would be $325 billion*. By aggressively using digital technologies to connect principals with highly curated professional development content, we were able to drive down the cost curve over time.

2. Smarter Management Tools

IDEA: We committed to arming every school leader with data-driven decision-making tools like **BrightBytes**, **Panorama Education**, and **MasteryConnect**, which helped them understand key trends in their organization, while informing strategic decisions around procurement, curriculum, and staffing. Removing the guesswork from decision-making, a basic expectation of CEOs in almost every major industry, made principals more effective, efficient, and confident as they developed and executed against school plans.

IMPACT: To achieve this end, we channeled the $500 million federal School Improvement Grant program into seeding the adoption of data and analytics platforms with demonstrated effectiveness. Working with “Test Beds” like **LEAP Innovations** — which played matchmaker between schools with key capability gaps and innovative technologies that could fill them — we catalyzed adoption of the best platforms. We also used funding to help districts offset upfront platform adoption costs.

The impact of adopting these platforms could not be overstated. Combined with comprehensive efforts to provide better training and development to principals, a

culture of data-driven decision-making professionalized school operations and optimized key organizational functions — benefits that ultimately accrued to students in the form of improved performance and outcomes.

3. Network + Elevate

IDEA: We launched a curated peer network for innovative school leaders, modeled on the highly effective Young Presidents' Organization (YPO), which connected over 23,000 business leaders in educational and networking experiences designed to support their businesses and personal leadership development. For principals — who served in a unique role that included oversight of talent acquisition and development, resource allocation, standards development, and accountability — idea exchange between leaders had a multiplier effect on the spread of best practices.

Equally important was elevating public perception around the critical role principals play in creating opportunity for young people. Compensation alone would not attract the best talent. We needed to inspire a broader audience around *how* principals were creating change, not simply *what* their job was. To this end, we created *Presidential 2020 Vision awards*, publicly honoring ten principals who created transformational change at their schools in support of our mission — to give every person an equal opportunity to participate in the future. Winners were honored annually at the White House as part of a broader summit that convened policymakers, business leaders, academics, and other key stakeholders in the cause.

IMPACT: The combined impact of targeted professional networking with awards to elevate the best school leaders created a virtuous circle. Networking accelerated the flow of good ideas from the best leaders across the network. Awards elevated the profession, attracting a deeper and more impactful talent pool, which fed into a growing principal network.

FOREFATHERS

PIONEERS IN EDUCATION INNOVATION



"Set high goals, encourage competition, and then keep score."

Sam Walton

Founder, Walmart

Sam Walton is renowned for founding the retail chain, Walmart, which he built from a single store into the World's largest retailer. The Walton Family Foundation has had significant presence and impact in K-12 philanthropy. Walton's largest investments include the Charter School Growth Fund, Teach for America, KIPP, the Alliance for School Choice, and GreatSchools Inc.

Stephen Covey

Founder, FranklinCovey

Stephen Covey is remembered as one of the World's foremost leadership authorities and organizational experts. Covey authored a number of books on leadership that offered timeless insights, including best-seller *The Seven Habits of Highly Effective People*, which sold over 25 million copies. He founded the Covey Leadership Center, which later merged with Franklin Quest to form Franklin Covey Co, a company focused on the development of leadership, strategy, and individual effectiveness.



"Leadership is a choice, not a position"



"Children need a good start in life ... I truly believe that if we can get them started on the right path to begin with, it will not only help them, but help our country and our communities."

T. Denny Sanford

Chairman + CEO, United National Corp.

T. Denny Sanford is regarded as one of the nation's most active philanthropists, with total philanthropic gifts exceeding $500 million geared towards improving the quality of life for children. At Arizona State University (ASU), he created the Sanford Harmony Program, which helps young children better understand the opposite gender to create respect, trust and understand between pre-adolescent boys and girls. At the Sanford School, named in honor of Sanford's life work, ASU is developing and promoting collaborative efforts that focus on themes including: relationships, families, education and well-being.

Arthur Levine

President, Woodrow Wilson National Fellowship Foundation

As the president of the Woodrow Wilson National Fellowship Foundation, which supports scholarship and public service in a variety of fields, Arthur Levine is focused on eliminating the achievement gap in education among races and incomes. Dr. Levine has written several books focused on increasing access to higher education, with a special focus on adversity and low-income students. Levine is a lifelong educator who has served as president and professor of education at Teachers College, Columbia University; chair of the higher education program; chair of the Institute for Educational Management; and senior lecturer at the Harvard Graduate School of Education.



"No generation will have the opportunity we have to put our mark on the look of education in the future."



3

STEPPING OUT

National Service as a Force Multiplier

We put boots on the ground, empowering millennials to rebuild a nation of at-risk youth.

Problem

Young people were twice as likely to graduate from high school and enroll in college if they had a mentor, but the national student-to-counselor ratio was 500 to 1. In fact, one third of middle and high school students lacked access to an adult mentor of *any* kind, including nine million "at-risk" students. Over half of the 800,000 students who dropped out of high school each year came from just 10 percent of schools. Ironically, AmeriCorps, the Federal service organization that supported a broad range of mentoring and academic support programs, was avalanched with nearly 600,000 applications for just 75,000 slots per year. Despite an estimated $4 return for every $1 invested in the program, we were turning away 500,000 young people who were eager to help solve the country's key challenges.

MODELS THAT WORK

- **"Full Service"**: Programs that enlist young people to serve as full-time mentors and teachers in underserved communities *(e.g. City Year, Teach for America, Common Ground Foundation)*
- **"Self-Services"**: Hybrid models that connect young professionals with students through structured in-person and virtual mentoring activities *(e.g. iMentor)*
- **Marketplaces + Networks**: Applying marketplace models that have propelled businesses like Uber, Lyft, and Airbnb to drive national service participation; Using mobile networks to efficiently connect audiences and deliver services *(e.g. Catchafire, Chegg, Mytonomy, Wyzant, Tutor.com-IAC)*
- **Media + Inspiration**: Using engaging, viral digital media and social network to drive behavior shifts and purposeful action *(e.g. Ice Bucket Challenge, Roadtrip Nation)*
- **Service Leaders**: Structured training programs cultivating leaders in service from a variety of disciplines *(e.g. Arizona State University Public Service Academy)*

SOLUTION

1. **Expand AmeriCorps**: Expand capacity of core U.S. service organizations like AmeriCorps where applications to participate exceed available slots by as much as 5 to 1
2. **Leverage Impact through Digital Networks**: Use powerful digital platforms to efficiently connect full- and part-time service workers with projects
3. **Education Resources for Service Members**: Couple full-time service programs with structured digital curriculum, emphasizing key 21st century skills (Entrepreneurship, Critical Thinking, and Communication); Credential students that successfully complete coursework

By the Numbers: National Service

Fundamentals	2015
Increased Likelihood of Enrolling in College when Student Has a Mentor	2x
U.S. Middle and High School Students Lacking an Adult Mentor	33%
At Risk Youth Lacking an Adult Mentor	9 Million
National Student-High School Advisor Ratio	500-1
U.S. High Schools Lacking Any Dedicated Advisors	20%
Americans with a College Degree (Age 25-29)	34%
African Americans/Hispanics with a College Degree (Age 25-29)	16% / 14%
Students Graduating from College (Top/Bottom Quartile Income)	82% / 8%
College Graduates Working in Jobs that Do Not Require a Degree	40%
Bartenders / Taxi Drivers with a College Degree	25% / 15%
U.S. Teenagers with a Smartphone	70%+
U.S. Teenagers who are Active Social Media Users	90%+
Total U.S. Citizens Who Volunteer	63 Million
FTE Volunteer Workforce	9 Million
Formal Volunteer Program Participants (Full Time)	125,000
Americans aged 18 to 29 Out of School and Unemployed	16%
African Americans aged 18 to 29 Out of School and Unemployed	24%
College Debt Outstanding	$1.2 Trillion

Source: Center for College Affordability and Productivity, NCES, Bureau of Labor Statistics, The Franklin Project

Israel earned the nickname “Start Up Nation” by having the highest density of start-ups anywhere in the World — 2.5x more than the United States, 30x Europe, 80x India, and 300x China.

Israel had more companies listed on the technology laced NASDAQ than Europe, Japan, Korea, India, and China… *combined*. Moreover, every major tech company in the United States had connectivity to Israel due to its prowess, from **Google**, to **Microsoft**, **Intel** and **Apple**.

Some of this can be explained by the Yiddish word “chutzpah”, which basically means “guts” and is embedded in the Israeli culture… it takes chutzpah to start a business.

Chutzpah, while important, was a derivative of what was likely the largest reason behind “Start-Up” nation. At age 18, all Israeli citizens need to serve in the Israeli Defense Forces (IDF) for at least two years. Units have “Technology Bootcamps” where teenage soldiers “learn by doing” for critical projects and life-or-death missions.

Israeli’s emerge from the military experience with much more than technology chops. They are trained how to collaborate and maintain mission focus. They learn how to lead and are guided by a desire to keep serving their country. The pride that Israel is recognized as a leader in technology and start-ups also fuels innovation and a drive to make a difference.

The broader cultural implication was significant. Israeli twenty-somethings had more maturity then peers from other countries and a sense of purpose that served as a lifelong compass. And nobody valued five minutes like Israeli’s as they knew that this might make the difference between success and failure.



ISRAEL DEFENSE FORCES

WHAT IT IS

In ordering the creation of his country's first army, the Israel Defense Forces (IDF), in 1948, prime minister David Ben Gurion remarked that the, "IDF is not only a means of defending the country, but also a means of integrating and building Israeli society." Israel mandates IDF service for all citizens over the age of 18. Men serve three years, while women serve two. This national service model has been credited with driving a culture of innovation. Israel has the highest density of start-ups in the World and its young workforce is widely regarded for its entrepreneurship, drive, and commitment to excellence.

WHY IT'S A WINNING MODEL

Service in the IDF is fundamentally designed to promote accountability, entrepreneurship, and professionalism. It is a mechanism to produce a talented workforce, level the playing field, and instill a sense obligation to country.

Limited Hierarchy: The ratio officers to enlisted personnel in the IDF is among the lowest in the World. The ration of senior officers to combat troops in the U.S. Army is 1 to 5; in the IDF, it's 1 to 9. Senior levels are deliberately understaffed to reduce top-down orders and encourage individual initiative at the lower ranks.

Level Playing Feld: Mandatory service ensures that people from all walks of life serve together. The sons and daughters of taxi drivers can command the children of millionaires because leadership is awarded purely based on demonstrated skills and abilities.

Emphasis on Accountability: IDF company commanders, as young as 23, are in charge of one hundred soldiers, twenty officers and sergeants, and three vehicles. Additionally, the IDF emphasizes professionalism, comradeship, and serving as a "personal example" as part of its core culture.

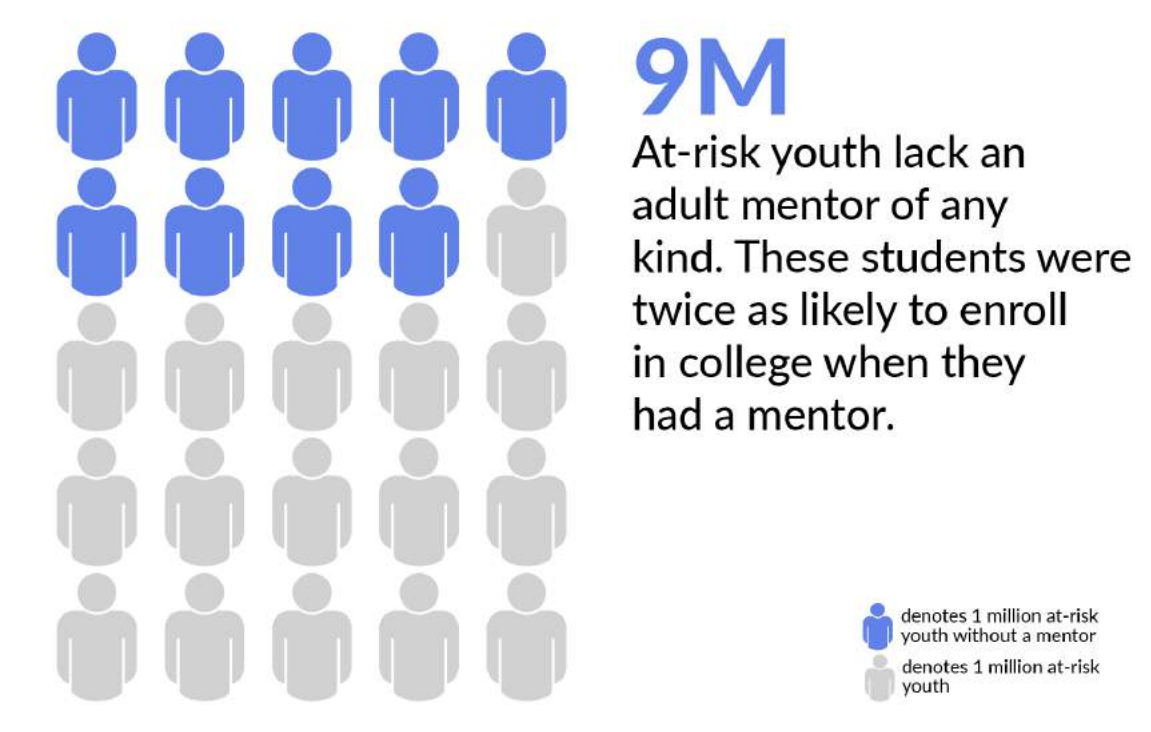
Problem

In America's under-resourced communities from Detroit to the Deep South, most young people found their only access to an adult was during the six hours per day they spent in school. Even then, personal interactions were scarce. While students

were twice as likely to enroll in college if they had a mentor, the national student-to-counselor ratio was 500 to 1. One in five schools had no counselors at all.

MASSIVE MENTOR GAP

Of the 25 Million At-Risk Youth in the United States, 9 Million Lack an Adult Mentor of any Kind



Source: GSV Asset Management, The Conference Board

The irony was that in an age of hyperconnectivity, where 70 percent of 13-year-olds owned a smart phone and 90 percent were active social media users, one third of middle and high school students lacked an adult mentor of any kind.[18] This group included nine million "at-risk" students who had already experienced some combination of the following: incarcerated parents, pregnancy, homelessness, poor academic performance, delinquency… the list goes on.[19]

[18] *Piper Jaffray*, Taking Stock with Teens (2014)

[19] *National Mentoring Partnership*, "The Mentoring Effect" (2014)

Buoyant economic reports in 2015 were highlighted by a surging stock market and record corporate profits. But for young people in the "other America", the tide wasn't rising fast enough. Just 76 percent of Hispanic students and 68 percent of African-American were graduating from high school, effectively shutting them out of a productive future by the age of 18. *Only one in ten* people from low income families had a bachelor's degree by age 25, compared to half of people from high income families.

Play it forward and 16 percent of Americans aged 18 to 29 were out of school and unemployed, a rate that jumped to 24 percent for African Americans. We already knew how this movie ended. Unemployment before the age of 24 translated into a lifetime wage penalty of 20 percent.[20]

Models that Work

Of all the places where the window to participate in the future slammed shut, none was tougher to stomach than students who made it to college but no further. Over 40 percent of students who started at four-year colleges hadn't earned a degree after six years. If you included community-college students, the dropout rate was more than half. That was worse than any of the thirty plus OECD nations except Hungary.

While the language might have been slightly more complicated, all of the academic research on the topic seemed to reach the same conclusion: Rich kids graduated; poor and working-class kids didn't. About a quarter of college freshmen born into the bottom half of the income distribution managed to secure a college degree by age 24, while almost 90 percent of kids born into families in the top income quartile did.

If you didn't understand the power of surrounding students with resources — especially good mentors — you didn't need to look much further than **College Track**. Founded by **Laurene Powell Jobs** and **Carlos Watson**, College Track

[20] *New York Times*, "In Jobless Youth, U.S. Is Said to Pay High Price" (2014)

recruited students from underserved communities and worked continuously with them from the summer before 9th grade through college graduation. It was more than fly-by support. The 10-year program systematically removed barriers that prevent students from earning their college degree, providing comprehensive academic support, leadership training, financial and college advising, and scholarships.

Being in a program like College Track has showed me that there are no excuses… our futures are affected by the decisions we make. I KNOW I can graduate from college if I am willing to go the extra mile and move on with the past.

CENDY DE LA TORRE

College Track Student

Ultimately, College Track did what good mentors do. It shared the playbook for how to be successful. In the 16 years after its founding, 92 percent of the high school seniors it served enrolled in a competitive college. Their graduation rate was nearly triple the national average.

"FULL SERVICE"

Our 2020 Vision embraced bold new models but we also needed boots on the ground to bring intensive, "Full Service" models to scale. America's rich tradition of service programs revealed that our army was hiding in plain sight. Programs like **City Year** were enlisting 18- to 25-year-olds as teachers and mentors for underserved K-12 students across the country. **Teach for America** had installed 10,500 teachers in 35 states and was training more new educators for low-income communities than any other organization in the nation, charitable or otherwise.[21]

[21] *Teach for America*





City Year (1988)

WHAT:

City Year, led by visionary CEO **Michael Brown**, partners with public schools to help keep at-risk students in school and on track to graduate. This innovative public-private partnership brings together teams of young AmeriCorps members who commit to a year of full-time service in schools. City Year currently operates in 242 schools in 25 cities, with 2,700 corps members serving 150,000 students.

WHY IT'S A GAME-CHANGER:

Students demonstrating an early warning indicator (poor attendance, disruptive behavior, or course failure in math and English) as early as sixth grade have only a 25% percent chance of graduating high school on time with their peers. However, students reaching the 10th grade on track and on time have a 75% chance of graduating. City Year targets early warning indicators in an effort to increase students' high school graduation rates.

Improve Academic Performance: 82% of 3rd-5th graders as well as 65% of 6th-9th graders improved scores on literary assessments. 39% of 6th-9th graders improved a full letter grade in their English Language Arts classes.

Increase Attendance + Improve Behavior: Students spend about 14,600 more hours in school than the year before as a result of City Year attendance programs. 43% of 6th-9th graders improved their average daily attendance.

Teach for America (1988)

WHAT:

Teach For America (TFA) is the national corps of outstanding top college graduates, graduate students, and professionals who commit two years to teach in low-income, urban and rural public schools. Its goal is to eliminate educational inequity by enlisting our nation's most promising talent in the effort. TFA's network includes 10,000 corps members teaching across the country.

WHY IT'S A GAME-CHANGER:

Improve Academic Performance: Students of corps members in pre-K through second grade outperformed their peers in both reading and math, gaining the equivalent of an extra 3 months of learning per year.

Teacher Training Model: TFA trains more new educators for low-income communities than any other organization in the nation, charitable or otherwise.

Talent Recruitment: Only 15 percent of corps members say they intend to pursue a career in education before joining TFA, yet two-thirds of our alumni work today in education, including more than 11,000 teachers. More founders and leaders of educational organizations participate in TFA than any other organization or program.

The very generation at risk of a "lost decade" was already proving to be a potent part of the solution. In fact, 47 percent of Millennials volunteered in some capacity every month, compared to 35 percent of Baby Boomers. In surveys, 94 percent of Millennials indicated a preference for work that benefits a "good cause".[22] Ironically, we lacked the infrastructure to channel this demand to serve. In 2015, our federal service program, **AmeriCorps**, had 600,000 applications for

[22] *The Atlantic*, "The Outsiders" (2013)

just 75,000 slots. **The Peace Corps** received 150,000 requests for applications but had funding for just 4,000 new positions each year.

Our loss was really two-fold. "Full Service" programs were really “force multipliers”. In the military, force multipliers are inputs like GPS navigation that can dramatically increase the effectiveness of a fighting unit. Service was a force multiplier because it benefited the “server” as much as the “served”. As we knew from evidence at home and around the World, young people who engaged in meaningful service, whether they wore camouflage or taught in a classroom, developed persistence and grit. They became better problem-solvers… they were better prepared for college and to succeed in their career.

NATIONAL SERVICE PROGRAMS

We have “seen the movie before” and know how it ends. As many countries have demonstrated, national service programs are an important means to tackle societal problems, unite the nation, train leaders, and cultivate a “pay it forward” mentality that will have positive long term ripple effect.

ISRAEL
Israel Defense Forces (IDF)

Israel mandates IDF service for all citizens over the age of 18. Men serve three years, while women serve two. This national service model has been credited with driving a culture of innovation. Israel has the highest density of start-ups in the World, and its young workforce is widely regarded for its entrepreneurship, drive, and commitment to excellence.

TAIWAN
Non-military National Service

Alternative service is 12 months of public safety or community service related work under the Ministry of the Interior, usually in the police, fire department, public clinics, local government offices, or as teachers in rural areas.

SWITZERLAND
Civilian Service

Civilians can apply for work in a broad variety of opportunities: healthcare, welfare, environmental protection, agriculture (small or alpine farms), research projects, development assistance abroad. Civilian service participants can greatly profit from this substitute service in terms of work experience to achieve a better position after the service.

FINLAND
Alternative Service

The program begins with a one-month training period and continues with approximately 11 months of work duties at an approved non-profit organization, ministry, or other government entity.

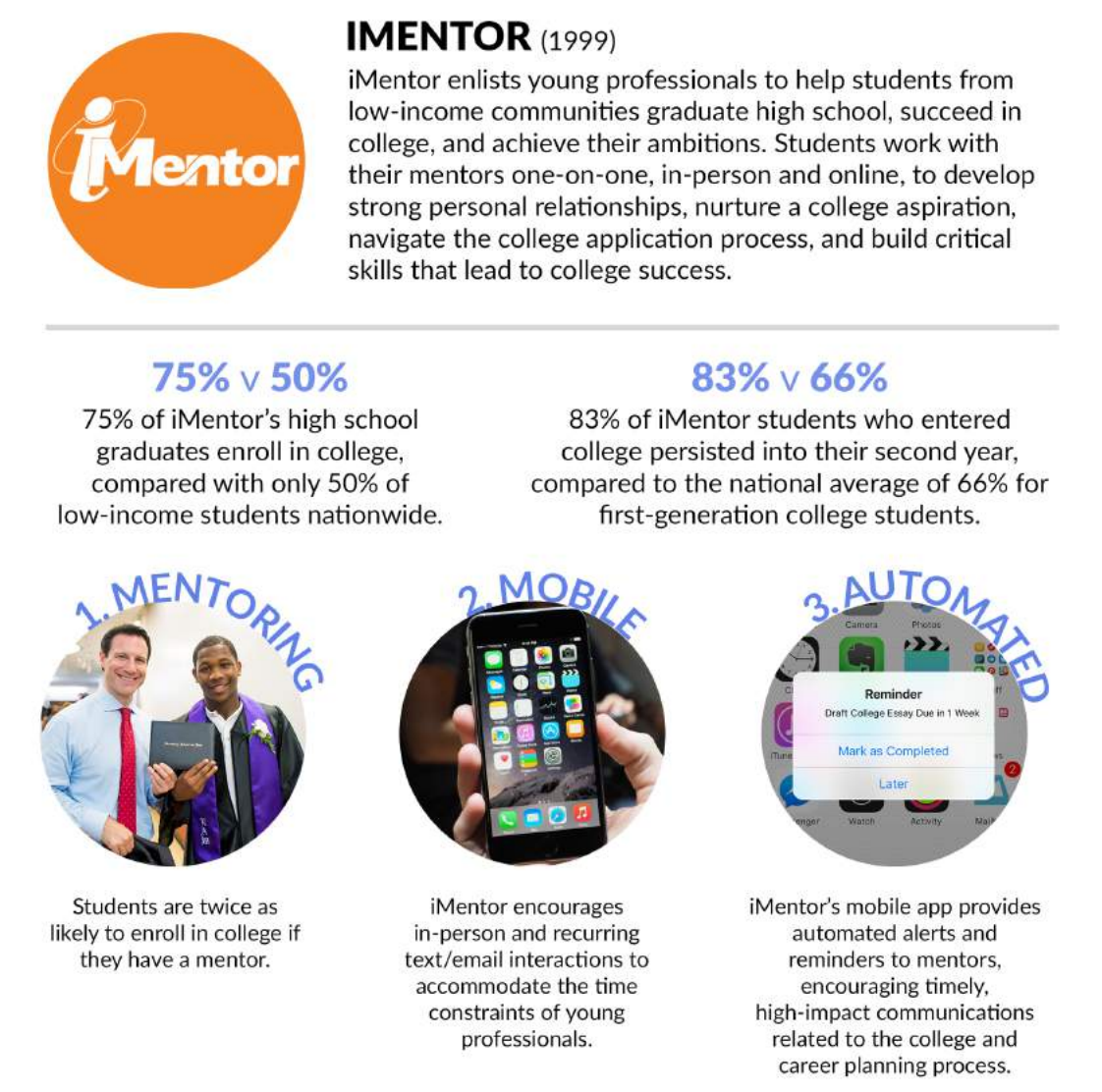
While conscription wasn’t the answer in the United States, the numbers did not lie. Just 56 percent of college students managed to earn a degree in six years, let alone four. Schools like Tufts University were already betting on the benefits of

service, offering to finance a gap year in the field before enrollment. Nice sentiment. But a nicer hedge against dropouts.

“SELF SERVICE”

"Full Service" wasn't the only answer. Immersive programs weren't for everyone and scaling would take more time than we could afford. Programs like **iMentor** offered an alternative: "Self Service.”

IMENTOR: MOBILE + MENTORING



iMentor connected young professionals with underserved students through a combination of in-person and virtual interactions. Instead of requiring full-time service commitments, the program developed a mobile app to guide mentors and students through timely, high-impact, college and career planning activities. Users received automated text messages, and reminders — just like addictive messaging apps and social networks — in advance of key deadlines and milestones.

Corporations were a driving force behind Self Service. In 1999, **Salesforce** launched a foundation using a novel "1-1-1" approach. Setting aside 1 percent of its equity, 1 percent of employee time, and 1 percent of product for philanthropy, the company encouraged employees to get engaged, allocating six fully compensated days for service per year.

SALESFORCE 1-1-1 MODEL

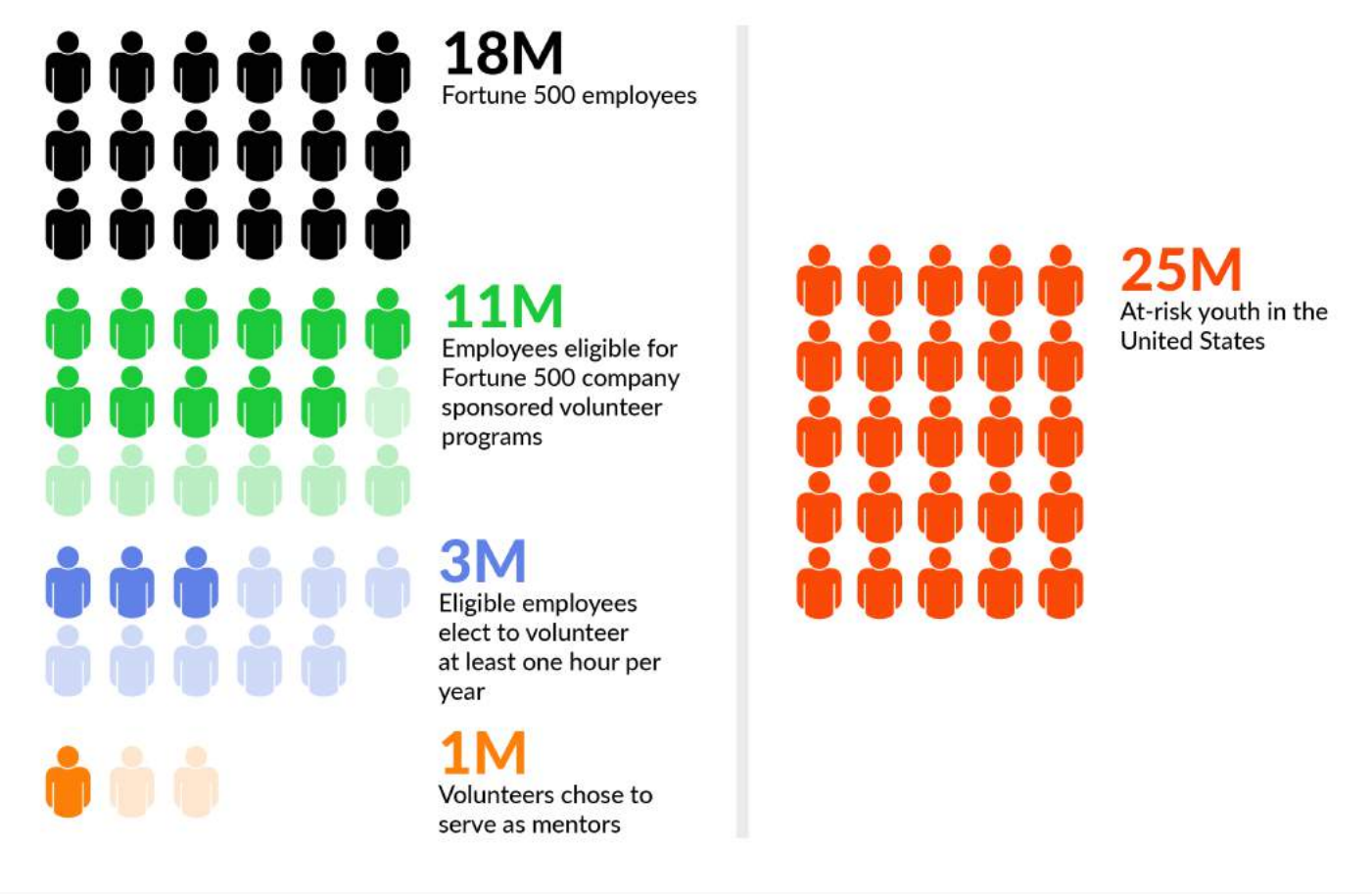


By 2015, Salesforce employees had logged nearly one million hours of service, the company had made over $80 million in charitable grants, and it served over 24,000 nonprofits with free products.

But Salesforce also served as a reminder that corporate philanthropic programs remained a largely untapped resource, especially when it came to engaging the nine million at-risk students who lacked an adult mentor. While 60 percent of Fortune 500 companies sponsored volunteer programs, only 30 percent of the 11 million eligible employees elected to participate. Less than one million people ultimately served as mentors.

UNTAPPED CORPORATE VOLUNTEERS

Over 17 Million Potential Mentors Are Sitting on the Bench



Source: GSV Asset Management, The Conference Board

What We Did About It

Building on our analysis of "Models that Work," we implemented the following initiatives to create equal access for all Americans to participate in the future.

1. Expand Americorps

IDEA: Federal youth service programs, primarily under the umbrella of AmeriCorps, attracted 600,000 applications for just 75,000 slots per year. We were turning away over 500,000 people, but as groups like the **Aspen Institute's** *Franklin Project*, led by **General Stanley McChrystal**, had shown, broadening the program would have profound benefits for society and participants alike. So we expanded the federal budget from $1.4 billion to nearly $10 billion to meet full demand.

IMPACT: While we ratcheted up our capacity for full-time participants, every investment of $1 in national service returned roughly $4 in value. *Our $10 billion program, in other words, generated $40+ billion per year*. Returns were driven by the various benefits accrued to communities, as well as the improved career prospects and long term earning power participants gained through the experience.

2. Leverage Impact through Digital Networks

IDEA: A key challenge facing America was the fact that one third of middle and high school students lacked an adult mentor of any kind, even though they were twice as likely to graduate from high school and enroll in college if they had one. To better leverage the impact of full-time service members, and to enlist a larger "part-time" army, we used compelling technology networks to reach more people.

Web-based tutoring platforms offered by **Chegg**, **Tutor.com** (**IAC**), and **Wyzant** enabled you to simply sign in and connect with somebody who needed help with their homework. **Catchafire** networked people with service opportunities just as freelance platforms like **Upwork** connected free-agents with projects aligned to

their abilities. With Catchafire, you simply entered your skills and what you cared about to find the right fit. **Mytonomy** was a digital network that enabled alumni to record and share topical advice with high school students. **iMentor** was a mentoring service that used structured digital interactions to help working professionals remain proactively engaged with students.

IMPACT: Taken together, these platforms enabled us to have a scaled impact on the mentor gap without 24x7 boots on the ground. While full-time service members were critically important, coupled with technology that applied the efficiency of peer-to-peer marketplaces, we were able to drastically reduce the mentor gap, driving up high school graduation rates and college completion.

3. Best-of-Breed On-Demand Education Resources for Service Members

IDEA: All national service participants were provided with an academic scaffolding to promote college readiness and 21st century skills development. We reimbursed students for the use of approved subscription and on-demand education resources such as **Udacity**, **Coursera**, **General Assembly**, **StraighterLine**, and **Skillshare**, and developed a core sequence of online courses focused on entrepreneurship, business fundamentals, and professional communication.

IMPACT: Completion of these courses earned service members a micro-degree endorsed by the Department of Education. This recognition improved your ability to be accepted into competitive education programs and enhanced your overall employability. As this cycle became more transparent, the role of service programs as a key element of the U.S. human capital pipeline solidified.

Teach for America Family



A major catalyst in rapidly-expanding industries has been the successful spawning from parent enterprise to multiple offspring. An example of this, the Paypal "mafia" has become notorious for its involvement in many of the new big idea companies that are reshaping Silicon Valley, including Facebook, Palantir, Tesla, SpaceX, LinkedIn and many more.

Godfather: Wendy Kopp
Founder & CEO, Teach for America

Mike Feinberg + Dave Levin Co-Founders Richard Barth CEO	KIPP	Adam Geller Founder & CEO	EDTHENA
Zeke Vanderhoek Founder & Principal	TEP	Steven Francisco Founder & President	INNOVATION TEACHING Solutions for Educational Excellence
Alex Grodd Founder & CEO	BetterLesson	Dan Carroll Co-Founder+ CPO Matt Pasternack Head of Growth	Clever
Axel Shalson Founder, President, & CEO	Red Schoolhouse Software	Jen Medbery Founder & CEO	kickboard

FOREFATHERS

PIONEERS IN EDUCATION INNOVATION



Howard Fuller

Former Superintendent, Milwaukee Public Schools; Founder & Director, Institute for the Transformation of Learning

"At a certain point in time, you have to say that you have to try something radically different."

Howard Fuller's extraordinary career has ranged from civil rights activist and community organizer, to leadership roles in public service and education. As Superintendent of Milwaukee Public Schools, Howard fought to ensure that low-income children and families were able to access transformational learning opportunities. As Founder and Director of the Institute for the Transformation of Learning at Marquette University, Howard challenges the "traditional" public school structure by supporting innovative educational delivery systems.

Donald + Doris Fisher

Founder, The Gap



"Change or fail."

Doris and Donald Fisher, founders of the Gap clothing company, are celebrated for their extensive education-reform philanthropy. The Fishers were early supporters of Edison Schools, and major supporters of KIPP and Teach for America, donating over $180 million to the two programs. Donald Fisher also co-founded the Charter School Growth Fund with John Walton, making early-stage investments of over $100 million in high-promise charter school networks. Their son, John Fisher, has carried the torch as the Chairman of KIPP.



Bill Milliken

Founder & Vice Chairman, Communities in Schools

"Love is the only tool of transformation that we have and I'm not afraid to use that word because it's all we've got."

Bill Milliken is one of the most successful and respected youth advocates in the country. Among his many accomplishments is the creation of the Communities In Schools network, a comprehensive program that repositions existing community resources into schools to help young people. It has become one of the nation's leading dropout prevention organizations, helping students succeed academically, creating productive, rewarding

Marc Benioff

CEO, Founder + Chairman, Salesforce



"You're probably not taking enough risk if it's not hard as rock sometimes."

Marc Benioff started Salesforce with the sole mission to revitalize the software industry by using Internet to revamped that way that software programs were designed and distributed. He created the term "platform as a service" and is the author of three books, including best seller *Behind the Cloud*. At Salesforce, Benioff pioneered the 1/1/1 philanthropic model, by which companies contribute 1% of profits, 1% of equity and 1% of employee hours back to the community it serves.



4

STEP ON IT

Accelerate Learning with Technology

We expanded quality and access in education by applying 21st Century technology fundamentals.

Problem

America's education system was constrained by two key flaws that were relics of technology fundamentals from a bygone era. First, for those who couldn't afford or access elite schools, education quality came down to the luck of the draw. Your learning experience hinged on the person standing at the front of a classroom. Second, despite a variety of skill sets, interests, and backgrounds, going to school meant studying the same materials as your peers at the same pace.

But technology advancements that would have seemed like science fiction a decade earlier meant that both issues were solvable. The rise of the Internet and then smartphones meant that physical location was no longer a barrier to accessing the World's best learning content. Powerful adaptive software meant that we all could have our own robot tutor to help us learn exactly what we needed to know at our own pace. The real challenge, ultimately, was catalyzing adoption of these game-changing technologies.

MODELS THAT WORK

- **Recurring Updates**: Regular technology upgrades, as contemplated in a typical cell phone plan, to keep pace with global innovation *(e.g. Education Superhighway, ConnectED)*
- **On-Demand, Curated Content**: Platforms with high-quality, on-demand educational content *(e.g. Khan Academy, iTunes U, LightSail, Newsela, Coursera, Udacity, CK-12, LearnZillion)*
- **Adaptive, Personalized**: Products that offer a personalized and engaging experience based on your preferences, habits, and peers, or a diagnostic of your specific needs *(e.g. Knewton, DreamBox Learning, Acrobatiq, Think Through Math, Smart Sparrow, Pearson, Cerego, McGraw-Hill-LearnSmart + ALEKS)*
- **Communication + Transparency Apps**: Mobile apps to streamline stakeholder transparency + analytics platforms that create transparency using formative assessments or aggregated student data *(e.g. Twitter, Class Dojo, Remind, Mastery Connect)*
- **Accelerating Innovation**: Institutions that catalyze and promote the adoption of innovative new technology *(GSVlabs, 1776, 1871, LEAP Innovations, EdSurge, Digital Promise)*

SOLUTION

1. **Permanent Technology Upgrade Cycle**: Open commitment to recurring technology upgrades in the U.S. public school system; Ensure every K-12 student has a connected mobile device to access the best digital education resources at school
2. **Remove School Innovation Barriers:** Eliminate artificial barriers to alternative education model growth: charters, online learning, etc.

By the Numbers: Technology Fundamentals

Fundamentals	2015
Global Internet Users / Penetration	3.1 Billion / 41%
U.S. Internet Users / Penetration	280 Million / 87%
Global Smartphone Penetration	22%
U.S. Smartphone Penetration	75%
U.S. Smartphone Penetration - High School Students	72%
High School Students Using Smartphones in the Classroom	26%
Amount of Media Accessed by Smartphone 2010 vs. 2015	4% vs. 23%
Time Spent on Digital Media Per Day 2010 vs. 2015	3 Hours vs. 6 Hours
Hours Per Week Playing Video Games (Teenagers)	14+
App Downloads, 2014	140 Billion
Projected App Downloads, 2017	270 Billion
iOS Education Apps	90K+
Android Education Apps	100K+
Classrooms, Internet Connected	95%
Schools, Full-School Wifi Access	39%
Schools, High Speed Internet Access	20%
Schools with Laptops/Tablets Available to Students on a 1-1 Basis	16%

Source: Apple, AppBrain, Deloitte, Gartner, Grunwald Associates, InternetLiveStats, Pearson, PewResearchCenter,

Weapons of Mass Instruction: Learning Accelerants



Company	Founded	Type	Impact
Acrobatiq	2013	Adaptive Learning	Adopted by major public university systems including Arizona State
ClassDojo	2011	Behavioral, Engagement + Communication	50M+ parents, students, and teachers in 50%+ U.S. schools
Clever	2012	App Platform + API Layer	25% of U.S. K-12 schools
DreamBox Learning	2006	Adaptive + Game-Based Math Learning	5M lessons completed per week
Edmodo	2008	Learning Management and Collaboration Platform	50M teachers, students and parents
Instructure	2008	Learning Management System + Online Courses	18M teachers and students
iTunes U	2007	Freemium Educational Content Platform	1B+ downloads
Khan Academy	2006	Free Educational Content Platform	15M+ users, 300M lessons delivered
Knewton	2008	Adaptive Learning + Big Data Platform	15B+ recommendations served to 9M+ users
Newsela	2013	Literacy Skills-Building Platform Using Real News Articles	4M+ students in 70%+ of U.S. schools
Remind	2011	Secure Communication Platform	25% of U.S. teachers, 60M messages per month
Think Through Math (TTM)	2006	Adaptive + Game-Based Math Learning	2.6M+ students per year
Turnitin	1995	Student Evaluation, Data and Analytics	24M students across 10K schools

Throughout much of history, a strong navy equaled power.

In the 15th century, Prince Henry of Portugal deeply understood the advantages of controlling the seas. As rumors of new sea routes to the Orient began to swirl throughout Europe, Prince Henry set up a research institute in 1418 in the town of Sagres to make his country the master of the science of sailing and navigation.

Ironically, Sagres was a coastal town located in the southwestern-most part of Portugal, which the "Flat World" conventional knowledge had for centuries held to be the actual edge of the Earth. The Institute — essentially a 15th century R&D lab — was a hub of innovation, with a library dedicated to navigation, an astronomical observatory, ship-building facilities, and Portugal's best minds to make new discoveries.

"DISCOVERIES MONUMENT"

Honoring Henry the Navigator (Lisbon, Portugal)



Pioneers + Mavericks: **Portuguese Maritime Explorers**

Explorer	Defining Voyage	Life
 Bartolomeu Dias	In 1488, Dias discovered the southernmost tip of Africa and rounded the Cape of Good Hope. The voyage proved the connection between the Atlantic and Indian oceans. Though Dias wanted to continue the journey to India, his crew was unwilling, and he was forced to turn back.	1457-1520
 Vasco da Gama	Da Gama was the first European to reach India by sea, linking Europe and Asia by an ocean route. He set sail from Portugal in 1497 on a mission to open such a sea route. His fleet sailed down the coast of Africa, rounding the Cape of Good Hope, and made numerous stops in Africa before reaching Calicut, India in 1498.	1469-1524
 Pedro Cabral	Cabral is credited as the first European to reach Brazil. Assuming command of a major expedition to India in 1500, Cabral sailed Southwest on the orders of Vasco da Gama, to avoid turbulent waters. His westward route led him to Brazil, where Cabral took formal possession of the land, before continuing to India.	1467-1520
 Gaspar Real	Gaspar Real was the first European to reach Greenland and is believed to have also found the coast of Newfoundland while searching for a Northwest Passage to Asia. He set sail in 1501 on an official voyage of exploration across the North Atlantic, encountering a land covered in tall green trees, which he named “Terra Verde”, meaning Greenland.	1450-1501
 Ferdinand Magellan	Magellan led the first expedition to circumnavigate the globe. Seeking a faster route to Eastern Asia, Magellan sailed west in 1519. What he found was a passageway to the Pacific Ocean, today called the Strait of Magellan. Though Magellan was killed in battle on the voyage, his expedition continued West, completing the journey in 1522 with just 18 of the original 260 men.	1480-1521

Prince Henry — nicknamed “Henry the Navigator” — became the John Doerr of his day, aggressively deploying venture capital to develop new technologies and intellectual property, and to push the boundaries of the known World.

In 1451, the Portuguese developed a game-changing new ship design at the Institute called a “Caravel”. It was fast, nimble, and able to navigate almost any type of wind… contrasted with the existing sailing technology that essentially required the wind to be at your back in order to move forward.

The Caravel propelled the Portuguese to become the masters of the sea, controlling lucrative global trade routes connecting Europe, India and South America. The compounding effects of Portugal’s investment in technology were transformative. The best sailing and navigation technology led to superior maps and sailing routes. This proprietary IP led to a monopoly in the global spice trade, which in turn created enormous prosperity… which drove even more exploration and investment in sailing and navigation technology.

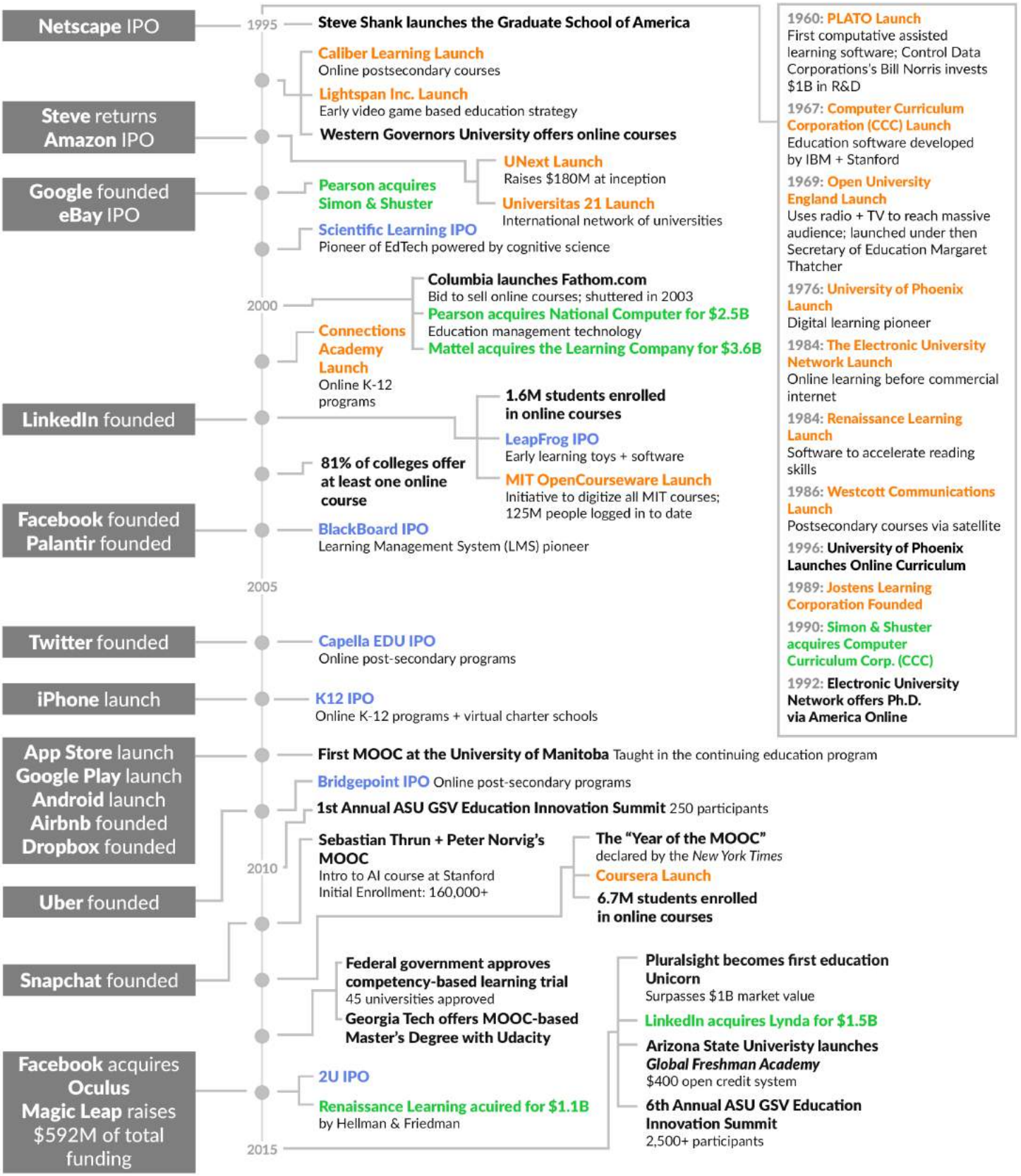
Portugal, smaller than the State of Indiana, became the most powerful country in the World through innovation. Its IP advantages were so pronounced that King Manuel I made it illegal for Portuguese maps to be sold outside of the country.

Alas, success promotes followers. Portugal’s next-door neighbor on the Iberian Peninsula, Spain, was anxious to participate in the global spoils. Playing the role of later stage venture capitalists, King Ferdinand and Queen Isabella of Spain backed Christopher Columbus in his accidental discovery of the “New World”. Two of his ships — the Nina and Pinta — were Caravels. Portuguese-born Ferdinand Magellan defected to Spain to lead the first expedition to circumnavigate the earth.

Piggybacking on 100 years of investment and innovation by Portugal, Spain was able to rule the seas and make much of the New World into a Spanish-speaking World. Similarly, the breakthrough changes we were about to experience in education through technology benefitted from the 50 years of investment in innovation before it.

THE EDTECH ERA: 1995-2015

Building on the innovations of education and technology pioneers in the 1960s, the decade from 1995-2015 witnessed the dawn of an "EdTech Era". Entrepreneurs used digital technologies to expand access to learning opportunities, reducing costs and improving quality. Lessons learned from key successes and failures became the foundation of a 21st century education system.



Problem

America's education system was constrained by two key flaws that were relics of technology fundamentals from a bygone era. First, for those who couldn't afford or access elite schools, education quality came down to the luck of the draw. Your learning experience hinged on the person standing at the front of a classroom — just like it did in the 18th century.

"Education" occurred in a local building, at a mandated time, delivered by a local team. "Learning" was a one-size-fits-all experience. Students were typically taught from hard-coded textbooks, 60 percent of which were still in print format. Walking into a typical school, from K-12 to college, would be like waking up to find that **Amazon**, **Netflix**, **YouTube**, **Spotify**, and any other popular digital platform you knew, had all vanished… and that you had been teleported to the set of *Little House on the Prairie*.

The second key design flaw was that despite a variety of skill sets, interests, and backgrounds, going to school meant studying the same materials as your peers at the same pace. We had known that individualized instruction was far superior for decades. In a groundbreaking 1984 study led by renowned education psychologist Benjamin Bloom, for example, students given one-on-one attention consistently performed *two standard deviations* better than their peers in a regular classroom.

That's enough to vault a middle of the pack student into the 98th percentile. Bloom's findings caused a stir in education, but ultimately they didn't significantly change the basic structure of the classroom. One-on-one tutors, after all, were insanely expensive. But technology advancements that would have seemed like science fiction a decade earlier made this solvable. Powerful, adaptive education software meant that we all could have our own "robot tutor" to help us learn exactly what we needed to know, at our own pace. There was no excuse to do things the old way.

DIGITAL DISCONNECT

When **Education Superhighway** founder, Evan Marwell (CEO) suggested to a teacher in his daughter's private middle school that she try a popular online course with the class, he was stunned by the response: "It doesn't work… our Internet is too slow." If it was this bad in a private school, what was it like public school?

Marwell launched Education Superhighway in 2012 because he couldn't reconcile the fact that the difference between opportunity and oblivion for many students was a matter of plumbing.

If your school had a viable high-speed Internet connection, you could access powerful digital learning resources that might change your life — from adaptive courseware to virtual AP classes. If your school had a slow connection, opportunity withered on the vine.

Carpe diem. Seize the day, boys. Make your lives extraordinary.

ROBIN WILLIAMS

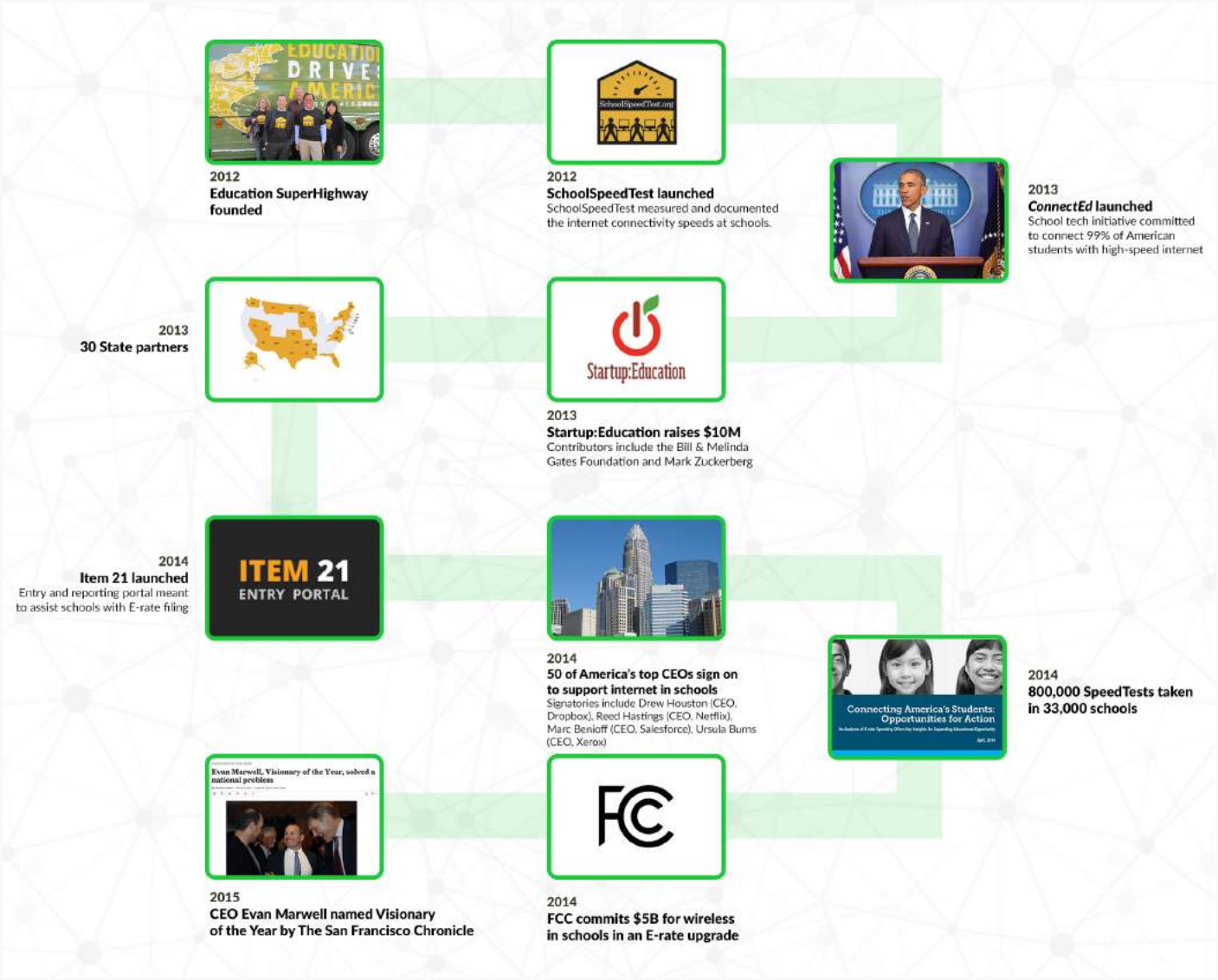
Dead Poets Society

By 2015, with backing from the **Bill & Melinda Gates Foundation** and Mark Zuckerberg's **Startup:Education**, Education Superhighway had catalyzed the launch of the White House *ConnectED* initiative (which committed to getting 99 percent of schools onto high-speed broadband) and "convinced" the FCC to take spending on school broadband from $1.4 billion per year to $3.9 billion.

Marwell's method of persuasion was to initiate the "National School Speed Test", which got employees in about 35,000 schools to upload their Internet speed to a database. The result? Only 37 percent of schools had enough broadband for digital learning.

EDUCATION SUPERHIGHWAY

Narrow Focus, Wide Impact

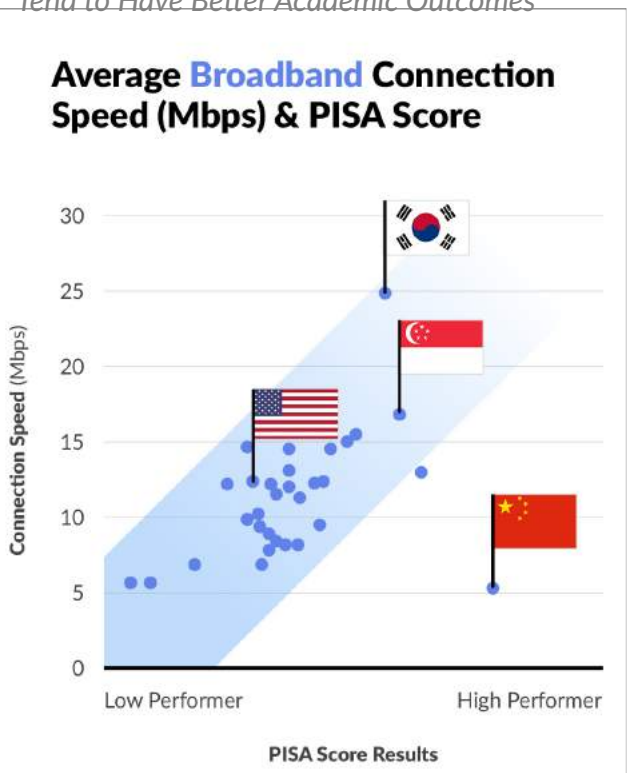


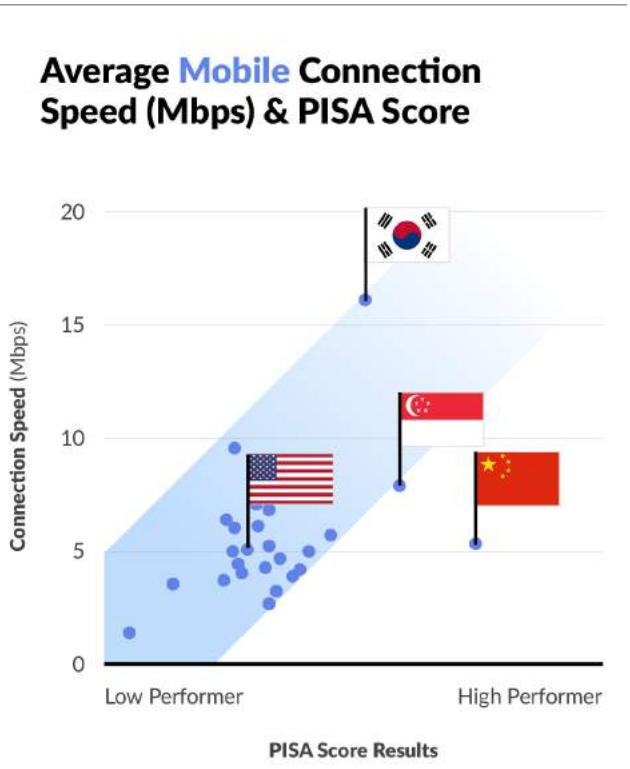
While organizations like Education Superhighway were driving change, the state of play was still abysmal. Over 60 percent of U.S. schools lacked high speed Internet, placing more than 40 million students on the wrong side of the digital divide. In a country where we expected free Wi-Fi with our coffee, going to school had become the most un-connected part of the day.

While there is no correlation between money spent in the classroom and academic performance, *there is a direct correlation between high speed Internet infrastructure and academic performance*. In South Korea, 100 percent of schools were wired with powerful broadband, and in Singapore, connections were 40 times faster than the United States. Both countries were top performers on international assessments like PISA, which measured the academic skills of young people.

High Speed Internet = High Speed Learning

Regardless of National Wealth, Countries with Better Broadband and Mobile Internet Speeds Tend to Have Better Academic Outcomes





Source: GSV Asset Management, Akami

KEY TAKE-AWAYS

While there is no correlation between money spent in the classroom and academic performance, there is a direct correlation between high speed Internet infrastructure and academic performance. Regardless of national wealth, countries with better broadband and mobile Internet speeds tend to perform better on international assessments like PISA, which compare core academic skills of young people. Students in Singapore, a consistent PISA top performer, had access to Internet connections that were on average 40 times faster than the United States.

Data revealed that regardless of national wealth, countries with better broadband and mobile Internet speeds tended to have better academic outcomes. In a hyper-competitive Global Knowledge Economy, our children were trying to learn skills for tomorrow with dial-up speeds of the past. We needed to prioritize the urgent deployment of World-class broadband in our schools.

THE COMPUTERS IN OUR POCKET

At the same time, the World had entered the transformational age of the smartphone. Over two billion people around the World used devices that had an Internet connection and a touchscreen, a number that was poised to double by 2020. Over 500 million smartphones were sold to China in 2015 alone.

Smartphones outsold personal computers four to one in 2015 and they penetrated every aspect of daily life. The average American spent two hours per day on their device. Nearly 80 percent of smartphone owners checked messages, news or other services within 15 minutes of waking up.

If everything seems under control, you aren't going fast enough.

MARIO ANDRETTI

Moore's Law meant better functionality and cheaper prices. **Micromax**, the most powerful brand in India, sold basic smartphone models for under $40. A $1.8 trillion investment from the mobile industry from 2009 to 2013 to improve connection infrastructure was wiping out "dark spots" on the World map. Access to personal computing more powerful than the 1969 NASA command center that landed men on the moon was becoming ubiquitous.

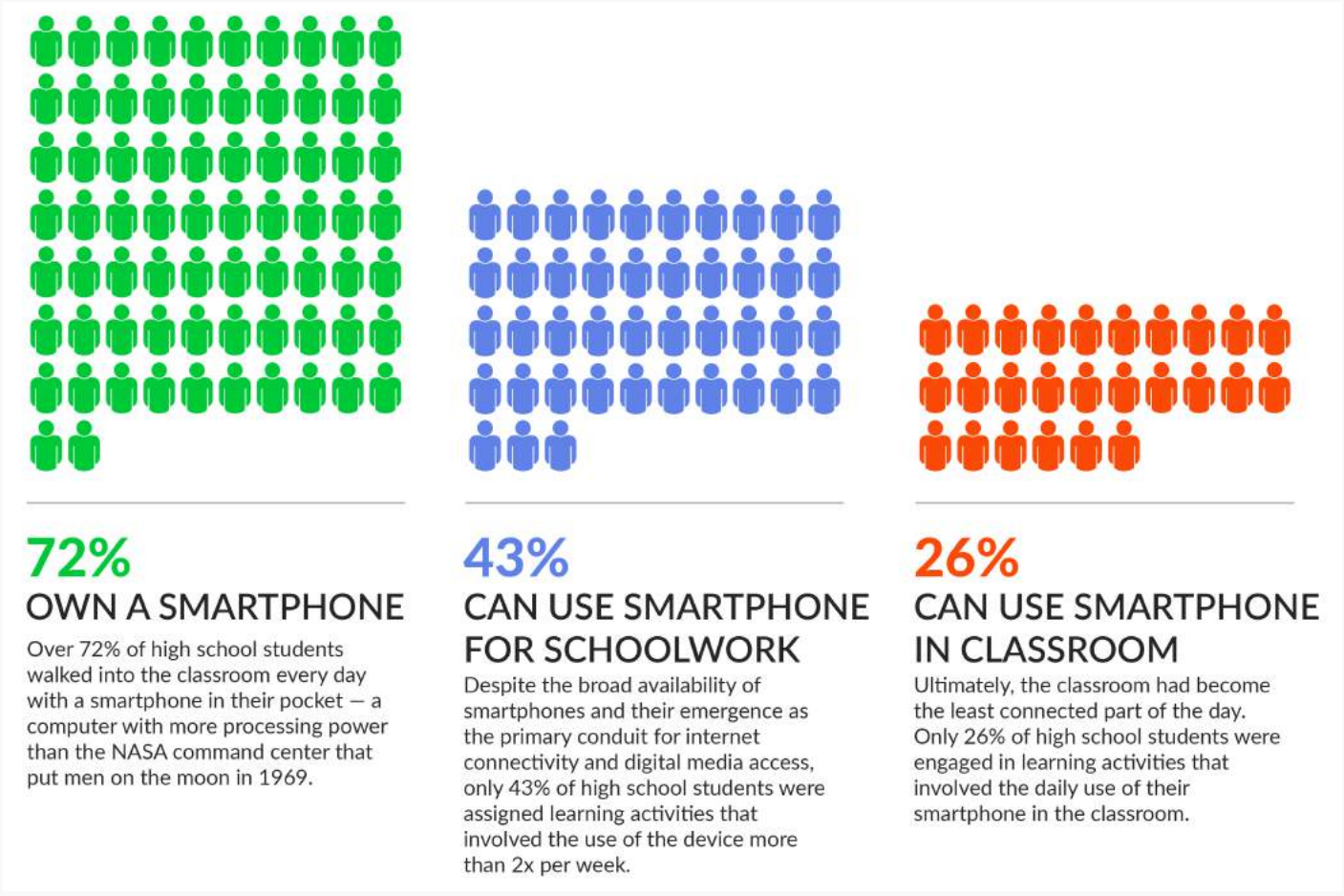
Of all the powerful applications for a smartphone, perhaps none held more potential than accelerated knowledge sharing and learning. **Uber** and **Lyft**

connected available drivers to nearby fares at cheaper prices. **Tinder** put people in touch with potential dates. Mobile connected wearables like the **Apple Watch** monitored our health. It seemed not only logical but necessary that these devices would also democratize access to quality education.

Yet while 72 percent of high school students owned a smartphone, only 43 percent used them for school work, and only 26 percent used them in class. Smartphones were the central nervous system for Millennial communication and collaboration, but the closer they got to the classroom, the less they were actually used.

DIGITAL DISCONNECT

The Closer High School Students Get to the Classroom, the More Disconnected they Become



Source: Pearson, Harris Poll, GSV Asset Management

While nobody was looking, every kid walked in the door with all the tech they needed in the form of a smartphone in their pockets.

JOHN DOERR

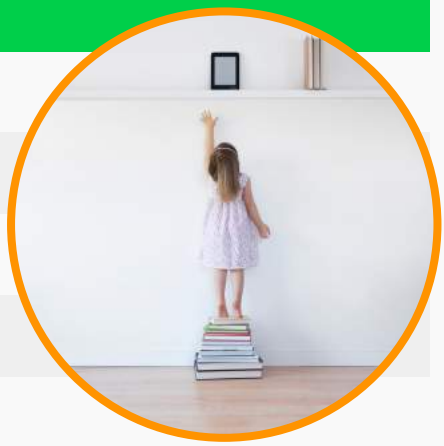
So despite the fact that most students walked into the classroom with a computer in their pocket, they effectively went unused for learning. Moreover, the U.S. K-12 system spent an estimated $3.5 billion on computing device purchases per year. Schools then rationed this technology out in the classroom.

Only one in six students had access to either a laptop or a tablet on a one-to-one basis during class, which hadn't materially changed in 20 years.

K-12 SCHOOLS PURCHASE AND RATION TECHNOLOGY

Only 17% U.S. K-12 Students Have Access to a Laptop or Tablet in School on a One-to-One Basis

Device Access at School	K-12 Segment		
	Elementary School	Middle School	High School
1-to-1 Laptop/Tablet Provided	11%	16%	18%
BYOD *(Bring Your Own Device)*	7%	9%	16%
Students Share in Class	35%	27%	22%
Available in Computer Lab	39%	35%	33%
Limited Access/Ad Hoc	9%	13%	11%



Source: Pearson, Harris Poll

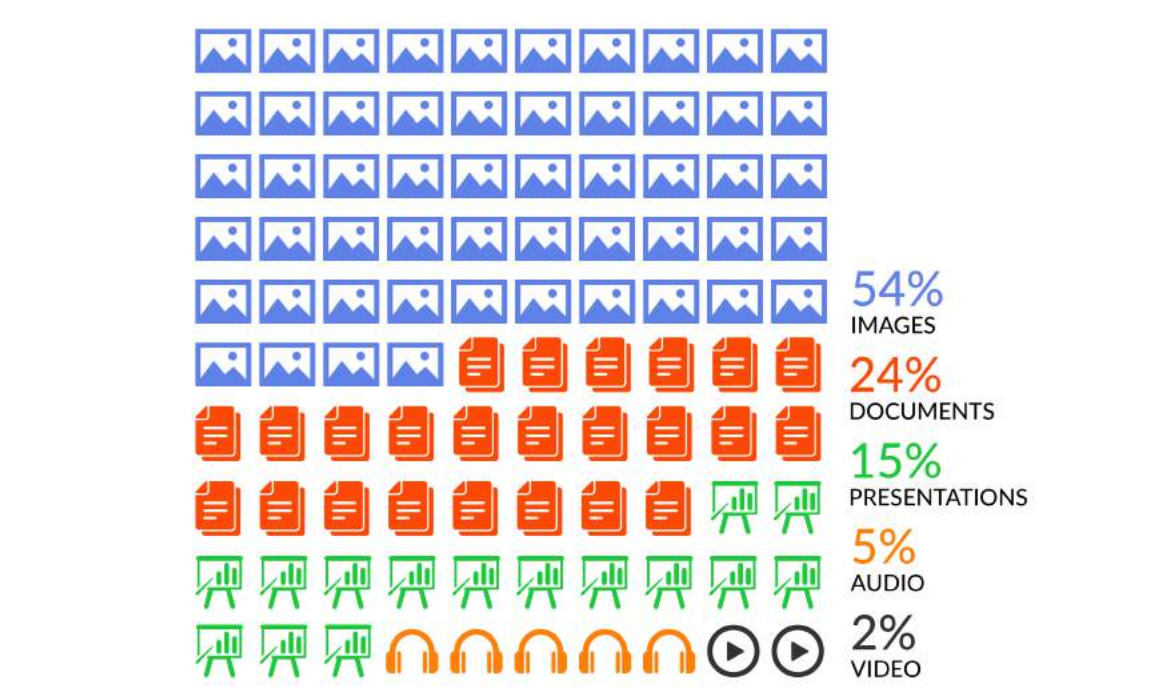
Part of the challenge could be traced to classic big bureaucracy issues. Everything from teacher training, to pedagogy and procurement had calcified for decades. Smartphones, which sprang from thin air by comparison, weren't contemplated in these fundamental processes.

A classic desire to do things the old way was another culprit. In a 2015 study of colleges and universities using their learning and course management system, for example, **Instructure** found that professors still disproportionately relied on "old" media, despite the widespread availability and popularity of more engaging mediums.

Of all the files uploaded into Instructure's platform for assignment to students, only two percent were videos. Images and documents comprised over 79 percent. A generation of digital natives entering the teaching profession, however, promised to shift this dynamic.

EDUCATORS STILL NOT OPTIMIZING POWERFUL NEW LEARNING TOOLS

Files Used by College Professors in the Canvas Learning Management System



Source: Canvas

But the fundamental challenge was the fact that the proliferation of personal learning devices and technology promised to dismantle knowledge silos and transform the role of teachers into facilitators and coaches. The evolution from “sage on the stage” to "guide on the side” was a radical transformation. As Upton Sinclair classically observed, “It is difficult to get a man to understand something, when his salary depends on his not understanding it.”

Models that Work

ACCESS TO QUALITY INSTRUCTION

Sal Khan never intended to become an education revolutionary. In 2001, after bouncing around a few Silicon Valley start-ups and facing a formidable recession, the MIT graduate did what anyone in his position would do… head to Harvard Business School. And then go work for a hedge fund.

Khan wasn’t your typical hedge fund analyst. During business lunches his mind wandered. He mused aloud about how many eggs the average chicken laid per year — he learned it was 260. Back at the office, colleagues would find giant math equations scrawled across Kahn's white board. He was training the younger staff in the nuances of high finance.

In 2004, Khan’s 13-year-old cousin Nadia, who lived across the country, asked him for help with her math homework. Khan agreed to tutor her on the phone. To illustrate the concepts he was describing, they would log into *Yahoo Messenger* and Khan would use the program’s drawing window to write equations while she watched remotely. When they couldn’t meet, Kahn would just record a video lesson on his laptop, talking through the material while writing in *Microsoft Paint*.

One day Nadia asked if they could skip the phone lessons and go straight to video. Why? Because that way she could review the video as many times as she wanted, pausing on challenging concepts and fast-forwarding through the easy stuff.

A lightbulb went off. Khan began "tutoring" several other cousins through video. He was disturbed to find that their grasp of basic concepts was shaky. They needed drilling that focused on their weaknesses. So Khan posted simple video lessons on **YouTube** and programmed *Java* modules that would fire questions at them automatically. If they got 10 questions right in a row, the software would push them to the next level, which had harder problems. As a bonus, Khan could peek at the database online to make sure they were actually doing the practice. That's when the Internet took notice.

Unless you're breaking stuff, you are not moving fast enough.

MARK ZUCKERBERG

Unbeknownst to Khan, thousands of people were watching his videos on YouTube. Some were high school students struggling with physics. Others were adults brushing up on basics before restarting a stalled degree. Khan gradually became more and more absorbed in his craft, working through the night to create new lessons.

In 2009, Khan decided to turn his hobby into a full-time job. He formed a nonprofit, **Khan Academy**, with initial funding from **Ann Doerr**, the wife of Kleiner Perkins partner, **John Doerr**. A year later, **Bill Gates**, who had never met Khan, announced to the *Aspen Ideas Festival* that his kids were using Khan Academy and that it was exactly the type of education solution the World needed.

By 2015, Sal Khan's electronic schoolhouse reached over 15 million users around the World with more than 5,000 courses in 36 languages. Khan Academy had delivered over 580 million lessons, with learners having completed over 3.8 billion exercise problems — nearly four million per day. Khan Academy had even found its way into the classroom, with over one million registered teachers around the World using the platform with students.



KHAN ACADEMY

FOUNDED: 2006

WHAT IT IS

Sal Khan, then a young hedge-fund analyst with a master's in computer science from MIT, started Khan Academy, offering free online courses focused on Math and Science. Today the free electronic schoolhouse reaches more than 10 million users around the World, with more than 5,000 courses. Khan Academy has delivered over 580 million lessons and learners have completed over 3.8 billion exercise problems — nearly four million per day. Over one million registered teachers around the World use Khan Academy in their classrooms.

Headquarters: Mountain View, CA

Funders: Google, Bill & Melinda Gates Foundation, **Ann** and **John Doerr**, **Reed Hastings**, The O'Sullivan Foundation,Valhalla Charitable Foundation, Bank of America, Comcast, AT&T, The Walt Disney Company

WHY IT'S A GAME-CHANGER

On-Demand: Khan Academy has developed an engaging, interactive learning platform rooted in video instruction. Users can access over 100,000 wide-ranging exercises developed with partners, including NASA, the Museum of Modern Art, and MIT. Content is continually optimized based on a rigorous analysis of past usage patterns, what works, and what doesn't.

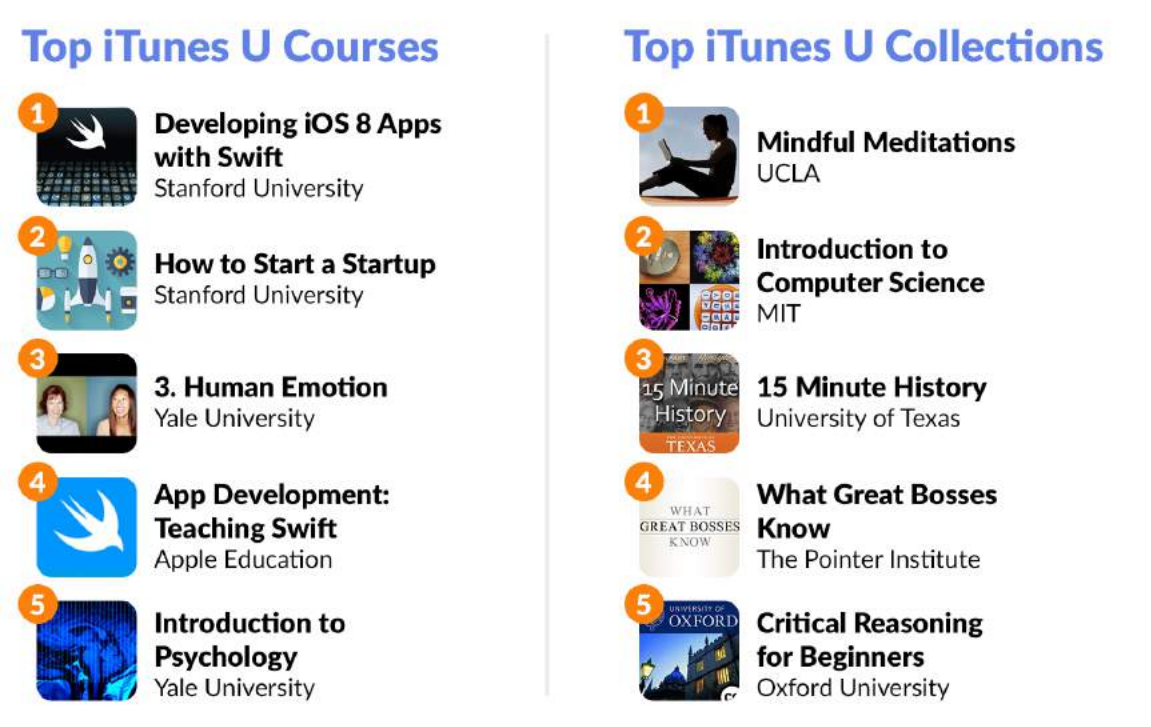
Growth Mindset: Most people are held back by their mindset, not innate ability. Khan Academy constantly reinforces a "Growth Mindset" — the belief that intelligence isn't fixed and that the mind can improve — because research demonstrates that it fuels motivation and leads to better academic outcomes.

Adaptive: Khan Academy lessons are self-paced and adaptive, adjusting rigor and focus areas based on student diagnostics and realtime analysis of their progress through exercises.

Khan Academy showed the way to make high quality, effective online learning available anytime, anywhere, and free. These were the fundamentals of a society where everyone had equal access to participate in the future.

Apple's *iTunes U*, launched in 2006, created unprecedented, consumer-friendly access to the World's largest free catalog of curated education content, featuring courses, lectures, and curations from leading universities. With over one billion downloads, iTunes brought high quality, seamless education on demand to a passionate network of over 800 million Apple device users. The arrival of MOOCs, ushered in by **Udacity** CEO (then Stanford Professor) **Sebastian Thrun's** open Artificial Intelligence course, further expanded global access to high-quality instruction. Marketplaces for wide-ranging, on-demand digital content and support resources like **Chegg** and **Schmoop** furthered access.

ITUNES U: TOP COURSES + COLLECTIONS



Source: Apple

Open Educational Resources (OER) curated by platforms like **LearnZillion**, **Curriki**, and **BetterLesson** increased the variety of vetted digital curriculum available to teachers. LearnZillion featured more than 4,000 free, open-source videos. Curriki offered more than 50,000 resources, ranging from individual classroom activities to complete courses. BetterLesson offered more than 10,000 Common Core-aligned lessons. These platforms allowed teachers and schools to upload, share, edit, and rate content online, creating trusted banks of resources.

The **CK-12** foundation, led by executive director and co-founder **Neeru Khosla**, created customizable learning content and tools — from textbooks to videos to interactive simulations — giving them away for free to school districts serving millions of students. Driven by these new market entrants, well-established publishers such as **Pearson**, **McGraw-Hill**, and **Houghton Mifflin** began incorporating OER into their proprietary materials and platforms, enabling teachers to customize their lessons.

Game-Changers: **Clever**

ROE

Clever has built an app platform that makes it easier to roll out learning software in schools. Clever's APIs allow 3rd party software products to tightly integrate with existing school district data systems (SIS and SSO). Schools can adopt Clever at no charge; the software vendors who integrate with Clever are its customers.

FOUNDED: 2012

HEADQUARTERS: San Francisco, CA

ADOPTION: 1 in 3 schools in America uses Clever (35K+ schools); 15M students and teachers; Clever works with more app developers than any other platform in education except Apple

INVESTORS: GSV, Sequoia Capital, Lightspeed, Bessemer, Google Ventures, Emerson Collective, Founder's Fund, Kapor Capital, SoftTech VC, SV Angel, Y Combinator, Deborah Quazzo (GSV Advisors),

CAPITAL RAISED: $44 million

MEGATRENDS
BIG DATA, BRANDS, CLOUD, FREEMIUM, MOBILE, PERSONALIZATION, ROE

GSV 4Ps ANALYSIS

People

CEO **Tyler Bosmeny** (co-founder) named to Forbes 30 under 30 list; CPO **Dan Carroll** (co-founder) is a TFA alumnus; CTO **Rafael Garcia** was formerly a machine learning specialist at Jump Trading.

Product

Scalable integration platform for third-party education apps, driving efficiencies to schools (simplified software product management) and vendors (better, faster deployments).

Predictability

Recurring integration / licensing fee charged to vendors that are selling education apps to school and district buyers; school districts often request vendors integrate with Clever's platform to accelerate deployments.

Potential

In less then 3 years, Clever is on a path to becoming ubiquitous in K-12 education, and the preferred way for any school district or vendor to roll out learning software.

Clever

Clever expanded access to high-quality learning resources by creating an app platform that made it easier to roll out learning software in schools. Clever's API enabled third-party software products to integrate directly with existing school data systems, automatically provisioning students with accounts, greatly reducing the complexity of implementation and adoption. Importantly, schools could adopt Clever at no charge. The software vendors who integrated with Clever were its paying customers.

PERSONALIZED + ADAPTIVE

With the digital infrastructure in place, powerful solutions that had the potential to transform the learning experience came of age. Advances in adaptive technology platforms meant that we could personalize every student's education experience to accommodate the nuances of their learning style. We were no longer constrained by the boundary of "one size fits all", a trend that was already redefining a variety of consumer applications. **Google** had already given the World a free digital assistant, *Google Now*, that could provide just-in-time, personalized alerts and recommendations… from train schedule changes, to delivery updates, and weather alerts for the places we were flying to the next day.

ADAPTIVE + PERSONALIZED TECHNOLOGY, THEN AND NOW



Game-changers: **Personalization Software - "Just for Me" Apps**

Company	Type	Founded	Impact
Amazon	E-Commerce & Digital Media	1994	Amazon algorithms personalize every part of the user experience — from product recommendations to checkout and purchasing — guiding how users find what to buy and when to buy it.
Evernote	Workplace Productivity	2007	Evernote's "Context" app analyzes your notes and documents to continuously curate information that might inform your work. "Information" can come in the form of archived notes from your account or a co-worker's, or articles from trusted news sources like the Wall Street Journal.
Facebook	Social Media	2004	When you click on *anything* in Facebook, the platform captures *everything*. Facebook algorithms curate the content in your newsfeed — from the people you see to the articles and videos that are featured — and they present "hyper-targeted" ads.
Google Now	Virtual Assistant	1998	Virtual assistant providing just-in-time recommendations based on user preferences, location, communications, and calendar. Information includes everything from train schedule changes, to package delivery updates, and weather alerts.
Netflix	Digital Media	1997	Netflix continuously analyzes your content preferences and usage patterns (including what you prefer to watch on which device) to inform recommendations. Over 50% of the programs people watch on Netflix begin with a system-generated recommendation.
Nest	"Smart" Thermostats & Smoke Alarms	2010	Acquired by Google for $3.2B in 2014, Nest created "smart" thermostats for homes, optimizing temperatures based on data collected from user preferences and usage patterns.
RelateIQ	CRM & Business Intelligence	2011	Adaptive business intelligence platform, using Big Data to find patterns in sales, service and relationship management cycles to create efficiencies.
Sailthru	Marketing	2008	Automated marketing platform constantly adapting to user behavior data to deliver timely messages and offers.
Spotify	Music	2006	Spotify generates personalized album, artist, and concert recommendations based on a variety data sources, including favorite tracks, location, and time of day — as well insights gained from the listening habits of the broader Spotify network.
SwiftKey	Mobile Keyboard	2008	SwiftKey's mobile communication platform learns continuously from you, identifying unique word choice patterns, syntax, and styles of communication with different audiences.



FACEBOOK

FOUNDED: 2008

WHAT IT IS

With over 1.5 billion users, Facebook has become the World's largest adaptive and personalization engine — whether or not its users realize it. Facebook receives data and input from people on the planet and through each Like, Comment, and Post, it learns something about what you enjoy.

Headquarters: Menlo Park, CA

Market Cap: $250+ billion*

WHY IT'S A WINNING MODEL

The Facebook platform is designed to constantly analyze network data to create personalized experiences for its users. It tracks where you click, hover, skim or skip — who you connect with, follow, message, and ignore.

The lesson for education technology was that student engagement could be dramatically enhanced by using data to optimize social experiences around learning. Education is inherently collaborative and Facebook was proof that collaboration could be cultivated and driven by paying attention to the data.

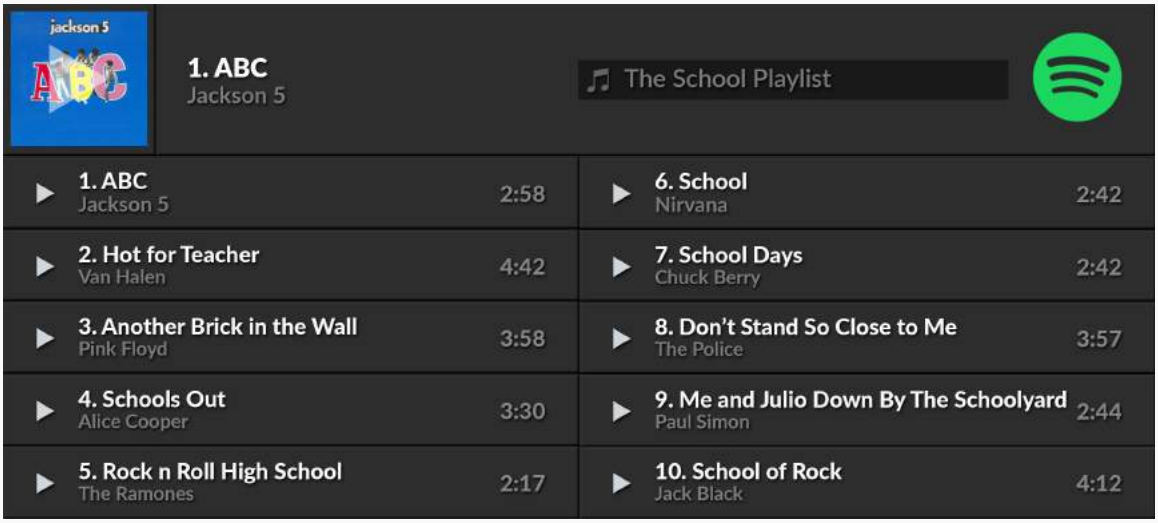
** As of September 2015*

Facebook had become the World's largest adaptive and personalization engine. It received data and input from 1.5 billion people on the planet and through every "Like," "Comment," and "Post," it learned something about what each user cared about. The more it learned, the better it optimized how people connected, communicated, and collaborated. A key lesson for education — an inherently social process — was that individual outcomes could be optimized by applying data around how people interact with content and peers on learning platforms.

Netflix pioneered the use of algorithms to get the right content to people when they wanted it. Of all the programs watched by Netflix's 65+ million users, *over 50 percent started with a system-generated recommendation*. Netflix continuously analyzed your preferences and usage patterns — even what you preferred to watch on your iPad versus TV — to inform the content it suggested.

Similarly, **Spotify**, the World's leading digital music platform with 75+ million users and 30+ million songs , could suggest artists, albums, and songs by constantly analyzing what you listened to, as well as what similar people tended to like. Building on its 2014 acquisition of **Echo Nest** — a "Music Intelligence Platform" specializing in advanced data analytics — Spotify's recommendation system moved beyond musical tastes, factoring in user location, "mood", and time of day.

TOP 10 "SCHOOL" SONGS ON SPOTIFY



The key takeaway for education was how effective and engaging a platform could become if it created a personalized experience by, 1) Learning from individual actions and preferences (*e.g. Your favorite movie genres or musicians*), and 2) Learning from the entire network to draw inferences about you (*e.g. Movies and songs that similar people enjoyed*). Adaptive education technology could apply the same principles to create a personalized experience, identifying what you wanted to learn, what you needed to learn, and the best way to learn it.

Interestingly, as another analogy for education, Spotify could recommend live concerts in your area that were aligned with your personal music DNA. It wasn't a stretch to see how an online education platform like **Coursera** could recommend a local lecture or class based on your personal learning priorities or interests.

The digitization of education content from printed textbooks to interactive software created the potential for personalized, adaptive learning materials. Historically dominated by just a few incumbents — **Pearson**, **Houghton Mifflin Harcourt**, and **McGraw-Hill Education** collectively commanded a 90 percent share of the U.S. textbook market, for example — new players began shaping the digital ecosystem of education, such as **Knewton**, **Declara**, **DreamBox Learning**, and **Acrobatiq**.

MEGA PUBLISHERS COMMAND 90%+ SHARE OF THE TEXTBOOK MARKET

Company	Founded	Market Value*	U.S. K-12 Market Share	U.S. Postsecondary Market Share
Cengage	1978 *Spun out of Thomson Learning in 2007*	$2+ billion	0-10%	20%+
Houghton Mifflin Harcourt	1880	$2.5+ billion	30%+	0-10%
McGraw-Hill Education	1888	$3+ billion *Acquired by Apollo Global Management in 2013 for $2.4 billion; Filed for IPO 09/2015*	30%+	10-15%
MacMillan	1843	N/A *Subsidiary of The Holtzbinck Publishing Group*	0-10%	0-10%
Pearson	1844	$13+ billion	30%+	30%+
Wiley	1807	$2.5+ billion	0-10%	0-10%

*Source: Cengage Learning, Pearson, GSV Asset Management *As of September 2015*

YOUR OWN PERSONALIZED ROBOT



We've seen "Smart" technology on the silver screen for decades — often in galaxies far, far away where intelligent robots help humans do and become more than what is humanly possibly. If only we had digital personal tutors to help us learn faster and smarter...

"Hello. I am Baymax, your personal healthcare companion."

In Disney's *Big Hero 6* (2014), the robot **Baymax** is created with the goal to improve healthcare around the world by serving as a hyper-attentive personalized nurse. Baymax is designed to instantly respond to his human companion's distress and can only be deactivated when his current patient states, "I am satisfied with my care."

With a simple scan, the plus-sized inflatable robot can detect a person's vital stats and treat almost all ailments. Baymax is programmed with the ability to store a massive amount of data and with thousands of different medical equipment, such as defibrillators in his hands, antibacterial sprays on his fingers, and a heating system that warms anyone lying on him. Although Baymax is a programmed robot, he quickly picks up human tendencies and emotions, gaining a personality that makes him truly someone's own personal robot.

MOVIE		SMART TECHNOLOGY
Interstellar (2014)		Robots **TARS**, **CASE**, and **KIPP** assist the humans that worked in NASA. Designed with the purpose to serve their assigned human, they go as far as to sacrifice themselves. They not only performed calculations and managed the mission, but also acted as traveling companions, providing humor when needed to their companions during the long, interstellar journey.
Her (2013)		Theodore Twombly, a lonely writer, develops an unlikely relationship with an artificial intelligence operating system named **Samantha** that he purchases to organize his life. As he read in an advertisement, "It's not just an operating system, it's a consciousness."
Robot & Frank (2012)		Frank Weld is an elderly ex-thief that suffers from dementia whose only companion is a robot named **Robot** that is programmed to provide to him comfort and satisfaction. Frank learns that the robot cannot distinguish legal recreational activities from illegal ones, and as a pair of cat burglars, the two commit petty crimes in the neighborhood.
Star Wars (1977)		The robots **C-3PO** and **R2-D2** are the only characters to appear in each of the seven Star Wars films. C-3PO is a "protocol droid" designed to serve human beings, and boasts that he is fluent in over six million forms of communication.



KNEWTON: Your Own Personal Robot Tutor

Knewton CEO, Jose Ferreira, has never been shy about challenging convention. Jobless after graduating from Carleton College with a degree in Mathematics and Philosophy, Ferreira found work as a Kaplan SAT tutor by day and as a poker player at night. Later, while completing practice problems for the GRE, he discovered a flaw that forced its creator, Educational Testing Service (ETS), to retract an entire section of the test. They nicknamed him "the Antichrist".

After Harvard Business School, followed by stints at Goldman Sachs and a venture capital firm, Ferreira kept coming back to a bigger "flaw" in education that bothered him since his days at Kaplan. He had seen the Internet lay waste to the media industry and rebuild it, from print, to video and music. Travel and retail had been similarly disrupted. But for some reason, education remained effectively unchanged — it was a "factory model" that taught every kid with the same materials, at the same pace, regardless of their individual needs. So Ferreira created Knewton in 2008 to make education smarter and more personalized for every student. To date, Knewton has served over 10 million users on six continents through an adaptive learning platform that Ferreira calls the "World's Robot Tutor in the Cloud".

FOUNDED: 2008
HEADQUARTERS: New York, NY
ADOPTION: 15B+ recommendations served for 9M+ learners
INVESTORS: GSV, Accel, Bessemer Venture Partners, Founders Fund, First Round, FirstMark Capital, Silicon Valley Bank
CAPITAL RAISED: $105 million

Build the Base

Knewton's vision was to create a digital learning experience where education content — lessons, videos, quizzes, etc. — was presented to students based on their specific strengths and weaknesses. But the monumental challenge was that Knewton lacked both the content *and* the user data to make this a reality. It had to create the industry it would inhabit. To accomplish this, Knewton started by licensing its technology to major education publishers — including Pearson, Houghton Mifflin, Cengage Learning — creating adaptive lessons using their content. This enabled Knewton to hone its core technology while capturing valuable student usage data, "learning" what types of materials worked and why.

Open Sesame ... Knewton.com

With its core infrastructure in place, Knewton has "opened" its platform to learners and educators at no cost, taking advantage of free learning resources it has steadily curated — from educational videos on YouTube to quizzes uploaded by teachers. Based on a a diagnostic test of student abilities on a given subject, Knewton will present a personalized sequence of bite-sized learning activities gathered from disparate sources, adapting what comes next based on periodic assessments to confirm mastery of skills. The more students use the platform, and the more content teachers share, the "smarter" and more adaptive it becomes.

"The World's Robot Tutor in the Cloud"

Knewton is bringing sci-fi to the fingertips of students *today*, effectively creating a personalized robot tutor for *everyone*. In the movie *Her*, a lonely writer falls in love with an advanced operating system that's designed to anticipate his every need. Students may not fall in love with Knewton.com, but it will provide them with a truly individualized learning experience. The impact can be transformative. When Arizona State Univeristy (ASU) started using Knewton-powered developmental math courses, for example, student pass rates rose quickly, from 64% to over 75%. Nearly half of students finished the course four weeks early and withdrawal rates dropped by over 50%.



Jose Ferreira
Founder + Chief Executive Officer
Former Kaplan Executive + Partner, New Atlantic Ventures



David Liu
Chief Operating Officer
Former SVP, AOL



David Kuntz
Chief Revenue Officer
Former Executive, Educational Testing Service



Ryan Prichard
Chief Technology Officer
Led development of PayPal's core payments + credit systems



Zohar Yardoni
Chief Product Officer
Former VP of Product, Zoc Doc

DreamBox Learning offered a K-8, SaaS, adaptive mathematics learning platform at the forefront of innovation in personalized learning. The company's assessment engine monitored student progress as they moved through lessons, enabling fine-grained adaptations to address individual learning needs. In the old World, an entire class worked through the same lessons at the same pace. In the new World that companies like DreamBox were creating, there were millions of pathways through the same exercises, tailored to each student.

Forward March: **DreamBox Learning**

ROE

DreamBox CEO **Jessie Woolley-Wilson** is a on a mission to end "drill and kill" in math with a K-8 adaptive learning platform at the forefront of innovation in personalized learning. The company's assessment engine monitors student progress through math lessons in real-time, enabling fine-grained adaptations that address individual learning needs and offer millions of curriculum pathways.

FOUNDED: 2004

HEADQUARTERS: Bellevue, WA

ADOPTION: 50 states, 5+ million lessons completed per week, 39 top education and technology industry awards

INVESTORS: GSV, Owl Ventures, Charter School Growth Fund (Reed Hastings, CEO, Netflix), Tao Capital, John Doerr (KPCB), Deborah Quazzo (GSV Advisors)

CAPITAL RAISED: $46 million

MEGATRENDS
BIG DATA, CLOUD, MOBILE, PERSONALIZATION, KNAAC, ROE

GSV 4Ps ANALYSIS

People

DreamBox CEO, Jessie Woolley-Wilson, is former President of Blackboard's K-12 group; **Reed Hastings** (CEO, Netflix) is a lead investor and member of the Board of Directors.

Product

Adaptive mathematics learning platform that continuously assesses student progress through curriculum and adjusts the experience to address individual needs.

Predictability

SaaS model allows DreamBox to enjoy high levels of visibility on future recurring revenue.

Potential

DreamBox is at the forefront of adaptive and personalized learning, offers a proven product suite, and could attain market leadership in the K-8 mathematics instruction space.

dreambox® LEARNING

Declara used advanced algorithms to accelerate the way people discover and exchange knowledge. When CEO, Ramona Pierson, was 22, she was hit by a drunk driver. The accident left her in a coma for 18 months and blind for ten years. As she relearned how to walk and live independently, supported by family and a variety of specialists, Ramona was struck by the power of connecting with others — a principle at the core of Declara's platform.

Forward March: **Declara**

ROE

Declara is a social learning platform that enables people and organizations to quickly and continuously develop knowledge. Using a combination of machine learning, search, algorithms and recommendations, Declara curates and recommends a wide variety of structured and unstructured learning resources — from training materials to tweets, articles, and blogs.

FOUNDED: 2011

HEADQUARTERS: Palo Alto, CA

ADOPTION: Global deployments with large, diverse organizations in Singapore, Australia, Chile, and Mexico

INVESTORS: GSV, Founders Fund, Catamount Ventures, Data Collective, EDBI, SUSA Ventures

CAPITAL RAISED: $30 million

MEGATRENDS
BIG DATA, CLOUD, GLOBALIZATION, MOBILE, PERSONALIZATION, SOCIAL, ROE

GSV 4Ps ANALYSIS

People

Ramona Pierson (Co-Founder + CEO) is a former neuroscientist at the Palo Alto Brain Center; **Nelson Gonzalez** (Co-Founder + CSO) is an advisor to the OECD; **Debra Chrapaty** (COO) is former CIO, Zynga and President, eBay

Product

Social learning platform that uses search, algorithms, machine learning, and recommendations to connect people with timely, relevant information.

Predictability

Declara combines an open platform to drive network growth with SaaS business model. It addresses a demonstrated pain point experienced by a wide range of organizations.

Potential

In a Global Knowledge Economy, an effective workforce is one that can continuously learn and adapt to new competitive dynamics. Declara's platform is directly aligned with this trend.

declara®



IBM: Smarter Education

For all its advanced technology, IBM's vision for education is remarkably simple. The classroom should learn *you*... and then create a personalized plan to help you succeed. IBM's approach to education innovation is built on four core technology fundamentals — Cognitive Computing, Big Data/Machine Learning, Neuroscience, and Deep Interactivity — which are the pillars of the Watson platform. Famous for a cameo on *Jeopardy!*, Watson has emerged as a powerful platform for data-driven "apps" that are making a variety of industries "smarter". Education is next.

TECHNOLOGY FUNDAMENTALS	PLATFORM	APPLICATIONS (PROPRIETARY + 3RD PARTY)
COGNITIVE COMPUTING •Technology that learns and interacts naturally with people •Virtual education "coaching" + recommendations engine	WATSON	Adaptive Learning
BIG DATA/MACHINE LEARNING •Powerful data analytics to identify patterns + indicators •Identify learning needs and effective education		Institutional Research, Analytics + Information
NEUROSCIENCE •Map the development + operation of the mind •Use technology to optimize cognitive function		
DEEP INTERACTIVITY •Rich, engaging interactions with technology •Augmented/Virtual Reality, Speech Recognition, etc.		Dynamic Education + Career Paths

ADAPTIVE LEARNING K12 + Higher Education

INSTITUTIONAL RESEARCH DYNAMIC EDUCATION

COGNITIVE COMPUTING: At Australia's Deakin University, Watson analyzes student profile and academic data to act as personal virtual advisor, answering questions and providing recommendations.

BIG DATA/MACHINE LEARNING: As students ask more questions, Watson identifies patterns of inquiry and valuable insights to "learn" how to be a better resource.

BIG DATA/MACHINE LEARNING + COGNITIVE COMPUTING: Georgia's Gwinnett County Public Schools system uses Watson to create personalized learning plans/curriculum for students. Teachers can track what works and identify early warning signs based on a variety of data indicators.



ADAPTIVE LEARNING CogniToy



COGNITIVE COMPUTING: A winner of the 2014 *Watson Mobile Developer Challenge*, Elemental Path's *CogniToy* uses the Watson platform to analyze and interpret questions, and then provide a relevant response based on a query of web-based and privately curated data.

BIG DATA/MACHINE LEARNING CogniToy adapts and evolves based on pattern recognition, including user preferences and communication patterns that work.

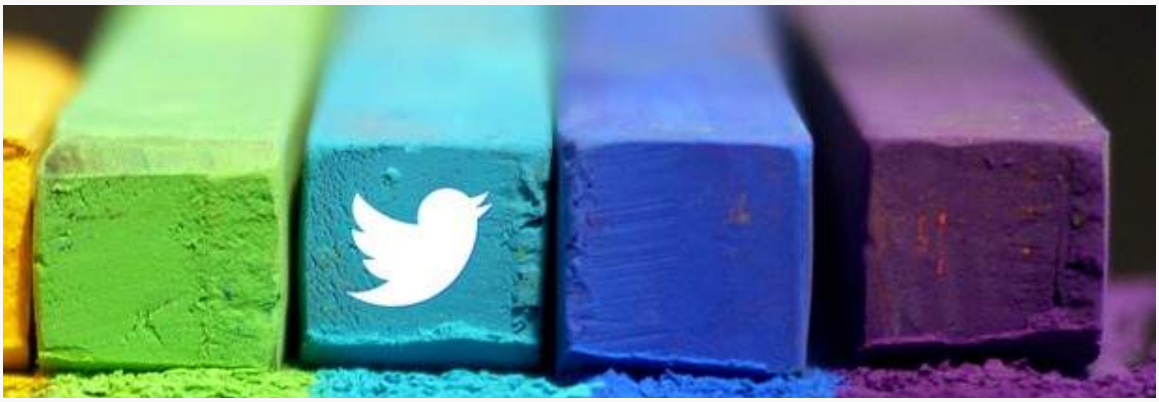
DEEP INTERACTIVITY: Using speech recognition and natural language processing, CogniToy interprets and responds to spontaneous questions, comments, and requests.

At the same time, large incumbent publishers began to aggressively expand their offerings to include adaptive learning resources. **Pearson's** *MyLab & Mastering*, for example, used continuous formative assessments to personalize content and reinforce concepts based on individual student needs. Its *CourseConnect* offering provided a plug-and-play library of over 130 adaptive online courses. **McGraw-Hill's** *ALEKS* platform used artificially intelligent assessments to quickly and accurately determine exactly which course concepts a student had mastered. Similarly, *LearnSmart* created ongoing learning experiences based on individual strengths and weaknesses, as well as student retention and memory degradation trends. Increasingly, personalized learning would become the new normal.

COMMUNICATION + TRANSPARENCY

Twitter was the World's most powerful real-time news and communication platform because it enabled over 300 million users to easily share, follow, and communicate through a platform that was born to be used on mobile. Want to know what is going on with your friends, in your neighborhood, or with your political leaders? You could easily find it on Twitter, where users posted over 500 million tweets per day.

NEWS TO KNOWLEDGE: TWITTER

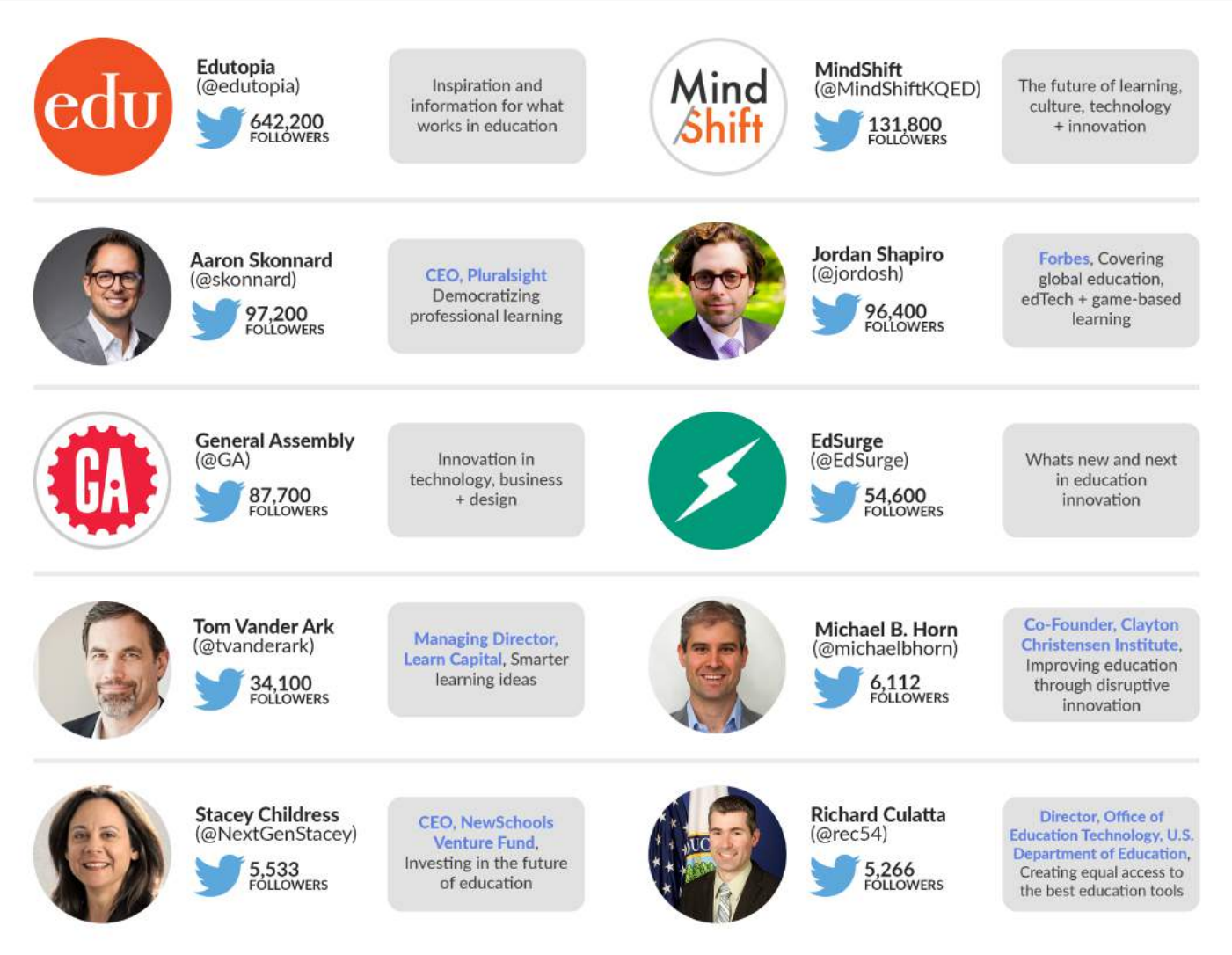


Source: The Atlantic

On one hand, Twitter was an education platform in its own right along the "News to Knowledge" continuum. It was effectively a global classroom where lifelong

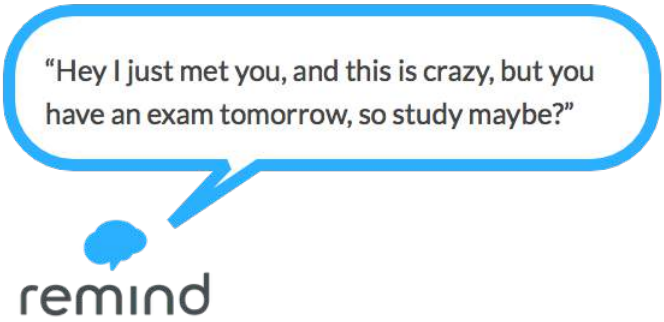
learners could curate, track, and interact with valuable "education" resources — from influential World leaders, to top journalists, CEOs, and academic luminaries. Designed to streamline quick, timely information exchange, Twitter was also a valuable resource for teachers and students to collaborate around key topics and learning exercises — through both synchronous and asynchronous interactions. Like the real World, the classroom dialogue did not need to be arbitrarily limited to a physical building. Similarly, Twitter proved valuable and popular as a professional development resource for educators. It provided visibility to the best practitioners who often commanded legions of followers who were eager to exchange insights and best practices.

TWITTER EDUCATION: WHO TO FOLLOW



Driven by smartphone growth and the precedent of popular media and communication platforms like Twitter, technology was accelerating student achievement by creating transparency between students, schools, and families. A key catalyst of this trend was the proliferation of education-specific, secure communication and collaboration apps that enabled teachers to easily share snapshots of student learning and key logistical information. Free on any device, **Remind**, for example, was a native mobile app that streamlined information exchange and created transparency between students and the parties that are critical to their success. Just four years after its launch, Remind was used by 25 percent of U.S. teachers and delivered over 60 million messages per month.

GAME CHANGERS



REMIND

FOUNDED: 2011

WHAT IT IS

Founded by brothers **Brett Kopf** (CEO) and **David Kopf** (VP of Growth), Remind is a secure communication platform connecting students, teachers and parents. Free on any device, Remind is a native mobile app that streamlines information exchange and creates transparency between students and the parties that are critical to their success.

Headquarters: San Francisco, CA

Investors: KPCB, First Round, The Social+Capital Partnership, Imagine K12, 500 Startups

Capital Raised: $60 million

WHY IT'S A GAME-CHANGER

Remind is racing to scale with a free, easy-to-use mobile app that appeals to digital natives. It is quickly becoming THE medium for information exchange around the academic process.

With a commanding footprint spanning 25 percent of U.S. teachers (sending over 60 million messages per month), Remind has opened a B2C2B strategy to sell value-add products and services to schools and districts off of its user base.

Comparable high-growth, mobile-centric platforms emerged that provided transparency around other aspects of the education process, including social-emotional learning. **ClassDojo**, for example, was used by over 35 million students, parents and teachers to develop and track key non-cognitive skills — from mood management to academic perseverance. The app enabled teachers to award positive feedback points in real-time to reinforce constructive behaviors.

Forward March: ClassDojo

ROE

ClassDojo is used by over 35 million students, parents, and teachers to develop and track critical non-cognitive skills like creativity, curiosity and academic persistence. The company's mobile app engages students in the process, while providing analytics and transparency to the adults that surround them.

FOUNDED: 2011

HEADQUARTERS: San Francisco, CA

ADOPTION: 50M+ students, parents, and teachers; Used in over half of schools in the U.S.; 160+ countries; 70% of teachers use mobile app

INVESTORS: General Catalyst, Shasta Ventures, SV Angel, SoftTech VC, Kapor Capital, Learn Capital, NewSchools Venture Fund, Imagine K12, Deborah Quazzo (GSV Advisors)

CAPITAL RAISED: $10M

MEGATRENDS
BIG DATA, CLOUD, FREEMIUM, GLOBALIZATION, MOBILE, PERSONALIZATION, SOCIAL, ROE

GSV 4Ps ANALYSIS

People

CEO (Sam Chaudhary) is a former K-12 teacher, McKinsey analyst and economist; CTO (Liam Don) is a software engineer, game developer, and was doing an ed-tech PhD.

Product

Mobile communication app that builds positive relationships between teachers, parents and students. Teachers use it to encourage students to develop skills, and engage parents.

Predictability

ClassDojo is deploying a freemium business model to create enormous scale around an intuitive mobile app that connects tens of millions students, parents and teachers; ClassDojo can be freely adopted by every teacher, parent and student in the World.

Potential

ClassDojo has built the foundation for a large-scale consumer education business by serving millions of highly-engaged students, parents and teachers through a mobile-centric platform.

ClassDojo

While ClassDojo's student experience revolved around personalized "monster" avatars that reacted to receiving points, the platform included sophisticated analytical tools for parents and teachers to monitor student progress and behavior patterns over time. *Class Story*, an "**Instagram**-meets-the-classroom" feature, enabled teachers to share pictures of classroom activities and announcements throughout the day via a digital stream accessible only to parents. With functionality similar to **Facebook** groups, teachers could see how many parents have viewed and "liked" each update.

My daughter Caroline, who taught fourth graders in San Jose Public Schools with **City Year**, found Class Dojo to be remarkably powerful in influencing class behavior. It was simple to use, stunningly effective, and *free*.

Remind and Class Dojo are great examples of Weapons of Mass Instruction as they have both been able to reach millions of students, teachers, and parents at lightning speed. Common denominators for both companies include: 1) Free models removing barriers to adoption; 2) Utilizing powerful mobile technology; 3) Easy to use, and; 4) Highly effective for each user.

ACCELERATED TEACHING, FORMATIVE ASSESSMENT + DATA ANALYTICS

In 1707, nearly 200 years after Portugal's maritime golden age, a British fleet of 21 ships departed Gibraltar, Spain on a trip that was not destined for the history books. After an inconclusive campaign against the French in the War of Spanish Succession, Admiral Sir Cloudesley Shovell had been ordered to sail home for new assignment. Traveling a route used by thousands of sailors before them, Shovell's ships entered the comforting confines of the English Channel after five days of rough seas. Rounding the coast of Brittany, sailing masters alerted the Admiral that they had reached the last leg of the trip.

But they were nowhere near Brittany. Pushed off course by the weather, Shovell's navigators miscalculated their longitude. The fleet was on a collision course with the rocky Isles of Scilly. Before they could change direction, four ships were

wrecked and over 1,400 sailors lost their lives — including Admiral Shovell himself — in the worst maritime disaster in British history.

Even the earliest explorers could pinpoint their latitude based on the position of the sun and stars against the horizon. But it would be another sixty years until an effective method for calculating longitude was developed — spurred by a multi-million dollar prize offer by the British Government, still reeling from the Scilly Naval Disaster.

THE ISLES OF SCILLY, ENGLISH CHANNEL

The Scilly Naval Disaster of 1707 was caused by the inability of navigators to accurately ascertain longitude, a problem that had vexed sailors for centuries.



A key part of the challenge in education was that we had been sailing blind for too long when it came to student development and mastery of skills. We spent a lot of time on lagging indicators like summative assessments. But these were just a scorecard that told us what we already knew. Millions of students were getting locked out of the future every year. But new technology fundamentals meant that the days of guesswork and speculation were numbered. Increasingly, we were able to track and measure student skills *while* they were learning, not *after*.

Formative Assessment platforms, which provided timely insights into what students knew and when, were the new foundation of effective teaching and learning practices. We could finally avoid the rocks.

In the old World, for example, if you wanted to develop strong writing skills, your best bet was to choose your zip code wisely. Learning to write effectively was dependent on access to a great teacher who could communicate and coach the nuances of the craft. Your teacher also needed the time to determine the specific skills you needed to improve — presumably by reading a stack of your writing samples to better understand your abilities.

GAME CHANGERS



LIGHTSIDE LABS (TURNITIN)

FOUNDED: 2013

WHAT IT IS

Founded by **Elijah Mayfield** (CEO), **David Adamson** (VP), and **Rajiv Enand** (Business + Sales), LightSide Labs has developed a writing skills assessment engine that provided automated feedback on writing samples using machine learning technology developed at Carnegie Mellon University

Headquarters: Pittsburgh, PA

Investors: Acquired by Turnitin in 2014 (Original investors include the Bill & Melinda Gates Foundation, College Board, Deborah Quazzo (GSV Advisors))

Capital Raised: N/A

WHY IT'S A GAME-CHANGER

Acquired by Turnitin and in 2014 and integrated into a platform serving 24 million students across 10,000 education institutions, Lightside Labs is a technology that democratizes access to high quality writing instruction.

Quality + Scale: Accurate, effective, and personalized skills development for writing, delivered at scale. Lightside's *Revision Assistant* provides real-time feedback to students to improve clarity of writing and argument development.

Transparency + Tracking: Data-driven instruction, tracking student progress through the writing and revision process, enables teachers to understand the writing skills where students need extra support.

Platforms like **Lightside Labs** (acquired by **Turnitin** in 2014), and later **WriteLab**, changed the equation. Lightside's writing skills assessment and feedback engine, for example, leveled the playing field by providing automated, accurate feedback on writing samples using machine learning technology developed at Carnegie Mellon University. The platform also made educators more effective by tracking

student mastery of quantifiable writing concepts — an insight most commonly determined heretofore through guesswork and speculation.

MasteryConnect's cloud-based assessment and analytics platform enabled teachers to track student mastery of a broader set of skills. Effectively moving beyond letter grades, it distilled what students actually *knew*, enabling educators to refocus priorities and intervene with those that needed the most help.

Forward March: **MasteryConnect**

ROE

MasteryConnect is a cloud-based assessment and analytics platform that enables teachers to track student mastery of skills. MasteryConnect is adaptable to a variety of education standards and facilitates collaboration among educators in a network for peer-to-peer exchanges of education and assessment resources.

FOUNDED: 2009

HEADQUARTERS: Sandy, UT

ADOPTION: 250K+ teachers from over 175 countries; Used in all 50 states and over 85% of US school districts

INVESTORS: Catamount Ventures, Trinity Ventures, Learn Capital, NewSchools Venture Fund, Deborah Quazzo (GSV Advisors)

CAPITAL RAISED: $24M

MEGATRENDS
BIG DATA, CLOUD, GLOBALIZATION, KNAAC, MOBILE, PERSONALIZATION, SOCIAL, ROE

GSV 4Ps ANALYSIS

People

CEO **Cory Reid** is former CEO of Instructure. The management team is bolstered by co-founders **Trenton Goble** (CLO), **Mick Hewitt** (CPO), and **Doug Weber** (CTO).

Product

Cloud-based assessment and analytics platform that enables teachers to track student mastery of skills.

Predictability

Intuitive product attracts individual teachers through a freemium model, with pathway to premium upgrade; Once adopted, product becomes integral part of student assessment process.

Potential

MasteryConnect has created a platform that moves beyond traditional letter grades, tracking in real-time what students actually know, and connecting teachers to share assessment practices that work.

MasteryConnect

At the same time, shaking up a market dominated by early EdTech pioneers like **Blackboard** , **Desire2Learn**, and **Ellucian**, next generation Learning Management Systems (LMS) used smart data and streamlined design to create efficiencies around the teaching and learning process itself.

Instructure, for example, used this model to achieve commanding scale. Founded in 2008, it served over 18 million users across 1,400 institutions by 2015. **Smart Sparrow** and **Acrobatiq** added further efficiencies, enabling educators to build adaptive courses using technology design based on neuroscience research. The popular **Quizlet** platform took a lighter touch, enabling teachers to create and share engaging quizzes, flashcards, and games.

A final piece to the puzzle was platforms that used a holistic set of data to optimize the relationship between education institutions and learners. **Civitas Learning**, for example, worked with colleges and universities to aggregate and examine disparate data sources — from how active students were in online classes, to attendance, and grades — to predict risk factors and inform course design.

In a similar vein, **Fidelis** pioneered the concept of the Learning Relationship Management, or "LRM" platform, enabling education institutions to organize and optimize the complex network of relationships surrounding each student. Just as popular Customer Relationship Management (CRM) systems like **Salesforce** helped businesses cultivate and manage mission-critical client relationships, LRMs developed by companies like Fidelis and **Motivis** changed the way education institutions engaged students and empowered them to succeed.



PEARSON: All In, Always Learning

Former CEO, Marjorie Scardino, ushered in the EdTech era with Pearson's purchase of Simon & Schuster in 1998 — a "shot heard round the world." Then, Pearson acquired National Computer in 2000, catalyzing the education sector with a vision for individualized, integrated, digital learning. Today, current CEO John Fallon, is driving Pearson to the frontier of educational services and data science, creating technology solutions that personalize and accelerate learning. With the $1.3 billion sale of the Financial Times, Pearson is all-in on education.

LEARNING SERVICES + DATA SCIENCE



John Fallon
Chief Executive Officer

Adaptive + Personalized

Pearson is evolving its products and services to emphasize adaptive learning paths for every student. *MyLab & Mastering* uses continuous formative assessments to personalize content and reinforce concepts based on student needs. *CourseConnect* offers a plug-and-play library of over 130 adaptive online courses. *Pearson LearningStudio* uses advanced data analytics to identify at-risk students early, providing recommendations for effective interventions.



Don Kilburn
Vice Chairman, Pearson Higher Education



Philip Hoffman
Chief Corporate Finance Strategy + Legal Officer

Scaling Quality

Pearson is bringing high-quality learning experiences to scale with end-to-end, web-based educational services. *Connections Education*, acquired in 2011, offers fully-accredited, virtual K-12 education experiences. *Embanet*, acquired in 2012, is a SaaS platform for outsourced college degree programs. *REVEL* enables educators to easily create highly engaging, media-rich learning experiences.



Johann Ari Larusson
Leader, Center for Digital Data, Analytics + Adaptive Learning



Sir Michael Barber
Chief Education Advisor

Driving Innovation

Pearson's *Center for NextGen Learning & Assessment* is a research and innovation center focused on creating assessments that accelerate learning. Capturing data about what students know and when they know it is at the core of designing personalized learning solutions. Pearson's *Catalyst* accelerator is driving innovation by supporting talented entrepreneurs who are attacking massive education challenges.



Steve Guttentag
President, Connections Education

ACCELERATING INNOVATION

The adoption of compelling new education technology was propelled by innovative education institutions with the conviction to rethink the basics of teaching and learning. Powerful adaptive software, for example, was incompatible with a classroom design that did not give students the freedom to learn on their own devices, at their own pace. By extension, to maximize personalized learning experiences, educators needed to evolve from "teaching" at the front of a classroom to acting as facilitators and coaches, intervening based on individual student needs.

Charter schools like **KIPP**, **Charter Schools USA**, and **IDEA** were early technology adopters in K-12 education because they were unencumbered by public school bureaucracies that were averse to change. **Summit Public Schools** partnered with **Facebook** to codify its best practices into repeatable technology, including the creation of "personalized learning plans" to guide the trajectory of student learning. Facebook dedicated a team of software engineers to translate this approach into a scalable software with the goal of offering it at no cost to all public schools.

Founded in 2013, **AltSchool** created a Montessori 2.0 that empowered students to learn by exploration in a technology-enabled environment. Re-imagining the one-room schoolhouse, each of its "micro-schools" was a single, mixed-age class of 30 kindergarten to 8th grade students, supervised by two teachers.

There were no report cards, bells, or traditional classes. Instead, there was *My.AltSchool*, a proprietary technology platform that enabled teachers to create weekly, personalized "playlists" for students — individual and group activities blending highly-effective digital media resources with classroom resources. Students could access their playlist from any computing device at school or at home.

Additional school models driving innovation forward included **Avenues: The World School**, **Nord Anglia**, **GEMS Education**, and **High Tech High**.

SCHOOL MODELS ACCELERATING INNOVATION IN EDUCATION

Avenues (2012)

In a Knowledge Economy, global demand for top-tier private schools has never been greater, especially in ascendant economies such as Brazil, China, India, and the Middle East. Co-founded by **Chris Whittle** (co-founded + ran Edison Schools) and **Benno Schmidt** (former President, Yale University), Avenues is creating a premier global network of sophisticated schools to meet this demand and address local supply imbalances.

INVESTORS: GSV, LLR, Fisher Family (Undisclosed capital raised)

AltSchool (2013)

Founded by former Google Head of Personalization **Max Ventilla**, AltSchool is a network of K to 8th grade schools empowering students to learn by exploration in a technology-enabled environment. Valueing experimentation, innovation, and self-expression, AltSchool is designed to create a personalized learning experience driven by the students' interests.

INVESTORS: A16Z, Founders Fund, Baseline Ventures, Learn Capital, Omidyar Network, Emerson Collective ($133 million raised)

GEMS Education (1968)

Founded by **Sunny Varkey**, GEMS is the largest global operator of K-12 schools, serving 16 countries with a network of 70 schools. Through its consultancy arm, GEMS Education Services, the company works with public and private sector clients to apply its innovative education design and operating models to school improvement initiatives.

INVESTORS: Privately held

High Tech High (2000)

High Tech High (HTH) was originally conceived by a group of civic and high tech industry leaders in San Diego who aimed to solve for a technology talent gap. What emerged was a ground-breaking school model that empowered students to become 21st century citizens by taking ownership of what they learned and how. HTH's education framework is built on four core principles: Personalization, Adult World Connection, Common Intellectual Mission, and Teacher as Designer.

INVESTORS: N/A – Charter School Network

Summit Public Schools (2003)

Summit Public Schools is a non-profit organization that prepares a diverse student population for success in college, the workforce, and life by flipping the traditional adult-driven school model. They put students at the center of education in a technology-infused environment that enables personalized and small-group learning. In 2015, Summit announced a partnership with Facebook to codify its best practices into digital personalized learning plans.

INVESTORS: N/A – Non-profit charter management organization

The **Charter School Growth Fund** (CGSF) accelerated these models by seeding and providing growth capital to game-changing Charter Management Organizations — networks of schools managed by central leadership teams,

sharing financial, human capital, and back-office resources. In a similar vein, The **Bill & Melinda Gates Foundation** financed scores of small high schools meant to better educate students through more focused attention and carefully tailored programs. **Laurene Powell Jobs** initiated a $50 million effort in 2015 called the *XQ: The Super School Project*, to inspire teams of educators and students, as well as leaders from other sectors, to come up with new plans for high schools.



CHARTER SCHOOL GROWTH FUND

FOUNDED: 2005

WHAT IT IS

The Charter School Growth Fund (CSGF) was launched in 2005 with $5 million grants from **Don Fisher** (Co-Founder of The Gap) and **John Walton** (Former Chairman, Walmart Family Foundation) with a mandate to finance and scale highly effective charter school networks that offer outstanding educational opportunities for underserved students. Backed by a blue chip syndicate of foundations and innovation leaders like **Reed Hastings**, CSGF has deployed more than $185 million to expand transformative education providers.

Headquarters: Broomfield, CO

Funders: Bill & Melinda Gates Foundation, Dell Foundation, Walton Family Foundation, etc.

Capital Deployed: $185 million

WHY IT'S A GAME-CHANGER

Led by Teach for America, McKinsey, and Goldman Sachs alum **Kevin Hall** (CEO), CSGF has created more than 260,000 new charter school seats for low-income and minority students around the country. Nearly 90 percent of the schools supported by CSGF perform better on state math and reading exams than their district peers and alumni of CSGF-backed high schools are typically 4x more likely to graduate from college than the average low-income student. Additionally, CSGF has allocated over $30 million to support technology innovation around personalized, adaptive learning models.

Another key catalyst for the adoption of new technologies was research, media, and marketplace platforms that provided trusted information about effective new learning resources for educators, students, and families. **Noodle**, founded by

education visionary, **John Katzman** (Founder, **The Princeton Review** + Co-Founder, **2U**), aggregated expert advice on over 800,000 education products and services, from Pre-K education providers to on-demand online courses. In a similar vein, **EdSurge** created the leading media platform focused on education innovation. Building on its editorial credibility, EdSurge attracted a highly engaged community of educators, entrepreneurs, product providers, and policymakers, which became the basis for a highly curated education marketplace.

GAME CHANGERS



EDSURGE

FOUNDED: 2011

WHAT IT IS

EdSurge was founded by **Betsy Corcoran** (CEO + Former Executive Editor, Forbes Media), **Matt Bowman**, **Nick Punt** and **Agustin Vilaseca** (CTO) to connect an emerging community of edtech entrepreneurs and educators. Built on a World-class media platform that is the trusted source for all things education technology, EdSurge is emerging as a powerful innovation network and marketplace.

Headquarters: Burlingame, CA

Investors: GSV, Learn Capital, NewSchools Venture Fund, Catamount Ventures, Women's Venture Capital Fund, Graham Holdings

Capital Raised: $3 million

WHY IT'S A GAME-CHANGER

Trusted Media Platform: EdSurge is the most trusted information source in education innovation because it publishes timely, relevant, and expert insights. Analyzing over 1.3 million tweets, Onalytica found EdSurge to be the most influential brand in edtech.

Community + Network: EdSurge's highly engaged community connects through summits (10+ per year), an active job network (4K+ targeted postings per year; 100% + growth rate), and thought leaders (1,000+ guest articles from experts).

Marketplace: EdSurge is building on its media platform and engaged network to create a powerful education marketplace, connecting education customers, entrepreneurs, and product providers.

Common Sense Media, led by founder Tom Steyer — a Stanford professor and thought leader on media and education issues — emerged as a trusted advocacy organization dedicated to helping kids thrive with digital technology. Its *Graphite* platform, launched in partnership with the **Bill & Melinda Gates Foundation**, helped teachers find and implement effective digital learning tools by providing expert reviews, technology-aligned lesson plans, and professional development resources. **Educents** created a marketplace of affordable, vetted, educational resources, saving teachers and homeschool parents $20+ million in the two years following its 2013 launch.

Digital Promise worked to advance both in-depth research and adoption of next-generation education technology, working closely with forward-thinking schools and districts that were willing to get off the sidelines and experiment.

In a similar spirit, **LEAP Innovations** created one of the first "Test Bed" models, finding the best digital learning resources to address key learning gaps and piloting them in Chicago schools. LEAP-organized "Match Days" enabled vetted companies and schools to meet each other and determine the best fit for efficacy trials.



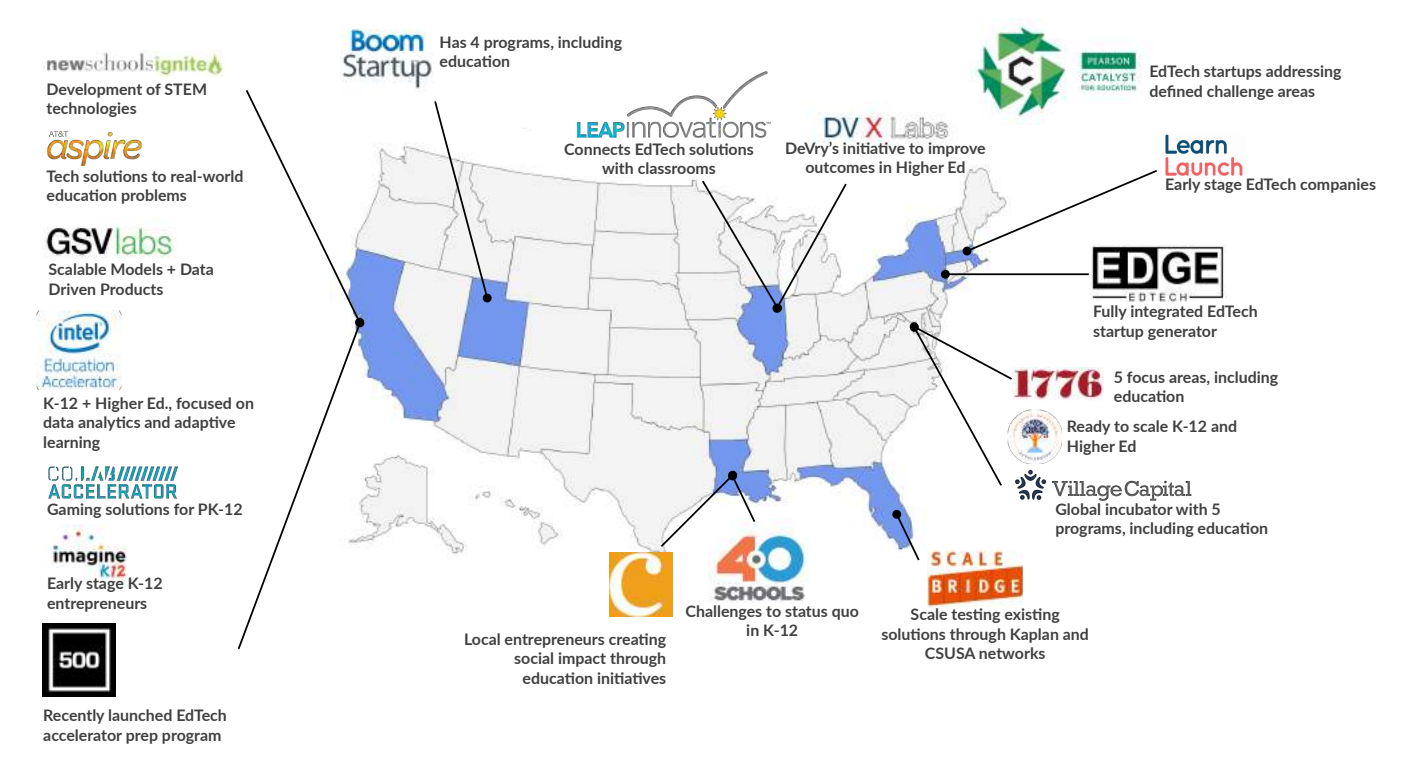
For schools that wanted to create digital classrooms, but lacked the expertise and technical infrastructure to do so, companies like **JAMF** filled the void. Offering end-to-end services for schools to implement **Apple** technologies in the

classroom, JAMF supported everything from device configuration and management to digital content discovery and usage.

The final piece of the puzzle was a growing base of incubators and accelerators focused on catalyzing the next wave of leading education technology entrepreneurs and driving scale change.

Given the complexities of the education market across segments and business models, these organizations provided critical support to promising young companies, including mentoring and coaching from experienced entrepreneurs and industry experts, access to schools as test beds, and in some cases, seed capital. Importantly, the best incubators helped startups navigate the education ecosystem, connecting entrepreneurs with groups that could help accelerate opportunity — from the Department of Education, to influential university systems, school districts, influential organizations, and large corporations.

EDTECH INCUBATORS + ACCELERATORS

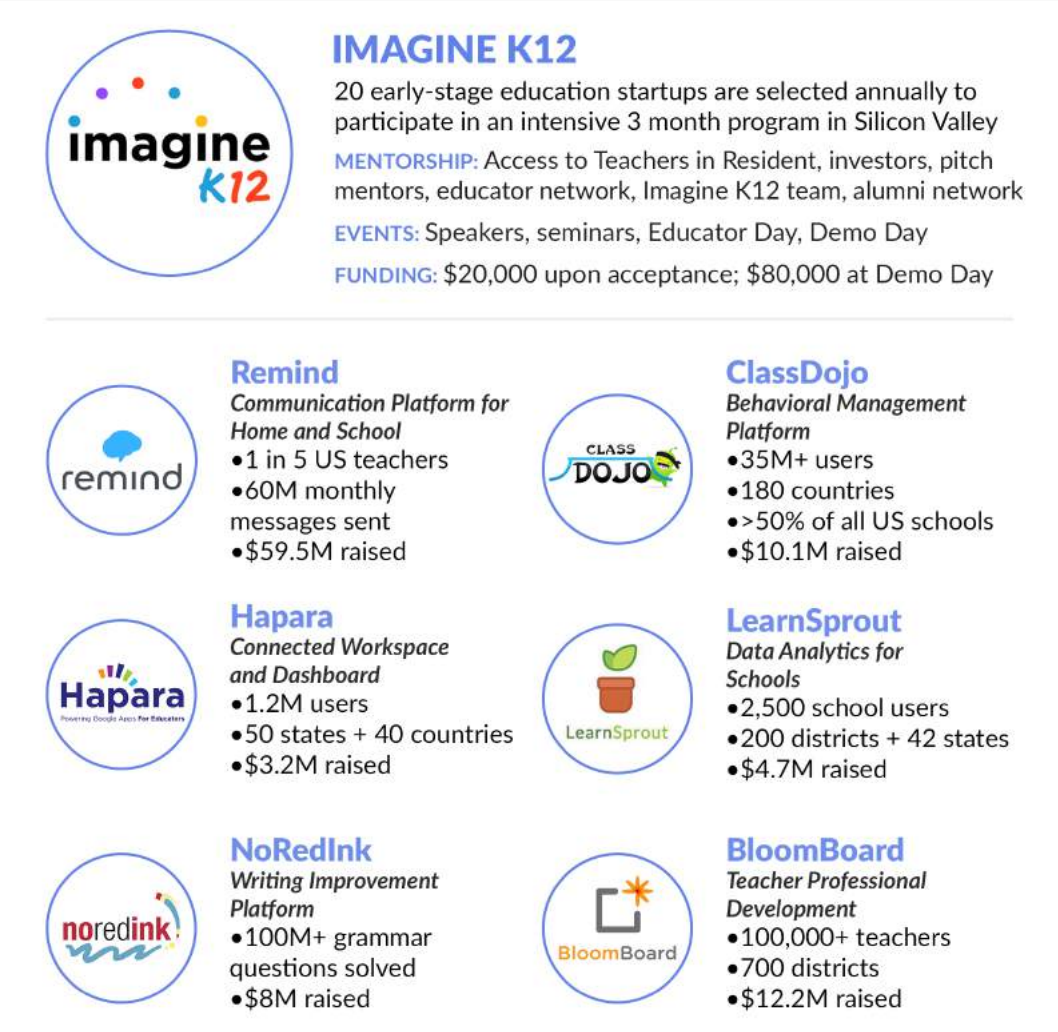


Source: GSV Advisors

GSVlabs, for example, served over 60 companies in a "lab" focused on education innovation, with a valuable mentor network that included **Karen Cator** (Founder, Digital Promise), **Tom Kalinske** (Former CEO of Mattel, Sega, and LeapFrog), and others.

Imagine K12 selected 20 education startups to participate in an intensive three-month accelerator program and alumni included **Remind**, **Class Dojo**, **NoRedInk**, and **BloomBoard**. At the same time, generalist incubators like **Y Combinator** increased their exposure to EdTech startups with notable alumni including **Codeacademy** (2011) and **Clever** (2012).

IMAGINE K12 EDTECH ACCELERATOR



Source: GSV Advisors

What We Did About It

Building on our analysis of "Models that Work," we implemented the following initiatives to create equal access for all Americans to participate in the future.

1. Permanent Technology Upgrade Cycle

IDEA: We brought our K-12 technology infrastructure into the 21st century and committed to funding the continuous improvement of our schools. Instead of waiting for systems to become obsolete, we gave the green light to the $800 million per year internet connectivity upgrade plan developed by *Education Superhighway*, extending it in perpetuity. Everyone understood that you needed to upgrade your cell phone every couple of years to remain connected to the best apps and services. Our schools needed the best internet connection to connect to the best education apps and services.

IMPACT: When it came to schools, real expense risk was failing to create better outcomes for young people, and international data showed a direct correlation between the speed of a country's internet connections and overall academic performance. Here's what the balance sheet looked like when you failed to improve schools. The projected lifetime cost to society of a high school dropout was estimated to be higher than $235,000, including expenses related to medical care, income assistance, and incarceration. With 1.2 million new dropouts per year, we could count on $282 billion in new expenses just by maintaining the status quo.

2. Unlock School Innovation

IDEA: We committed to removing arbitrary barriers that blocked student access to high-quality education opportunities. To this end, we saw charter school networks with proven track records as change agents. They were not only adopting the most innovative teaching and learning tools, but doing so in a cost-effective model. **KIPP**, for example, consistently outperformed nearby school

districts despite serving a student population with lower test scores at time of enrollment. And KIPP spent less in the process, despite funding the "KIPP through College" program, which supported students outside their walls as they pursued a college degree.

But many states hindered the expansion of these models by arbitrarily setting caps on charter school growth, despite surging public demand. The combined charter school waiting list stood at 1 million in 2015, up from 365,000 in 2009. We intervened, tethering federal funding for a range of key programs to the requirement that states remove these arbitrary caps. Quality control was one thing. Senseless barriers that were effectively robbing students of their ability to participate in the future were intolerable.

IMPACT: The net result of removing arbitrary barriers was increased adoption of personalized learning models and technologies. To paraphrase tireless school innovation advocate, **Reed Hastings** (CEO, **Netflix**), because charters have non-elected school boards and rational operating models, they are able to take a long term strategic view and are more willing to cast aside the old way of doing things — an approach seen as being "risky" in traditional schools.

But powerful new personalized education platforms like **Knewton**, **DreamBox Learning**, **Smart Sparrow**, and **Acrobatiq** required a rethink of the fundamental design of classrooms. When students learned at their own pace, teachers became coaches and facilitators. Curriculum design was a matter of students learning what they needed to know and skipping the rest.

ADAPTIVE LEARNING PLATFORMS

Company	Founded	Market	Description	Capital Rasied	Investors
Acrobatiq	2013	Postsecondary	Course Authoring, Learning Management + Analytics	$10 million	Bill & Melinda Gates Foundation, Hearst Ventures, Draper Triangle, Carnegie Innovations
Cerego	2000	K-12+ Postsecondary	Adaptive Learning Engine + API Layer	Undisclosed	Undisclosed
Curriculum Associates *i-Ready*	1969	K-12	Assessments, Courseware + Analytics	Undisclosed	Privately Held
Declara	2011	Corporate + Consumer	Social Learning Platform + Data-Driven Content Curation	$30 million	GSV, Founders Fund, Catamount Ventures, Data Collective, EDBI, SUSA Ventures
Desire2Learn *LeaP*	1999	K-12, Postsecondary + Corporate	Course Authoring, Learning Management + Analytics	$165 million	NEA, Graham Holdings, OMERS Ventures, Aurion Capital, Columbus Nova Technology Partners
DreamBox Learning	2004	K-12	Math Learning Platform	$46 million	GSV, Stars of Tomorrow Fund,
Fishtree	2012	K-12+ Postsecondary	Course Authoring, Learning Management + Analytics	$3 million	New Markets Venture Partners, ECMC, JISR, Recruit Strategic Partners
IXL	1998	K-12	Math + English Language Arts Learning Platform	Undisclosed	Undisclosed
Khan Academy	2008	K-12, Postsecondary, Corporate + Consumer	On-Demand Instructional Resources	Non-Profit	Key Funders: Google, Gates Foundation, Ann & John Doerr, Reed Hastings, The O'Sullivan Foundation, Valhalla Foundation, BofA, Comcast, AT&T
Knewton	2008	K-12, Postsecondary + Consumer	Adaptive Learning Engine, API Layer + Learning Platform	$105 million	GSV, Accel, Bessemer Venture Partners, Founders Fund, First Round, FirstMark Capital, Silicon Valley Bank
McGraw-Hill *ALEKS + LearnSmart*	1888	K-12 + Postsecondary	*ALEKS*: Courseware *LearnSmart*: Assessment + Courseware	N/A	Acquired by Apollo Global Management for $2.4 billion in 2012; Filed for IPO 09/2015
Pearson *MyLab + Mastering*	1844	K-12 + Postsecondary	Assessment + Courseware	N/A	Publicly Traded
Realizeit *CCKF*	2007	K-12, Postsecondary + Corporate	Adaptive Learning Engine, API Layer + Learning Platform	$10+ million	Leaf Investments, Career Education Corporation (CEC)
Renaissance Learning	1984	K-12	Assessments, Courseware + Analytics	N/A	Acquired by Hellman & Friedman for $1.1 billion in 2014
Smart Sparrow	2010	Postsecondary	Platform to create, implement, and manage adaptive courseware	$12 million	One Ventures, Uniseed Ventures, Yellow Brick Capital Advisers
TenMarks	2009	K-12	Math Learning Platform	N/A	Acquired by Amazon in 2013 (Terms Undisclosed)
ThinkThrough Math	2006	K-12 + Postsecondary	Math Learning Platform	$10+ million	New Markets Venture Partners, Saturn Asset, SJF Ventures

Source: CrunchBase, GSV Asset Management

ADAPTIVE READING + LITERACY SKILLS BUILDING PLATFORMS

Company	Founded	Market	Description	Capital Raised	Investors
Achieve3000	2000	K-12, Postsecondary, Workforce	Literacy Assessment + Skills Development	$9M	Insight Venture Partners
Cambium Learning	2009	K-12, Postsecondary	Core Skills Development + Resources for Special Needs/At-Risk Students	N/A	Publicly Traded
Curriculet	2012	K-12	Variable Skill Level Ebooks + Literacy Skills Tracking	$2M	New Schools Venture Fund, Kapor Capital, Relay Ventures, Garnett Ventures, Sand Hill Angels
LightSail	2012	K-12	Variable Skill Level Ebooks, Literacy Skills Assessment + Analytics	$12M+	Gotham Capital, Viceroy Ventures
myON Capstone	1991	K-12	Variable Skill Level Ebooks + Literacy Skills Tracking	N/A	Subsidiary of the Coughlan Companies
NoRedInk	2012	K-12	Short-Form Reading + Writing Activities to Improve Core Literacy Skills	$8M	True Ventures, Google Ventures, Kapor Capital, Learn Capital, Rethink Education, Hyde Park Venture Partners, Imagine K12, Fresco Capital, The Social + Capital Partnership, Deborah Quazzo (GSV Advisors)
ThinkCERCA	2012	K-12	Literacy Curriculum, Assessment + Peer Collaboration Platform	$5M	Great Oaks VC, Abundant Ventures, Follett Knowledge Fund, Math Venture Partners, Amicus Capital, The Impact Engine, Deborah Quazzo (GSV Advisors)

GAME CHANGERS

NEWSELA

NEWSELA

FOUNDED: 2013

WHAT IT IS

Newsela was founded by **Matthew Gross** (CEO) and **Dan Cogan-Drew** (Chief Product Officer) to build literacy skills by reading the news. Using a proprietary language analysis technology to publish high-interest daily articles from major news organizations at five different reading levels, Newsela meets students where they're ready to learn.

Headquarters: New York, NY

Investors: KPCB, NewSchools Venture Fund, Kapor Capital, Owl Ventures, Kaplan Ventures, Cambridge Information Group, Knight Foundation, Zuckerberg Education Ventures, Women's Venture Capital Fund

Capital Raised: $22 million

WHY IT'S A GAME-CHANGER

Multiple Reading Levels: Newsela publishes articles every day at five reading levels, enabling students with various skill levels to begin reading the news.

Content Partners: Newsela partners with leading news organizations to access, syndicate, and enhance their content. Current Newsela partners include the *Associated Press*, the *Washington Post*, and the *McClatchy-Tribune*.

Teaching and Learning Tools + Transparency: Common Core–aligned quizzes attached to articles give educators and parents insight into their students' reading strengths and weaknesses.

COMMUNICATION + TRANSPARENCY APPS

Company	Founded	Market	Description	Capital Raised	Investors
ClassDojo	2011	K-12	Student + Parent Engagement, Behavior Management	$10 million	General Catalyst, Shasta Ventures, SV Angel, SoftTech VC, Kapor Capital, Learn Capital, NewSchools Venture Fund, Imagine K12, Deborah Quazzo (GSV Advisors)
ClassOwl	2014	K-12, Postsecondary, Corporate	Planning + Collaboration for Classes and Teams	$1 million	Follett Knowledge Fund, Dorm Room Fund, StartX
FreshGrade	2012	K-12	Track and Share Student Learning + Work in Digital Formats (Video, Notes, Audio, etc.)	$4+ million	Accel, Emerson Collective, NewSchools Venture Fund, The Social + Capital Partnership
Kaymbu	2012	K-12	Track + Share Student Learning (Video, Notes, Audio, etc.)	Seed	Imagine K12
LiveSchool	2011	K-12	Behavior Management	$2+ million	Nashville Capital Network, Tennessee Angel Fund
NewsCrafted	2012	K-12	Newsletter Authoring + Publishing Platform	$2+ million	Broadmark Capital
Remind	2011	K-12	Student, Parent and Teacher Communication + Collaboration	$60 million	KPCB, First Round, The Social+Capital Partnership, Imagine K12, 500 Startups
SchoolMint	2013	K-12	Student Enrollment, Registration + Application Workflow	$2+ million	Crosslink Capital, NewSchools Venture Fund, Imagine K12, Romulus Capital, Fresco Capital, Kapor Capital
Three Ring	2011	K-12	Track and Share Student Learning + Work in Digital Formats (Video, Notes, Audio, etc.)	$2+ million	Great Oaks Venture Capital, New Markets Venture Partners, Maryland Venture Fund

Source: CrunchBase, GSV Asset Management

FIRST GENERATION TEACHING + LEARNING MANAGEMENT PLATFORMS

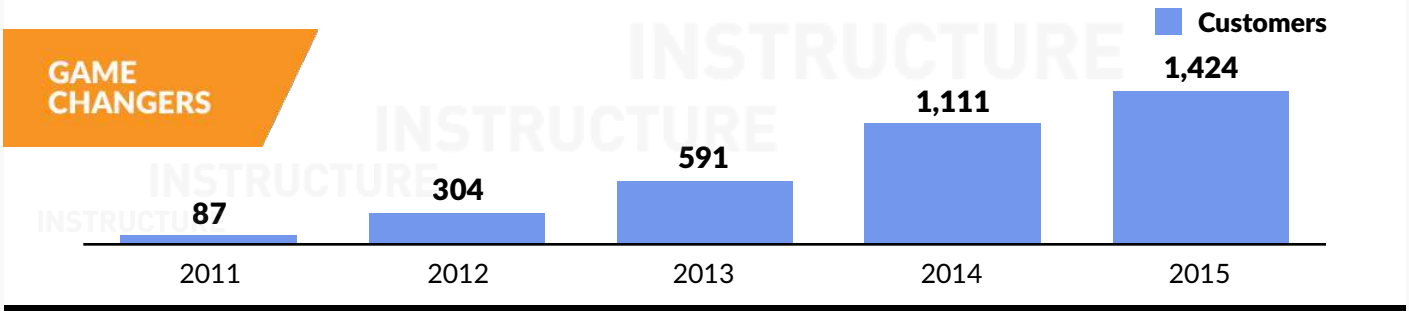
Company	Founded	Market	Valuation	Investors
Blackboard	1997	K-12, Postsecondary, Corporate	$1.6 billion *Acquired by Providence Equity in 2011*	Providence Equity
Desire2Learn	1999	K-12, Postsecondary, Corporate	Undisclosed	NEA, Graham Holdings, OMERS Ventures, Aurion Capital, Columbus Nova Technology Partners
Ellucian	1968 *2012 Merger of Datable + SunGaurd Higher Ed*	Postsecondary	$3.5 billion *Acquired from Hellman & Friedman in 2015*	TPG Capital, Leonord Green Partners
Jenzabar	1998	Postsecondary, Corporate	Undisclosed	Undisclosed
Moodle	2002	K-12, Postsecondary, Corporate	N/A	N/A *Free + Open-Source*
Sakai	2005	Postsecondary	N/A *Free + Open-Source*	N/A *Free + Open-Source*

Source: CrunchBase, Forbes, Yahoo Finance, GSV Asset Management

NEXT GENERATION TEACHING + LEARNING MANAGEMENT PLATFORMS

Company	Founded	Market	Description	Capital Raised	Investors
Acrobatiq	2013	Postsecondary	Platform to create, implement, and manage adaptive courseware; Carnegie Mellon University spin-out	$10 million	Bill & Melinda Gates Foundation, Hearst Ventures, Draper Triangle, Carnegie Innovations
Edmodo	2008	K-12	Collaborative, freemium, teaching and learning platform	$88 million	Benchmark, Greylock, NEA, Union Square Ventures, Index Ventures, Learn Capital,
Engrade *McGraw-Hill*	2003	K-12	Integrated learning and assessment management platform	N/A *Acquired by McGraw-Hill for $50 million*	*Original Investors: Rethink Education, NewSchools Venture Fund, Javelin Venture Partners, Kapor Capital, Expansion Venture Capital, Samsung Ventures*
Instructure	2008	K-12, Postsecondary, Corporate	Intuitive, cloud-based learning management system branded as *Canvas*	$90 million	Insight Venture Partners, OpenView Venture Partners, EPIC, Tomorrow Ventures, University Venture Fund
LoudCloud	2010	K-12, Postsecondary, Corporate	Adaptive teaching and learning platform focused on student mastery of key competencies	$15 million	Undisclosed
Schoology	2009	K-12, Postsecondary, Corporate	Next generation learning management system emphasizing collaboration + social interactions	$25 million	Intel Capital, FirstMark Capital, Meakem Becker Venture Capital, Great Oaks Venture Capital
Smart Sparrow	2010	Postsecondary	Platform to create, implement, and manage adaptive courseware	$12 million	One Ventures, Uniseed Ventures, Yellow Brick Capital Advisers

Source: CrunchBase, Forbes, Yahoo Finance, GSV Asset Management



INSTRUCTURE

FOUNDED: 2008

WHAT IT IS

Led by CEO **Josh Coates**, Instructure provides cloud-based learning management platforms to universities, school districts, institutions, and companies around the World. Instructure's flagship platform, *Canvas*, serves academic institutions, while the recently launched *Bridge*, targets the corporate training market.

Headquarters: Salt Lake City, UT

Investors: Insight Venture Partners, Bessemer, OpenView Venture Partners, EPIC Ventures, TomorrowVentures, University Venture Fund

Capital Raised: $90 million

WHY IT'S A GAME-CHANGER

Instructure has quickly achieved commanding scale since its launch in 2008, serving over 18 million users across 1,400 institutions. The company's market strategy has been unambiguous: find customers and markets using antiquated learning platforms and introduce a product that is elegant and simple.

Effectively born in the cloud, Instructure is unencumbered by complicated legacy software infrastructure that has plagued old guard Enterprise software providers. With only 100 corporate clients, Instructure will follow the same plan of attack to capture the corporate training market.

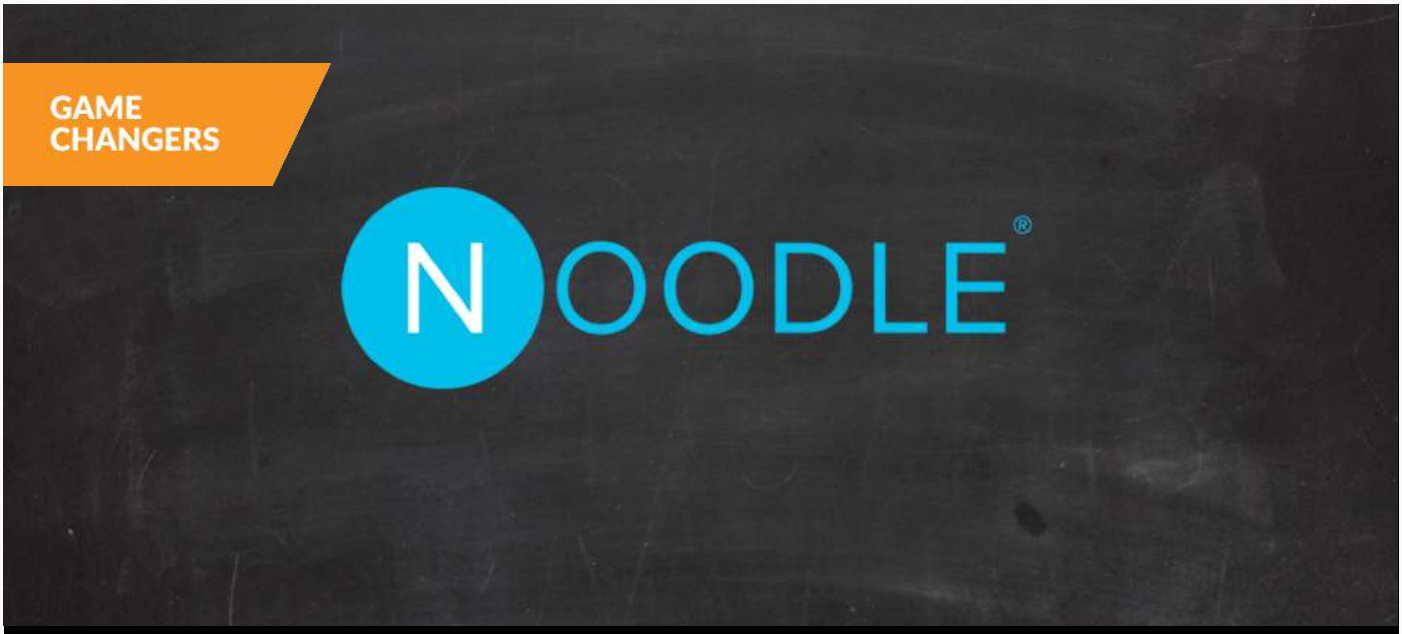


FORMATIVE ASSESSMENT + DATA ANALYTICS PLATFORMS

Company	Founded	Market	Description	Capital Raised	Investors
BrightBytes	2012	K-12	Data Dashboards + Insights	$52 million	Insight Venture Partners, Bessemer Venture Partners, Learn Capital, Rethink Education, NewSchools Venture Fund
Civitas	2011	Postsecondary	Data Dashboards, Insights + Intervention Tools	$89 million	Warburg Pincus, Austin Ventures, First Round, Rethink Education, Felicis Ventures, Floodgate, New Markets Venture Partners
DataCation *Longleaf Solutions*	2008	K-12	Data Dashboards, Formative Assessment + Intervention Tools	Undisclosed	Undisclosed
Illuminate Education	2009	K-12	Suite of student data and assessment management products + services	$26+ million	Insight Venture Partners
Learnmetrics	2012	K-12	Data Collection Workflow Optimization	Seed	Vine St. Ventures, The Impact Engine, The Brandery
LearnSprout	2012	K-12	Data Dashboards+ Insights	$5 million	A16Z, Formation 8, Samsung Ventures, Imagine K12
Mastery Connect	2009	K-12	Formative Assessment, Data & Analytics + Collaboration Platform	$24 million	Trinity Ventures, Learn Capital, Dell Foundation, Catamount Ventures, New Schools Venture Fund
Panorama Education	2012	K-12	School Surveys, Data & Analytics + Consulting Services	$16 million	Spark Capital, Google Ventures, Owl Ventures, SV Angel, SoftTech VC, Mark Zuckerberg
Schoolzilla	2013	K-12	Data Dashboards (Powered by Tableau) + Insights	Undisclosed	NewSchools Venture Fund

Source: CrunchBase, GSV Asset Management

ORGANIZATIONS THAT ACCELERATE INNOVATION



NOODLE

FOUNDED: 2010

WHAT IT IS

Noodle was founded by education visionary **John Katzman** (CEO) to help students and parents make better decisions about learning. Building on a strong track record of entrepreneurship and innovation — Katzman was the founder and CEO of the Princeton Review before co-founding 2U — Noodle is creating transparency and efficiency around the way people find and purchase education services.

Headquarters: New York, NY

Investors: Undisclosed

Capital Raised: Undisclosed

WHY IT'S A GAME-CHANGER

Expert Guidance: Noodle offers free guidance and recommendations on a broad range of education products and services, from pre-k education providers to on-demand online courses.

Marketplace: Aggregating data and insights from validated, trusted sources, Noodle provides users with unbiased information on more than 800,000 education providers. Beyond robust search and recommendation tools, the company is building a community of "Noodle Experts" — people it has identified as demonstrating significant knowledge, interest, and commitment to a particular education topic.



DIGITAL PROMISE

FOUNDED: 2008

WHAT IT IS

Founded by **Karen Cator**, the former Director of the Office of Educational Technology at the U.S. Department of Education, Digital Promise is a nonprofit organization authorized by Congress to spur education innovation. It implements a comprehensive research and development program to harness the increasing capacity of advanced information and digital technologies to improve all levels of learning and education.

Headquarters: Redwood City, CA (GSVlabs)

WHY IT'S A GAME-CHANGER

Identifying Breakthrough Technologies: Digital Promise partners with technology firms and researchers to map the R&D landscape, and identify opportunities for breakthroughs in learning from the cradle through a career.

Accelerating Development: When it comes to education, R&D cycles can take years, producing results that are out of date the minute they're released. Digital Promise works with researchers and entrepreneurs to develop new approaches for rapidly evaluating new products.

Transforming the Market for Learning Technologies: With more than 14,000 school districts and outdated procurement systems, it's difficult for entrepreneurs to break into the market and it's also tough to prove that their products can deliver meaningful results. Meanwhile, the amount we invest in R&D in K-12 education is estimated at just 0.2% of total spending on K-12 education, compared to 10-20% of revenues spent on R&D in many knowledge-intensive industries such as software development and biotech. Digital Promise works with school districts to create "smart demand" that drives private-sector investment in innovation.

LANGUAGE LEARNING APPS + PLATFORMS

Company	Founded	Market	Description	Capital Raised	Investors
Duolingo	2011	Lifelong Learning (B2C)	Game-based, mobile-centric language learning app	$83 million	KPCB, USV, Google Capital, NEA
EnglishCentral	2008	Multi (B2C)	Video-based language learning + virtual tutoring	$14 million	Google Ventures, Atlas Venture, Stonebridge Capital, SK Telecom Ventures, NTT Finance, Valor Capital Group
Middlebury Interactive	2010	K-12 (B2B)	Immersive software for foreign language + literacy learning; Situates learning in cultural context to accelerate comprehension	Undisclosed	JV between Middlebury College and K12
Open English	2006	Lifelong Learning (B2C)	Live, online English language learning classes (targeting Latin American + U.S. Hispanic Markets)	$120 million	TCV, Redpoint Ventures, Insight Venture Partners, Flybridge Capital Partners
Rosetta Stone	1992	Multi (B2C + B2B)	Immersive software for foreign language + literacy learning	N/A	Publicly Traded
TutorGroup	2004	Multi (B2C)	Online English language learning classes (targeting mainland China, Asia, and North + South America)	$115 million	Alibaba, Temasek, SBI Holdings, QiMing Venture Partners, Cyber Agent Ventures
Voxy	2010	Multi (B2C + B2B)	Adaptive, on-demand English language learning exercises + live classes	$19 million	Pearson, Weld North, Rethink Education, Contour Venture Partners, Seavest Capital Partners, Deborah Quazzo (GSV Advisors)

Source: CrunchBase, GSV Asset Management

ADDITIONAL HIGH IMPACT DIGITAL CONTENT + CURRICULUM

Company	Founded	Market	Description	Capital Raised	Investors
Cambium Learning	2009	K-12, Postsecondary (B2B)	Core Skills Development + Resources for Special Needs/At-Risk Students	N/A	Publicly Traded
CK-12	2007	K-12 (B2C)	Open Educational Resources (Curriculum + Content)	N/A	Non-Profit
Cricket Media	1996	K-12 (B2B + B2C)	EBooks, Digital Literacy Resources + Collaboration Tools	N/A	Publicly Traded
Defined Learning	2009	K-12 (B2B)	Interdisciplinary Project-Based Learning	Undisclosed	Undisclosed
Techbook *Discovery Education*	1985	K-12 (B2B)	Variable Skill Level Digital Textbooks	N/A	Subsidiary of Discovery Communications
EverFi	2008	K-12, Postsecondary, Adult Learner (B2B)	Digital Curriculum Targeting Critical Life Skills (e.g. Financial Literacy, Digital Literacy, etc.)	$21 million	NEA, Rethink Education, TomorrowVentures
LearnZillion	2011	K-12 (B2C2B)	Open Educational Resources (Curriculum + Content)	$22+ million	NewSchools Venture Fund, Owl Ventures, DCM, Ulu Ventures, Social Venture Fund, O'Reilly AlphaTech Ventures, Learn Capital, Bill & Melinda Gates Foundation
Nearpod	2012	K-12 (B2C2B)	Synchronized, Interactive, Mobile Lessons (Curated) + Assessment	$7+ million	Emerson Collective, Reach Capital, Rothenberg Ventures, Storm Ventures, Stanford-StartX, Knight Found., Arsenal Venture Partners Krillion Ventures, Deborah Quazzo (GSV Advisors)
Renaissance Learning	1984	K-12 (B2B)	Assessments, Courseware + Analytics	N/A	Acquired by Hellman & Friedman for $1.1 billion in 2014
Triumph Learning	1999	K-12 (B2B)	Standards-Aligned Instructional Materials	Undisclosed	Undisclosed

Source: CrunchBase, GSV Asset Management

Blackboard Family



A major catalyst in rapidly-expanding industries has been the successful spawning from parent enterprise to multiple offspring. An example of this, the Paypal "mafia" has become notorious for its involvement in many of the new big idea companies that are reshaping Silicon Valley, including Facebook, Palantir, Tesla, SpaceX, LinkedIn and many more.

Co-Godfather: Michael Chasen
Co-Founder, President, & CEO, Blackboard



Co-Godfather: Matthew Pittinsky
Co-Founder, Chairman, & former CEO, Blackboard;
Founder & CEO, Parchment

Todd Gibby CEO	Board Effect	Greg Davies former CEO, Presidium (Acquired by Blackboard in 2012)	presidium
David Yaskin Founder & CEO	Starfish retention solutions	Lou Pugliese former CEO, Moodle; Edupreneur	moodlerooms
Jessie Woolley-Wilson President, CEO & Chairman	dreambox LEARNING	Patrick Supanc Director, Kindle Education	amazonkindle
Matt Pittinsky Founder & CEO	parchment credentials unleashed	Stephen Gilfus Founder & CEO	Gilfus Education Group Education Strategy, Research and Implementations

FOREFATHERS

PIONEERS IN EDUCATION INNOVATION



"As we look ahead into the next century, leaders will be those who empower others."

Bill Gates

Co-Founder, Microsoft; Co-Founder, The Bill and Melinda Gates Foundation

One of the all-time great entrepreneurs, Bill Gates has revolutionized the digital World with his contributions to the computer industry. He took a technology previously only affordable to the richest of companies, and helped condense it, making it accessible to ordinary individuals. Equally as impressive is his profound commitment to service and philanthropic work. The Bill & Melinda Gates Foundation is dedicated to supporting education, World health, and investment in low-income communities, and the couple has committed to donating 95% of their fortune to philanthropy.

Marjorie Scardino

Former CEO, Pearson

Marjorie Scardino is responsible for the radical transformation of Pearson into the leading education company it is today. When she was appointed CEO in 1997, she was the first woman to become chief executive of a FTSE 100 company. In reorganizing the company, Scardino bet everything on education. Pearson became the World's largest publisher and a leader in learning.



"We tried, we failed, but we learned an incredibly important lesson: if you fail, you don't die. Once you realize that, everything is possible."



"It's not that teachers should have to learn more about technology—it's that technology needs to learn more about teachers."

Larry Berger

CEO, Amplify Learning

Larry Berger has been active in the education and technology industries for decades. Prior to his position at Amplify Learning, Berger co-founded Wireless Generation in 2000, and led the invention of a software platform that streamlines the process of K-12 observational assessments. He was formerly the President of InterDimensions and served as the Education Technology Specialist at the Children's Aid Society, where he lead the development of four community computer labs called "Technology Playgrounds" in Staten Island and Harlem in New York. He worked on Educational Technology at NASA as a White House Fellow and was also a Rhodes scholar at Oxford University.

Barbara Dreyer

Former CEO, Connections Education

Barbara Dreyer helped pioneer the K-12 online-learning movement, one that has the potential to create a more personalized education system that is student-centric. During her career, she promoted the need for high standards and transparency and accountability for virtual schools.Under her leadership, Connections Education, which she founded, grew into the second largest K-12 online-learning provider in the nation. Connections Education was acquired by Pearson in 2011.



"We have something for the 1 or 2 percent, let's have something for the 98 percent."



"The Internet will save higher education, but it may kill your alma mater."

John Katzman

CEO, Noodle; Founder, The Princeton Review; Co-Founder, 2U

John has founded and run three education companies: The Princeton Review, 2U, and now Noodle; in each, he's brought together incredible people and helped them create transformative services and compelling cultures. He sits on the Boards of the Woodrow Wilson Foundation, the National Association of Independent Schools, and the National Alliance for Public Charter Schools.

Maria Klawe

President, Harvey Mudd College

A renowned computer scientist and scholar, Maria Klawe became Harvey Mudd's first female president in 2006. Since then, Klawe overhauled the way that Harvey Mudd recruited and retained female students and increased the ratio of female-to-male students in computer science courses by 4x. She is a world renowned lecturer, giving talks about diversity in technology and scientific fields worldwide and currently devotes her time towards improving K-12 STEM education.



"If you completely shut out the entire feminine perspective on the world, you are going to have a different set of products."



5

MARCH TO THE BEAT OF A DIFFERENT DRUMMER

Create Access + Improve Quality through New Models

We adopted new teaching, learning, and business models to improve education quality and access.

Problem

In the 21st-century Global Knowledge Economy, a young person failing to earn a high school diploma was effectively locked out of the future, but the national graduation rate was only 81 percent. Dropouts were 3x more likely to be unemployed and 8x more likely to end up in prison. Of the 55 million new job openings forecasted over the next decade, at least 65 percent required a college credential, but only 31 percent of Americans had one. Getting a degree was expensive (the average borrower graduated with $30,000 in debt) and required you to drop out of life. But given that essentially 100 percent of the U.S. adult population had access to the Internet and over 75 percent owned a smartphone, we were no longer beholden to these fundamentals. The digital framework was in place to democratize access to learning by lowering cost, increasing access — and now — improving quality.

MODELS THAT WORK

- **Media Models**: Putting the "ED" in "media" with high-quality content delivered across large audiences; Affordable consumer costs achieved through blended revenue streams like advertising, fee-based premium content + services, etc. *(e.g. Super Bowl, Cable TV, Hollywood)*
- **Freemium**: Creating a massive user base by removing barriers to adoption with a high utility free product; Monetize a small portion of the base (typically less than 10 percent) with fee-based upgrades to "premium services" *(e.g. Dropbox, Spotify, Coursera, Duolingo, Class Dojo, Remind)*
- **Light Subscription**: Creating, aggregating, and distributing high-production value content across large audiences at low, "all-you-can-eat" subscription prices *(e.g. Netflix, Hulu, Curious.com, Lynda, Pluralsight)*
- **Peer-to-Peer Marketplaces**: Efficient, two-sided digital marketplaces enabling people to monetize assets they own (e.g. Cars, Homes, etc.) + provide a variety of services *(e.g. Uber, Lyft, Airbnb, Course Hero, TeachersPayTeachers)*
- **Software-as-a-Service**: Robust, scalable turn-key solutions that address critical business issues *(e.g. Salesforce, Zendesk, 2U, HotChalk, Embanet)*

SOLUTION

1. **FDA for EDU**: Transparent review framework for education technology product efficacy, blending curated review and usage data from trusted media/marketplace platforms (e.g. EdSurge, Common Sense Media-Graphite, Noodle), as well as Department of Education validation of efficacy data
2. **Innovation Eduation**: Provide "tuition" reimbursement for incubators + accelerators that offer rigorous academic programs, prioritizing organizations that are focused on supporting next generation EdTech entrepreneurs

By the Numbers: **New Models**

Fundamentals	2015
High School Graduation Rate	81%
High School Dropouts, U.S. Prison Population	80%
Projected New Job Openings: 2015-2025	55 Million
Projected New Job Openings Requiring a College Degree	65%
Percentage of Americans with a College Degree	31%
Percentage of African Americans with a College Degree	17%
Percentage of Latinos with a College Degree	13%
Percentage of Students Graduating from College in 6 Years	56%
Student Loan Debt	$1.2 Trillion
Student Loan Debt Default Rates	12%

Source: Bureau of Labor Statistics, Georgetown University Center on Education and the Workforce National Center for Education Statistics, Pew Research Center

Weapons of Mass Instruction: New Models



Company	Founded	Type	Impact
2U	2008	School-as-a-Service: Turn-Key Online Degree Programs	500+ faculty; 1,000+ course sections; 1,600 hours of live instruction per week
Chegg	2005	Student Graph: Apps for Students Across Academic Lifecyle	15+ million users
ClassDojo	2011	Freemium Behavioral, Engagement + Communication	50+ million parents, students, and teachers in 50%+ U.S. schools
Coursera	2011	mEDia + Freemium: MOOC + Education Platform	15+ million users; 1,000+ courses
Course Hero	2006	Peer-to-Peer Marketplace: Academic Resources	5+ million users; 7+ million education resources
Curious.com	2012	Subscription: Curated, On-Demand Lessons from Expert Practitioners (Broad Topic Range)	15,000+ lessons viewed 3+ million times
Duolingo	2011	Freemium: Language Learning	100+ million users
Edmodo	2008	Freemium: Learning Management + Collaboration Platform	50M teachers, students and parents
EdX	2012	mEDia + Freemium: MOOC Platform	3+ million users; 400+ courses
Teachers Pay Teachers	2006	Peer-to-Peer Marketplace: Original Teaching Resources	3M+ teachers; $150M+ payouts to date
Udacity	2012	Subscription: Immersive Skills	2M+ users; 100+ courses

King Gillette was a frustrated traveling salesman working for Crown Cork & Seal selling bottle caps when he had an idea. What if instead of having to shave with an expensive, dangerous and high maintenance “straight edge” razor, you could have a cheap metal razor you could throw away after using a few times?

Having almost killed himself shaving on a train from Chicago to Milwaukee on the way to a meeting and constantly being frustrated by the cost of a new razor or the need to continually sharpen what he had, Gillette thought there had to be a better way to stay clean shaven.

So excited was Gillette by his brainstorm, he went to Massachusetts Institute of Technology (MIT) to see if they could help design his invention. The engineers at MIT told Gillette that what he wanted to manufacture was “impossible”. Gillette was so convinced of the power of his concept that he didn’t let the cynics stop him from pursuing his idea. Ironically, Gillette found his partner in MIT educated William Emery Nickerson who together after five years, were able to produce the inexpensive sharp edge razor he had imagined.

Gillette applied for a patent in 1901 and founded the Gillette Safety Razor Company to launch his new product. A razor plus one blade was priced at $5, and 20 blades — each in a decorative wrapper bearing King's portrait — cost $1. Production began in 1903 and the company sold a grand total of 51 razors and 168 blades, less than $1,000 in revenue.

By 1904, Gillette had invented the disposable double edge razor, as well as the business model of selling the razor below manufacturing cost and making all the profit on the recurring sale of blades. Hence the “Razor-Razor Blade” model was born, with numerous enterprises benefitting from this business model innovation. A little over 100 years after King hatched his idea, the Gillette Safety Razor Company was sold in 2005 to **Proctor & Gamble** for $57 billion while it was making $2.5 billion of profit.

The Razor-Razor Blade playbook has created phenomenal business opportunities across a range of industries, with everybody from **Hewlett Packard** selling

inexpensive printers to generate ongoing high-margin printer ink sales, to **Microsoft** selling X Box consoles at low margin to enable sales of high margin software games. Coming full circle, the **Dollar Shave Club** launched in 2011 with a hysterical **YouTube** video that went viral with over 18 million views.

Founder Michael Dubin was annoyed by how much Gillette's successors were making off him so he came up with a new twist — the idea of sending a fresh set of blades every month for $1 while giving you the opportunity to buy other men's grooming products. In other words, Dollar Shave Club hooks you as a customer with a loss-leading razor blade and makes its profit by selling you a bunch of high margin products like aftershave, lotion, hair gel, and shaving butter. After two years of business, Dollar Shaving Club had over one million monthly customers and raised $50 million in venture capital.

DOLLAR SHAVE CLUB



Source: Dollar Shave Club

RyanAir applied an equally transformative vision to the airline industry, unbundling key components of the flying experience and providing transparency on cost. The end game was extreme value for RyanAir passengers and a wildly successful airline in an industry that, overall, had not made a profit since Orville and Wilbur Wright took their first flight.

RYANAIR: UNBUNDLED AIRLINE = CONSUMER VALUE

CEO Michael O'Leary on RyanAir's sales strategy: "If drink sales are falling off, we get the pilots to engineer a bit of turbulence. That usually spikes sales."



Source: CNN

Emerging "Freemium" models were among the most powerful, especially when they created network effects. **Dropbox** seemed to monetize by magic as only a small fraction of its 400 million users paid for the service… but it was valued at $10 billion. **Facebook** was the World's center of communication and collaboration but the platform was free to over 1.5 billion users. The social network was valued at over $230 billion.

Reimagining models to address the needs of students and remove impediments to success was critical to achieving our 2020 Vision. Freemium, Razor-Razor Blade, and Software as a Service (SaaS) were all models that had been effective in other industries and provided a blueprint for strategies to create scale impact.

HIGH IMPACT NEW BUSINESS MODELS

Company	Innovation	Result*
Costco	Large Unit Sales + Long Payment Cycles to Suppliers, Creating Investible "Float"	Costco's customers win with insanely low prices and Costco shareholders win with $60+ billion market value.
Facebook	Free Platform for Communication and Collaboration + Targeted Advertising	1.5+ billion users + $250 billion market value business.
Gillette	"Razor-Razor Blade" Model: Sell the Razor at a Loss, Generating Profits on the Recurring Sale of Blades	Acquired by Procter & Gamble in 2005 for $57 billion while generating $2.5 billion in profits.
Google	Free Search Engine + Targeted Advertising	1+ trillion Google searches per year + $400+ billion market value business.
Hewlett Packard	Inexpensive Printers + Expensive, High-Margin Printer Ink Refills	Recurring ink sales at $4,285 per liter, one of the most expensive liquids in the World.
Netflix	Low-Cost Subscription for "All You Can Eat" Access to On-Demand Streaming Movies and TV Shows	62 million subscribers paying at least $7.99 per month.
Night Clubs	Lady's Night: Free and Reduced Drink Prices for Ladies	Network effects that create large crowds and stimulate sales.
RyanAir	Unbundled Airline with Fee-Based Premium Services + In-Plane Advertising	Wildly successful airline in an industry that, overall, had not made a profit since the Wright brothers took the first flight.
Salesforce	End-to-End SaaS Product Suite for Businesses	Customers avoid massive upfront costs and software installations, receiving a product that is automatically updated.

*Source: Yahoo Fiance, GSV Asset Management *As of September 2015*

Problem

In 2015, America's high school graduation rate surpassed 81 percent, an all-time record. The bad news? In the 21st century Global Knowledge Economy, a young person failing to earn a high school diploma was effectively locked out of the future. The real headline was that 720,000 young Americans dropped out and over half were people of color.[23] The prospects for dropouts were abysmal… 25 percent unemployment[24]… a median income less than half that of college graduates[25]… over 80 percent of the prison population.

Our goal was 100 percent participation in the future, which sounded unrealistic to some. But if commercial airlines aimed to safely land *anything less* than 100 percent of their flights, airports would be empty.

Urban dropout factories from Detroit to Atlanta graduated less than 50 percent of their students, sending thousands of young people into *the land of the living dead*. It would be unthinkable for a hospital to have a 50 percent survival rate, but we routinely tolerated high schools in large urban districts where over 50 percent of students did not graduate.

While we battled to make incremental advances with high school graduation rates, a *college* crisis was already bearing down on us. We were one fight behind. Of the 55 million new job openings likely to be created over the next decade, at least 65 percent would require a college credential.[26] Yet only 31 percent of Americans held a degree, a number that dipped substantially for African Americans (17 percent) and Latinos (13 percent). We had simply run out of time for half measures. The bridges were burning.

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[23] Pew Research Center

[24] Bureau of Labor Statistics, *Current Population Survey* (2014)

[25] National Center for Education Statistics, *The Condition of Education* (2015)

[26] Georgetown University Center on Education and the Workforce

The fundamental impediment to getting a degree — the ticket to participate in the future — was cost… both money and time. A typical four-year undergraduate degree averaged $19,000 per year on the low end ($42,000+ for elite private schools) and it required you to drop out of life to take courses on campus at arbitrarily designated times. Only 56 percent of students enrolling in college managed to graduate within six years. These dynamics resulted in the average college graduate having nearly $30,000 of debt when they completed their degree. Overall, student debt had ballooned to $1.2 trillion and default rates climbed past 12 percent.

Adding insult to injury, only 50 percent of recent college graduates were getting jobs in fields related to their major and 15 percent were underemployed. And despite paying premium prices, the likelihood that your professor was the best in their field was by definition remote — even at the top schools. The idea that any college could cost effectively produce World-class content consistently was ludicrous.

SCORE CARD: U.S. EDUCATION MODEL

K-12	Higher Education
• **20%** of students fail to graduate from high school, producing a dropout population of 720,000+	• **$19,000** minimum average cost per year for a four-year degree (***$42,000+*** *for private schools*)
• **25%+** unemployment rate for high school dropouts	• **56%** six-year graduation rate
• **50%** lower median income for for high school dropout vs. 4-year degree holder	• **$30,000** of debt per borrower at graduation
• **80%** of prison population is high school dropouts	• **$1.2** trillion student debt; **12%** default rate (*compared to **3%** for credit cards*)
	• **50%** of college graduates in jobs related to their major
	• **15%** of college graduates underemployed; **7%** unemployed (***11%+*** *for Black and Hispanic graduates*)

Source: Economic Policy Institute, College Board, Bureau of Labor Statistics, Pew Research Center, Georgetown University Center on Education and the Workforce, National Center for Education Statistics, MarketWatch

These challenges were only compounding as Millennials were projected to cycle through 15+ careers during their working lives. The drivers were accelerating globalization and jobs being "Siri'd" as software continued to "eat the World". We needed to empower a society of lifelong learners. An education model with limited access and efficiency, where costs increased with quality, was simply untenable.

But given that essentially 100 percent of the U.S. adult population had access to the Internet and over 75 percent owned a smartphone, we were no longer beholden to these fundamentals. The digital framework was in place to *democratize* access to learning by lowering cost, increasing access — and now — improving quality.

Models that Work

MEDIA MODELS

Super Bowl 50, scheduled to be played in Santa Cruz, California February 7, 2016, was projected to generate over $100 million in ticket sales and concessions. While impressive, that was nothing compared to the $500 million in advertising that would be created by the Big Game at $5 million for a 30-second commercial.

Every year, only 80,000 or so fans are able to pay $1,000+ for a Super Bowl ticket and multiples of that for travel and lodging — not to mention having to be there at a certain date and time. But a billion people are able to watch the game for free in the comfort of their homes or neighborhood parties. With **TiVo**, the less social can record the whole event and watch it at their convenience.

But the fact is, TV not only creates broad access, but a better product for the people who attend the event. Mass distribution, in turn, creates a virtuous circle by unlocking distribution economics that attract better players, coaches and officials, with more riding on the game.

Dollars & Sense: Superbowl Media Model



Item	Detail
Stadium Capacity	80,000
Cost Per Seat	$1,000+
Total Attendee Revenue	$100+ million
Remote Viewers	121 Million
Cost to View Remotely	Free
Cost Per Ad	$5 Million / 30 Second Slot
Total Ad Sales, 2015	$360 Million

Source: CNN Money, StubHub, WalletHub

Applying the fundamentals of media models like the Super Bowl offered important insights into delivering quality education content at scale. The Ivy League, like the Super Bowl, was expensive, exclusive, and most people could not go… less than one percent of college students attended Ivy League or other elite schools. But the emergence of digital education platforms, from MOOCs to online degree platforms, meant that we could use media models to democratize access to the best programs and professors.

Moreover, the best teachers could leverage their time and talent to get paid like other media stars. Instead of reaching a few hundred students in their classroom, professors could engage an audience of thousands around the World.

Dollars & Sense: "mEDia" Model



Harvard	Detail
Enrollment	6,700
Annual Tuition	$62,000
Total Attendee Revenue	$294 Million
Public Cost (Tuition Aid)	$5-10 Million*
MOOC Users	30 Million
Cost Per MOOC	Free - $2,000
MOOC Revenue (*@ $150 per*)	$350 Million

PUTTING THE "ED" INTO MEDIA

Alexander Hamilton was arguably the most influential of the American Founding Fathers who never became President. Chief advisor to George Washington, chief author of the Federalist Papers, and chief architect and advocate for the Federal Reserve, it's hard to imagine what the United States would look like if Hamilton's enormous talents weren't part of the country's early mix.

In Hamilton's story, reality is so much better than fiction could contrive. He was born to a lady of the night in the West Indies, never knew his father, rose to fame and power in New York City with superior intellect and a quick pen, and died in a duel with his mortal enemy, Vice President Aaron Burr.

In between, he *sparred* with Thomas Jefferson, he *spun* with John Adams, and he *spooned* with Marquis de Lafayette. The seductions and subsequent blackmail by a wayward married woman ultimately reversed his meteoric rise.

While Pulitzer Prize author Ron Chernow dutifully articulated Hamilton's biography in 2005, it was Lin Manuel Miranda's 2015 rap musical *Hamilton* that brought this amazing tale to life.

Hamilton became the hottest ticket on Broadway over night, with theater-goers camping outside the box office for a ticket to be engaged, entertained, and educated about the man who now occupies the "Ten Spot" in U.S. legal tender.

ALEXANDER HAMILTON 2.0

2015 Smash-Hit Hip Hop Musical, "Hamilton"



Source: PublicTheatre.org

Just down the street, if New York University (NYU) put on an Alexander Hamilton course covering the same history, I doubt students would be fighting to get a seat in the class. Even Chernow's wonderful, best-selling biography could expect to reach only a fraction of the audience *Hamilton* would engage — while grossing significantly less money.

Interestingly, classroom research has shown rap to be a highly effective vehicle for teaching math and science. My daughter Maggie aspires to inspire kids to follow current events by performing a rap to the news of the week, appropriately called the "Weekly Rap". (*Shameless plug, but seriously, go to maggiemoe.org and check it out.*)

We should guard against the abridgment of freedom in our country, especially the vulnerable freedoms of press and of education.

WALTER H. ANNENBERG

In 2015, we saw a future of learning that was a "News to Knowledge" continuum — from quick, timely information to insights gained from in-depth understanding of a subject.

To put brackets around News to Knowledge, **Google** is the World's uber provider of information and Harvard is the leading brand for providing knowledge.

Blogs, news publications, magazines, podcasts, books, documentaries, courses, majors, and degrees are linear stations on the learning continuum that can be mashed up to provide knowledge. What's interesting is that most of these mediums would be considered "media business". *The World we saw emerging was one where education put the "ED" in mEDia.*

Google is instructive as it is not only the de-facto organizer of all the World's information and the second largest Market Cap company in the World, but for the knowledge seeker, it's *FREE*. Sure, there are ads and sponsorships all over the place but it's unobtrusive for the user and more than a fair trade given the value received.

If Google would have charged even a penny per search, "Google" wouldn't be a verb.



Harvard, on the other hand, which is a wildly successful enterprise and the ultimate brand for education, reaches a small fraction of the knowledge seekers that Google reaches. The value received by the roughly 10,000 students at Harvard is enormous, but so is the cost.

We saw a future of Global learners on a continuous path to build up their Knowledge Portfolio, benefiting from the continuum of News to Knowledge, with personalized content available anytime, anywhere on mobile. The Knowledge Currency of the future would be valued by what you knew, not how you came to know it.

RISE OF THE MOOCS

Time for a pop quiz — see if you can spot the anomaly on this list: Harvard, Yale, Penn, Brown, Cornell, Columbia, Princeton, Dartmouth, and Rutgers.

WHICH DOESN'T BELONG?



And the answer is… *Cornell* — which was the only school on this list to be founded after the Revolutionary War. Here's our real point: with all of the changes that had taken place in the last 10 years — let alone 236 years — we couldn't think of another industry in which so much remained exactly the same.

CHALLENGED FUNDAMENTALS

In fact, higher education had evolved very little since the 11th century when the University of Bologna, the World's oldest university, was founded in 1088. While there were many causes for this inertia, teaching had been fundamentally constrained by technology. Until recently, a student needed to be in a lecture hall to have access to university instruction.

The higher education model in the United States was a proxy for access and cost challenges. College was exclusive and expensive. At a strategic level, institutions were incentivized to shut people out in order to improve their *U.S. News* ranking. Bizarrely, this mainly irrelevant news magazine had become the arbiter for what mattered and what didn't, and for some perverse reason, educating more people was deemed uncouth. If **Disney** measured its success based on how many people it turned away, or if **Starbucks** aimed to limit the number of people that could drink its coffee, you would never have heard of either company.

State of Play: **"Top 20 Universities" by Lowest Acceptance Rate**

	Institution	Acceptance Rate		Institution	Acceptance Rate
1	Harvard University	6.1%	11	University of Chicago	13.2%
2	Stanford University	6.6%	12	Duke University	13.4%
3	Yale University	7.1%	13	Vanderbilt University	14.2%
4	Columbia University	7.4%	14	Northwestern University	15.3%
5	Princeton University	7.9%	15	Cornell University	16.6%
6	MIT	9.0%	16	Rice University	16.7%
7	Brown University	9.6%	17	Georgetown University	17.0%
8	Dartmouth College	9.8%	18	Johns Hopkins University	17.7%
9	Caltech	11.8%	19	Washington Univ. in St. Louis	17.9%
10	University of Pennsylvania	12.6%	20	UC Berkeley	18.0%

Source: U.S. News & World Report

But there were more fundamental challenges on the supply side. Postsecondary institutions had high fixed costs, access to the learning offerings they provided

was dependent on specific times and places, and the quality of that experience was in turn dependent on the quality of faculty employed at a specific campus. These were theatre production challenges.

Moreover, the old university model is set up for 18- to 22-year-olds, offering classes exclusively during the day, only twice a year, with dormitories, football teams, and marching bands — all of which are basically irrelevant to a huge portion of the audience that desperately needs access to ongoing education.

Perhaps the most problematic aspect of the higher education model was that rising institutional costs were passed along to a consumer that typically had to take on an unsustainable debt burden (backstopped by the Federal Government) to cover tuition price. Student debt, which *surged past $1.2 trillion, had grown at a 15 percent CAGR since 2005 and exceeded credit card debt in the United Sates*.

State of Play: **Top 20 Most Expensive Universities**

	Institution	Cost		Institution	Cost
1	Harvey Mudd College	$64,527	11	Johns Hopkins University	$61,806
2	Bard College	$63,626	12	Trinity College	$61,806
3	University of Chicago	$63,585	13	Oberlin College	$61,788
4	Sarah Lawrence College	$63,472	14	Haverford College	$61,784
5	New York University	$63,472	15	Pitzer College	$61,750
6	Columbia University	$63,440	16	Drexel University	$61,731
7	Dartmouth College	$62,337	17	Rensselaer Polytechnic Institute	$61,703
8	Claremont McKenna College	$62,215	18	Northwestern University	$61,640
9	University of Southern California	$62,031	19	Fordham University	$61,588
10	Scripps College	$61,940	20	Wesleyan University	$61,498

Source: U.S. News & World Report

This paradigm simply does not work in the World we live in today. Only 41 percent of Millennials aged 25 to 34 have a college degree. But in 2018, at least 63 percent of all job openings will require college education, according to

projections from Georgetown University and the Bureau of Labor Statistics. The lifelong learning reality and technology's role in making jobs obsolete requires a reconceptualization of how learning will be delivered to meet these huge societal challenges.

Appropriately enough, the idea of MOOCs (Massive Open Online Courses), was hatched on YouTube in 2011 by a Stanford Professor, who we later learned wasn't wearing pants. **Sebastian Thrun** essentially dared would-be students to take his Artificial Intelligence class online for free with the quid pro quo being they would be graded as if they were actually Stanford students in his class.

SEBASTIAN THRUN, FOUNDER, UDACITY



Source: Stanford University

Provocateur Thrun was bona fide — not only being a star faculty member on essentially the Yankees of higher education but also being a leader of the **Google** team that was developing driverless cars and *Google Glass*. Surprising to everybody, perhaps, but Thrun, 160,000 students rapidly signed up for the "Stanford Challenge" and a movement was born.

Not wishing to miss out on a second California Gold Rush, alliances quickly formed amongst nascent MOOC providers — the Big Three being Thrun's **Udacity**,

Daphne Koller and Andrew Ng's **Coursera**, and Harvard and MIT's not-for-profit **EdX** — and academic institutions from around the World. Millions of people were signing up for MOOC classes for free and by the Spring of 2013, it had become conventional wisdom that MOOC's were going to disrupt higher education in a major way. Then something predictable happened — *the Empire fought back*.

Your margin is my opportunity.

JEFF BEZOS

At first, it was subtle slaps with prominent professors voicing their disappointment that their online experience just wasn't what they thought it could be. Next, the chorus started to highlight the low completion rates — often less than 10 percent — of the MOOC courses (failing to acknowledge the remarkably low completion rates and graduation rates for physical classes at most universities despite students paying tens of thousands of dollars).

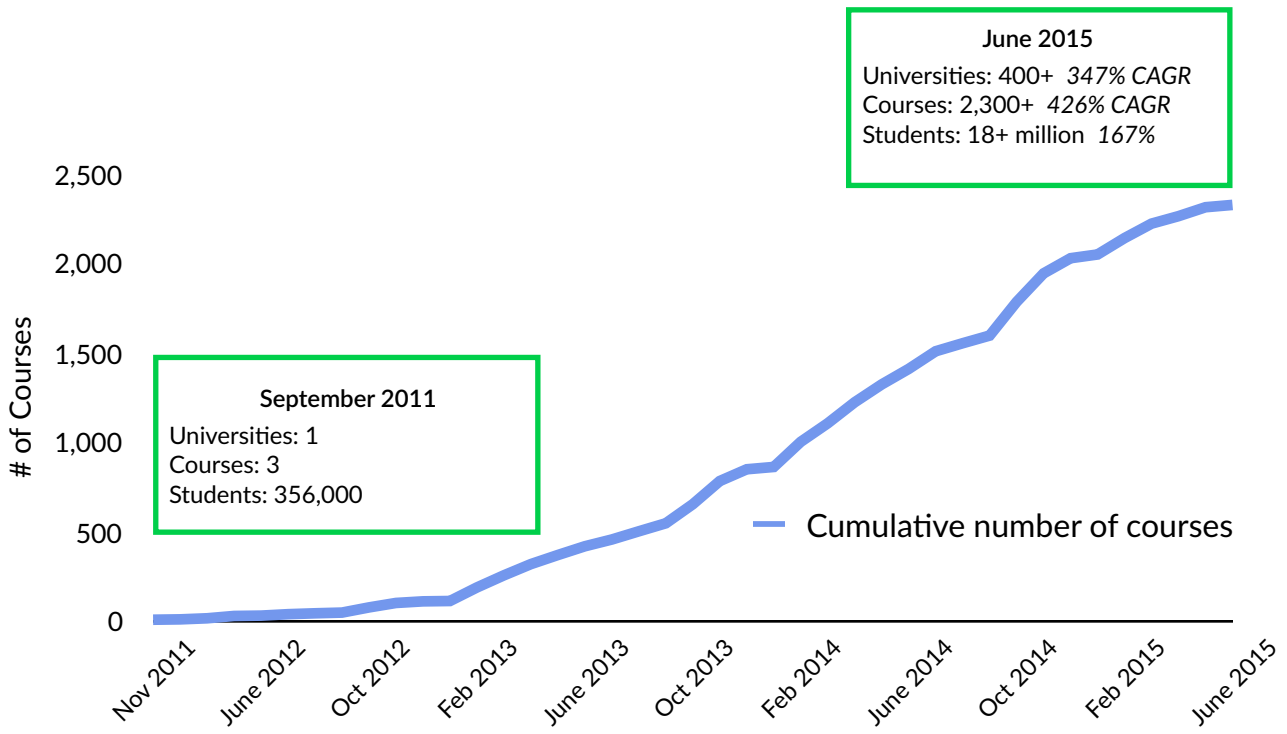
Then, under the guise of protecting students, faculty and institutions, the economic model of providing courses for "free" was routinely roasted as absurd and certainly not sustainable. Alas, conventional wisdom now regarded MOOCs as a Roman Candle, and the Empire largely viewed them as a temporary threat averted.

BREAKOUT

While much of the hype was gone, MOOCs continued to expand steadily as supply induced demand. The number of students taking courses on the "Big 3" — Coursera, EdX ,and Udacity — was over 19 million by the beginning of 2015. And there were over 2,000 courses collectively offered by the largest MOOC platforms, up from effectively none at the end of 2011.

Rise of the MOOCs

MOOC Courses and Students Surge, 2011-2015



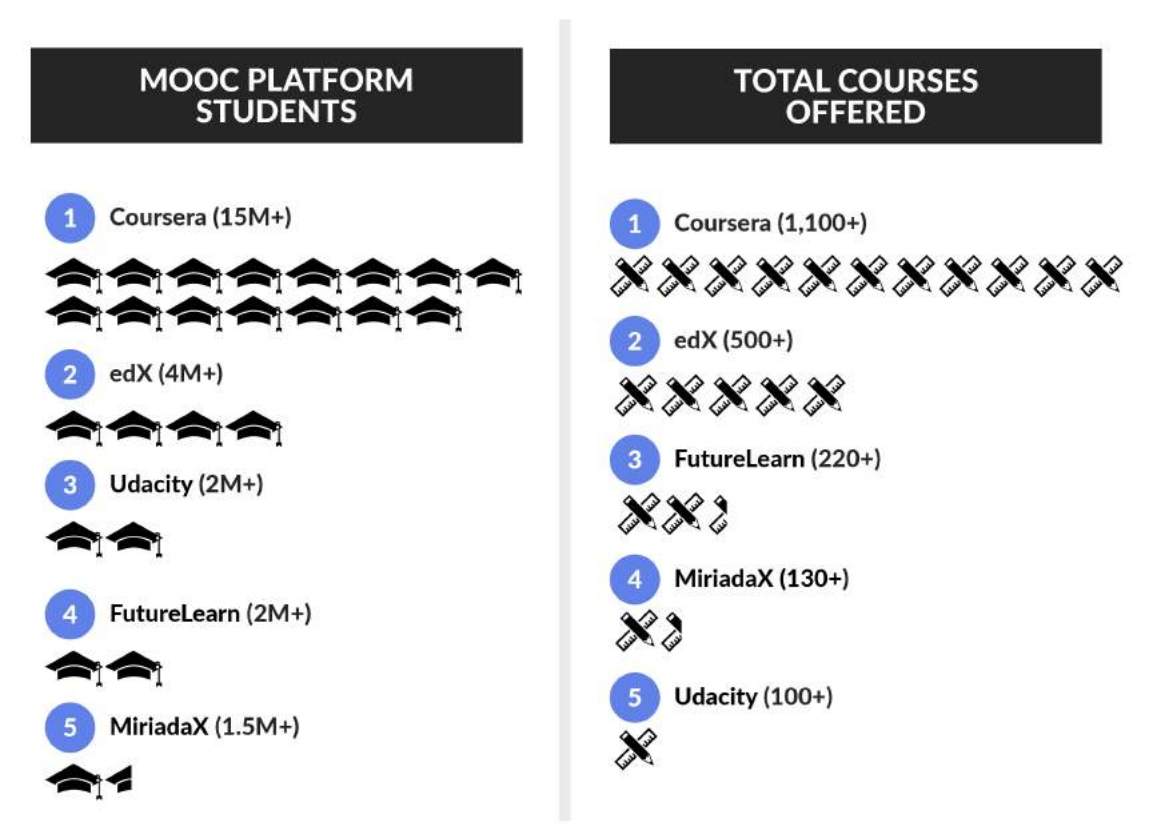
Source: Class-Central

KEY TAKE-AWAYS

In 2011, Stanford Professor, Sebastian Thrun, welcomed the World to take his Artificial Intelligence course. By 2012, the *New York Times* declared that it was the, "Year of the MOOC". The naysayers piled on just as quickly, calling MOOCs a fad, citing low completion rates and questioning how "free" courses could ever make money. Despite the headlines, MOOCs kept growing… fast. By 2015, over 18 million students registered for MOOCs, taking more than 2,300 courses from 400+ universities.

Universities continued to partner with MOOC providers to offer free courses to students around the globe, surpassing 400 in 2015. Among the ranks were elite universities, including Stanford, Yale, and Harvard, large research institutions, including the Universities of North Carolina and Illinois, as well as global schools, such as Peking University, the Moscow Institute of Physics & Technology, and Hebrew University.

TOP MOOC PLATFORMS BY STUDENTS AND COURSES



Source: GSV Asset Management, Class Central, Coursera, edX

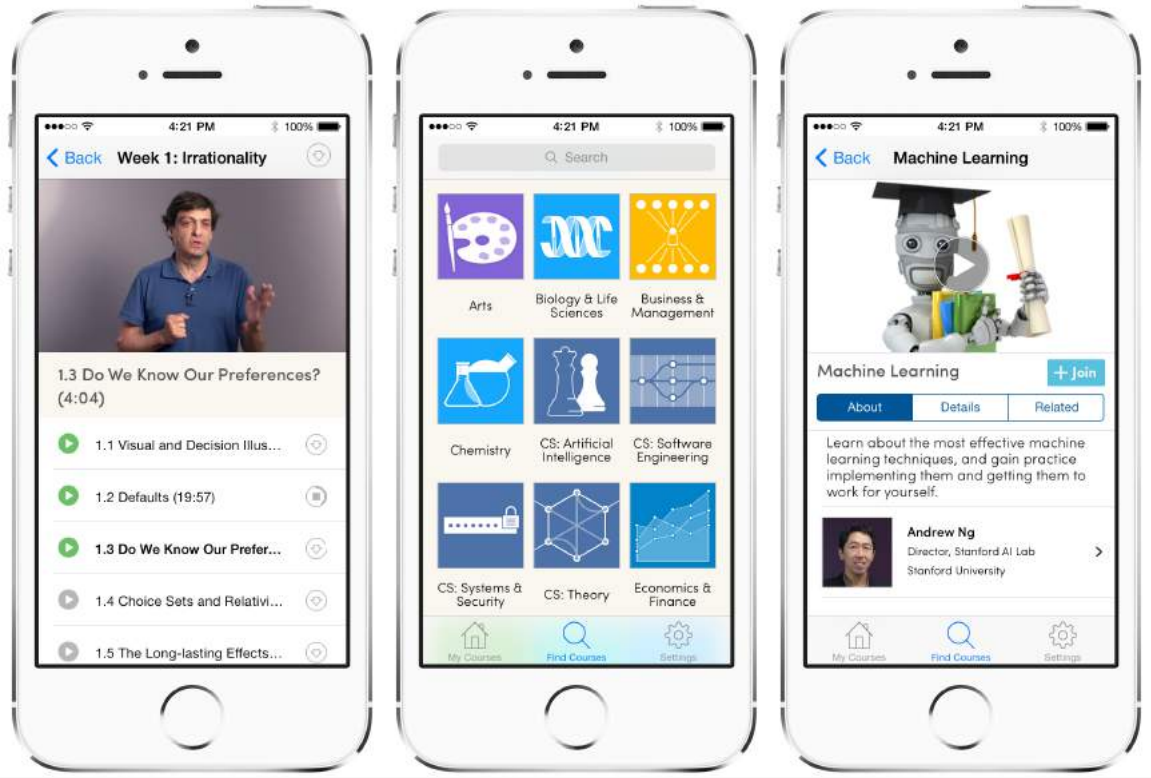
In 2014, Coursera had a particularly transformative year adding CEO **Rick Levin**, who joined after serving as the highly respected President of Yale University for nearly 20 years. The company hit the 10 million user mark in November 2014, becoming the first MOOC to do so.

While it took 9 months to achieve its first $1 million of revenue from courses, Coursera surged past $1 million of revenue per month in 2014. Additionally, Coursera launched *Specializations* — groupings of related courses — that enabled students to gain deep expertise in a given field of study.

By July 2015, Coursera offered more than 1,100 courses to over 15 million students, up from over 530 courses and 5 million students a year earlier. Growth was driven by a rapidly expanding value proposition, from increased course

inventory — including “on-demand” courses — to design enhancements emphasizing an improved mobile experience for iOS, Android, and Amazon devices. Coursera even announced a partnership with **JetBlue** whereby passengers could access courses on the airline’s in-flight entertainment system.

MOBILE LEARNING WITH COURSERA



Source: TheNextWeb

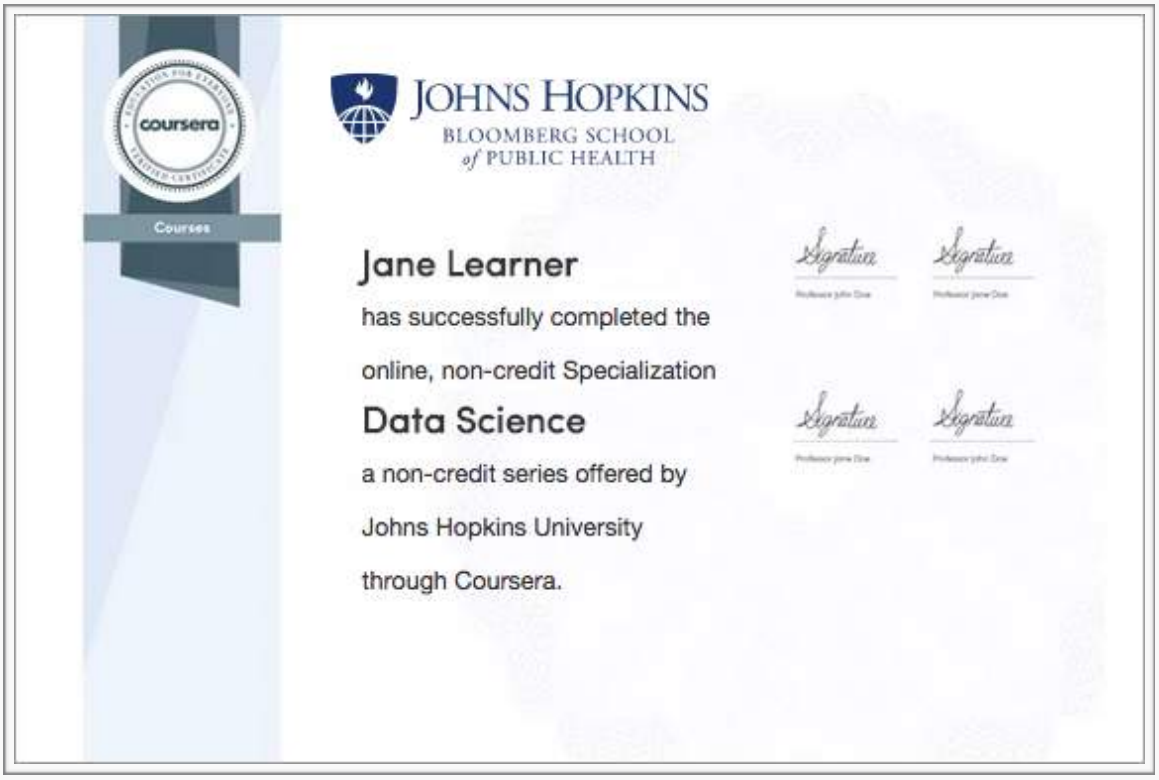
BUSINESS MODELS

As supply and demand for MOOCs grew, business models evolved. The largest MOOC providers zeroed in on low-cost credentialing, charging students as little as $50 to verify their mastery of skills taught by an individual course or sequence of courses. Coursera (*Specializations*), EdX (*XSeries + ASU Global Freshmen Academy*), and Udacity (*Nanodegrees*) all launched and refined variations of the model.

By 2015, Coursera offered 30 Specializations, ranging from Business Foundations (developed with the of the University of Pennsylvania Wharton School) to Data

Science (developed with Johns Hopkins University). Between April, 2014 and February 2015, Johns Hopkins awarded over 71,000 verified certificates for Data Science courses, despite an on-campus enrollment of just 21,000. In fact, the certificate became so popular that by 2015, the Coursera + Johns Hopkins offering was the second result on a generic Google search for "Data Science".

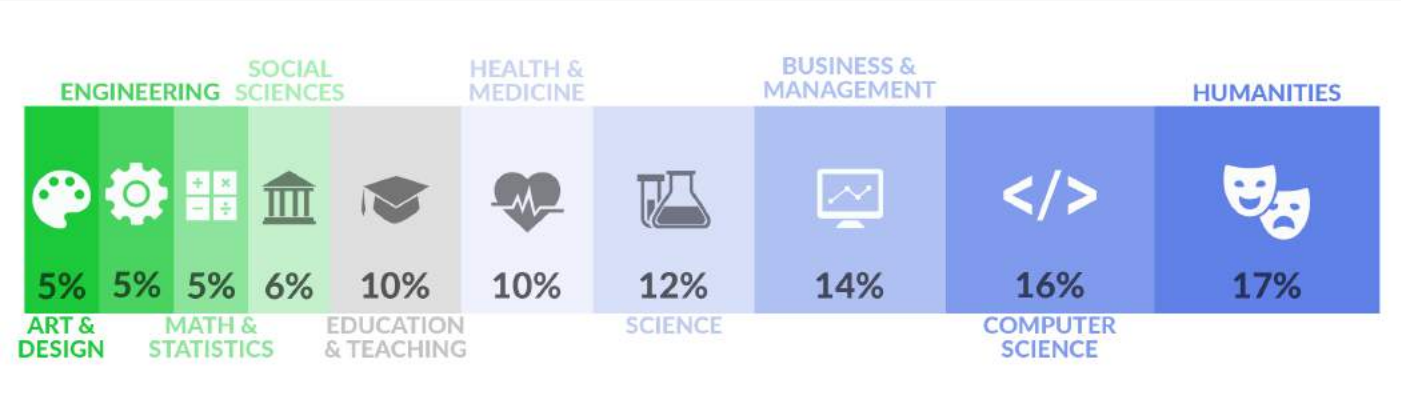
MOOC CREDENTIAL: JOHNS HOPKINS DATA SCIENCE



Source: Coursera

Beyond credential monetization, Coursera began partnering with companies like **Yahoo**, **MasterCard**, and **GE** to use MOOCs for low-cost, high quality corporate training and new hire on-boarding. In a similar spirit, Coursera partnered with governments (e.g. Trinidad and Tobago), foundations (e.g. Carlos Slim Foundation in Mexico), and other organizations (e.g. U.S. Department of Commerce, 500 Startups) to make courses and certificates available to their constituents.

TOP MOOCS BY SUBJECT AREA



Source: GSV Asset Management, Class Central, Coursera, edX

Later, Coursera launched the *Global Skills Initiative* (GSI), a program to build deeper relationships between industry and education. **BNY Mellon**, **Cisco**, **Microsoft**, **Qualcomm**, **Splunk**, and **UBS**, all provided funding and content expertise to produce online courses in fields like data science, computer programming, and finance.

Coursera also partnered with a variety of companies — including **Google**, **Instagram**, and **Shazam** — to create "capstone projects" at the culmination of courses that required students to apply their new skills in real-World exercises.

Thinking about the Super Bowl example, we saw a World where top quality universities would continue to thrive, providing high quality, high cost education for a relatively small number of students — the "fans who get to attend the game". A vastly larger audience would also get to watch the game, but it wouldn't cost them anything beyond watching a few commercials… nobody complains.

In fact, Super Bowl ads are now a "spectator sport" in their own right. Other supplementary programs can be built off of the main program too, creating additional value and engagement.



COURSERA: The World's Education Platform

Coursera is capitalizing on the convergence of increasing global education demand with new technology fundamentals that enable people to learn anytime, anywhere. We believe Coursera will be the leading platform for online learning, creating high quality, affordable learning opportunities in partnership with the World's leading academic institutions.

FOUNDED: 2012
HEADQUARTERS: Mountain View, CA
INVESTORS: GSV, KPCB, NEA, International Finance Corporation (IFC), Laureate Education, Learn Capital, Yuri Milner, Times of India
CAPITAL RAISED: $145+ million



Daphne Koller
Co-founder + President

Scale

In 2012, Coursera was effectively and idea. By 2014, Coursera offered 530 courses to over five million students. Today, Coursera reaches more than 15 million students with 1,100 courses. It is being propelled by powerful network effects. A bigger audience means that Coursera can more easily curate premier education content from universities and employers, which in turn attracts more learners.



Andrew Ng
Co-founder + Chairman
Chief Scientist, Baidu



Rick Levin
Chief Executive Officer
Former President, Yale

Monetize

Coursera's revenue flywheel began to spin with the launch of fee-based certification for course completion for as little as $50. *Specializations* — groupings of related courses focusing on high-demand skills — have added further momentum. While it took 9 months to achieve its first $1 million of revenue from courses, Coursera surged past $1 million of revenue per month in 2014.



Lila Ibrahim
Chief Business Officer
Former Partner, KPCB



Kurt Apen
Chief Marketing Officer
Former VP Marketing, Disney

Mobile

Coursera continues to expand access and reduce barriers to adoption with an emphasis on mobile learning. Courses are accessible on iOS, Android, and Amazon devices and users can watch short, modular lessons on demand. Content can be streamed or downloaded for offline viewing. Anytime, anywhere learning is becoming a reality.



Tom Willerer
Chief Product Officer
Forner VP Product, Netflix



Amber Saloner Tennant
VP of Operations
Former Director User Ops, Facebook

Expand + Improve

Coursera's powerful scale is unlocking a variety of new revenue opportunities. Beyond credential monetization, Coursera is providing curated courses to companies including MasterCard and GE for low-cost, high quality corporate training. It has also launched the Global Skills Initiative (GSI), a program engaging companies like Cisco and Microsoft to fund the creation of industry-aligned courses, further strengthening Coursera's offering. The next wave of opportunity will be complimentary learning and career "apps" that enhance Coursera's core value proposition and create deeper engagement.



Julia Stiglitz
Director of Business Development + International

Despite their scale, growth, and emerging business models, a chorus of MOOC naysayers questioned how an education business could be profitable if its basic offering was "free". Obviously, this analysis was unencumbered by observations of models such as **Google**, **Facebook**, and **Dropbox**, which were all "free". We saw numerous ways MOOCs would be able to monetize their large, engaged, and growing networks. You just had to think differently.

MOOC BUSINESS MODELS COME OF AGE

Apps to Monetize the Network



CERTIFICATION

- Fee-based certification of course or course sequence completion
- Portable digital credentials that integrate with networks like LinkedIn



ADVERTISING + SPONSORSHIP

- Targeted product advertisements
- In-course product placement
- Third-party course sponsorship (*e.g. "Brought to you by…"*)



PREMIUM CONTENT

- Fee-based access to premium lectures and course content
- Fee-based access to in-course features (*e.g. Quizzes, Feedback on Work Products, etc.*)
- One-time + monthly subscription monetization models



WHITE LABEL COURSES

- License popular course content for distribution through third-party education platforms
- Create, version + group courses for distribution through third-party education platforms



LEARNING APPS

- Cluster relevant, high-value, third-party educational "apps" around the core learning experience
- On-Demand Tutoring, Writing Skills Development, Peer-to-Peer Study Materials Marketplace, etc.



ENTERPRISE LEARNING SOLUTIONS

- Private learning portals for corporations, curating content that aligns with human capital development strategy
- Create + version content to align with specific company goals and learning objectives



HIGH SCHOOL

- Advanced courses for high school + college credit
- College preparation courses (*e.g. "Learning How to Learn", "Pre-Calculus for College", etc.*)

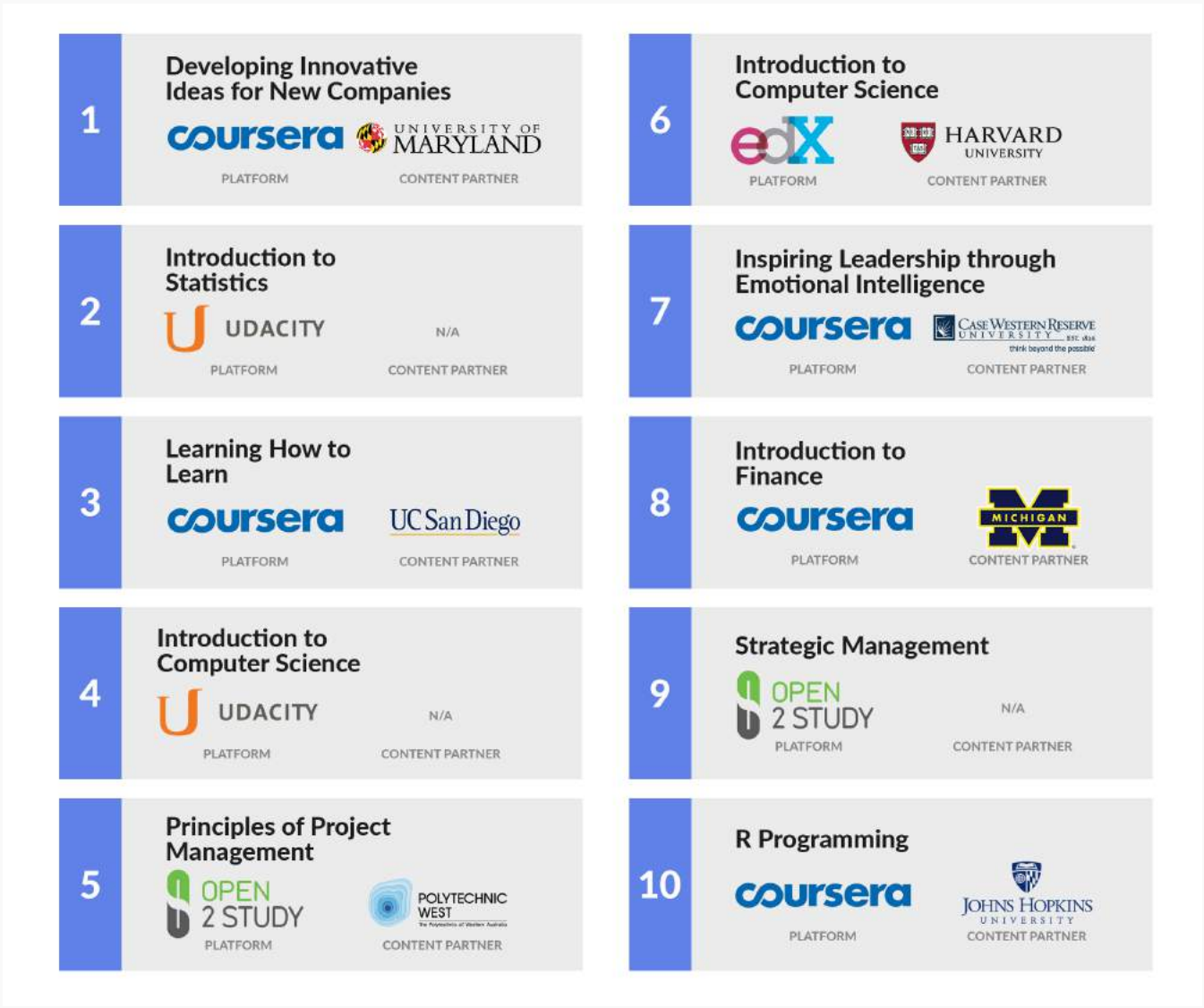


CAREER PLACEMENT + RECRUITING

- Career placement services, including career-aligned learning paths (*course sequences mapped to jobs*), job recommendations, etc.
- Recruitment services connecting curated companies with Coursera users

TOP MOOC COURSES

Coursera Offers Five of the Top Ten Courses



Source: GSV Asset Management, Class Central, Coursera, edX

FREE + FREEMIUM

As we looked for disruptive models to transform education, it was instructive to learn from powerful examples in other sectors. While some people thought that the education industry was unique and isolated, it was our view that there were more similarities than differences in a digital, hyper-connected World.

The Encyclopaedia Britannica was conceived in Scotland in 1768 by a bookseller, Colin Macfarquhar, and an engraver, Andrew Bell. Originally, the two Scots aimed to create a conservative rebuttal to a popular French encyclopedia that many in Europe viewed as heretical. The first edition of Britannica took three years to publish and a second edition followed 13 years later.

Imagination is more important than knowledge.

ALBERT EINSTEIN

Britannica reached its peak in 1990 when the encyclopedia's vaunted door-to-door sales force moved more than 100,000 units at $1,200 each. Imagine the shock if you would have predicted that less than 20 years later a company named **Google** would manage to index all of the World's information and become a verb on its way to a $400+ billion[27] valuation — *all without charging its customers a penny*.

But the dynamics of cost changed radically. In 2015, the idea of Google charging *anything* — even a penny per search — would have been unconscionable to consumers and likely would have destroyed the business.

If **Facebook** had chosen to charge users a dollar per month to use their platform, the *Social Network* movie would have been over before you finished your popcorn. Facebook wouldn't have taken off on Harvard's campus, let alone among 1.5 billion people across the globe.

While Google and Facebook created massive networks that enabled them to monetize troves of data instead of charging users a toll, a derivative of this model began to emerge that fueled a new generation of Billion Dollar Babies: Freemium.

[27] Market value estimate, as of September 2015

Freemium companies provided a basic product or service at no cost to users, instead charging for upgrades to a premium capability set. In 2007, when most of the World thought that the cloud was condensed water in the sky, **Dropbox** founder Drew Houston created a free service that enabled people to store and retrieve digital files from any device at any time.

DROPBOX FOUNDER, DREW HOUSTON



Source: Wired

Everyone had files to store and Dropbox's freemium model gave new customers ample space to do so. But inevitably, people would need more. *We love businesses that are addictive but don't cause cancer.*

Today, Dropbox serves over 400 million users uploading more than 1 billion files per day. Great design and usability, combined with a Freemium model and network effects, turned it into a $10 billion market value business, even though 98 percent of its "customers" didn't pay for the product.

FREEMIUM ALL-STARS

Company	Founded	Description	Market Value
 *Dropbox*	2007	Everyone had files to store and Dropbox's freemium model reached over 400 million users uploading one billion files per day. Dropbox made it easy to start as a free user with ample storage... but people always needed more.	$10 billion
 *Evernote*	2007	A beautiful note-taking experience made Evernote over 100 million friends (aka users). Evernote offered premium services for individuals and businesses, as well as a marketplace to buy integrated productivity apps.	$1 billion
 *LinkedIn*	2002	The freemium professional network counted 300 million members from 200 countries, generating revenues from premium memberships, as well as enterprise talent and marketing solutions.	$25 billion*
 *Skype*	2003	A pioneer of the freemium model, Skype continued to serve as a video conferencing platform for over 100 million active users. Microsoft paid a cool $8.5 billion to acquire the service in 2011.	$8.5 billion**
 *Slack*	2013	A relatively new player in the enterprise collaboration space, Slack reached stratospheric valuation levels with a freemium model that had gone viral among companies large and small.	$2.8 billion
 *Spotify*	2006	The popular music service reached 75 million active users. More than 20 million people opted to pay $10 per month for an ad-free experience. Over 50 percent of paying customers were under the age of 27.	$8.5 billion

Source: Yahoo Finance, Skype, Wall Street Journal
**As of September 2015; **Acquired by Microsoft in 2011 for $8.5 billion*

MOOCs grabbed the early attention for applying the power of "Free" to education. But a variety of compelling Freemium business models began to emerge, quickly reaching scale by leap-frogging purchasing barriers and bureaucracies.

Duolingo created an engaging language learning app that reached 100 million users in three years. Using games to make the experience fun, Duolingo applied real-time data analytics to emphasize concepts where users struggled and skip areas they mastered. Like **Coursera**, the Duolingo app was free to use, but for $20, customers could certify their language skills and import a digital certificate into **LinkedIn**.



DUOLINGO

FOUNDED: 2011

WHAT IT IS

Led by co-founders **Luis von Ahn** (CEO) and **Severin Hacker** (CTO) Duolingo has created a mobile-first, adaptive language learning app that uses games to make the experience fun. It has raced to 100 million users by reimagining a learning experience that has traditionally relied on classroom teaching, private tutors, and boring video exercises.

Headquarters: Pittsburgh, PA

Investors: KPCB, NEA, Google Capital, USV

Capital Raised: $83 million

WHY IT'S A GAME-CHANGER

Mobile: Duolingo has mobile DNA, creating an engaging learning experience designed specifically for smartphones.

Games: The old way to learn languages was in an intensive class, with a tutor, or watching mind-numbing videos. Duolingo's method revolves around a sequence of engaging games that constantly set new learning goals.

Big Data: Duolingo automatically adapts its learning sequence based on real-time data captured from app use. It emphasizes areas where users struggle and skips past concepts that they have mastered.

FREEMIUM EDU

Company	Founded	Description	Mkt. Value
Class Dojo	2011	With 35 million users in over half of U.S. classrooms, ClassDojo's mobile app helped develop and track critical student non-cognitive skills like creativity and academic persistence.	Undisclosed *$10 million raised*
Codecademy	2011	Codeacademy offered free online technology training to over 25 million learners, covering topics from website and app development, to programming and APIs.	Undisclosed *$13 million raised*
Coursera	2012	Coursera partnered with the World's leading academic institutions to produce and deliver free courses through its online learning platform. After rapidly building a base of over 15 million users, Coursera introduced a credentialing service, charging $50+ to validate course completion.	Undisclosed *$85 million raised*
Curious	2012	Curious built a library of over 18,000 hand-curated video lessons and courses, granting limited access at no cost. Users could upgrade for unlimited access and premium features.	Undisclosed *$23 million raised*
Duolingo	2011	Duolingo created a highly engaging free language learning app that counted more than 100 million users and 100,000 teachers. Like Coursera, Duolingo enabled users to certify their language skills for a $20 fee.	$470 million *$83 million raised*
Edmodo	2008	Over 51 million students and teachers used Edmodo's social learning platform to collaborate and share resources. Edmodo monetized its network by offering premium apps for a fee (proprietary + 3rd party), as well as professional services.	Undisclosed *$88 million raised*
Remind	2011	Remind's secure messaging platform was used by 20 percent of U.S. teachers to communicate critical information to students and parents. Though it remained a free app in 2015, Remind planned to charge for premium feature sets and professional services.	$460 million *$60 million raised*
Tynker	2012	Tynker empowered kids to master computational and programming skills by building games and apps in a fun, intuitive environment.	Undisclosed *$3 million raised*

Source: Business Insider, Yahoo Finance, Skype, Wall Street Journal

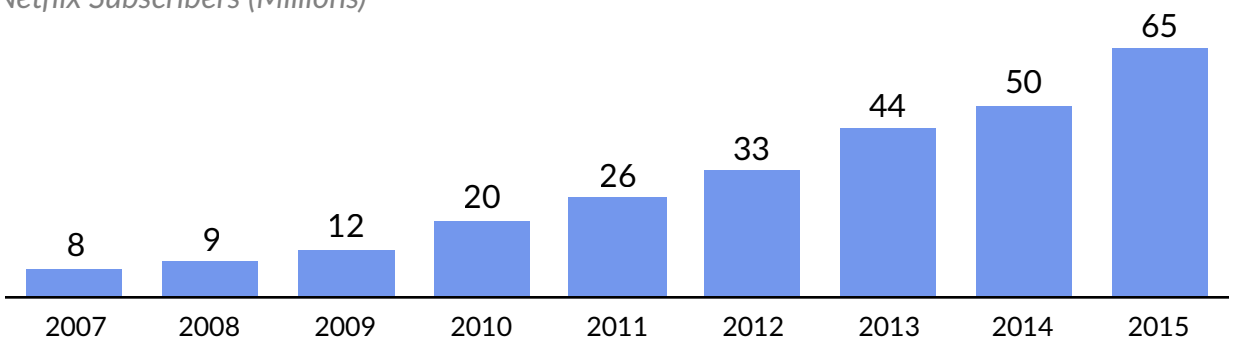
SUBSCRIPTION

Netflix has 65 million subscribers paying $7.99 per month to access virtually all of the media that they can consume. It can afford to spend $100 million to produce a season of *House of Cards* because one million new users cover the production cost. *House of Cards* creates additional value for existing members and it is a meaningful hook to attract the nearly 3 billion people on the Internet that aren't Netflix members.

Whether it's Netflix, or a large Hollywood studio, professional content producers are able to invest tremendous sums into producing blockbusters because the content is distributed to massive audiences and can be repeatedly monetized across platforms.

Netflix Network Growth Unlocks Content Investment

Netflix Subscribers (Millions)



Source: Netflix

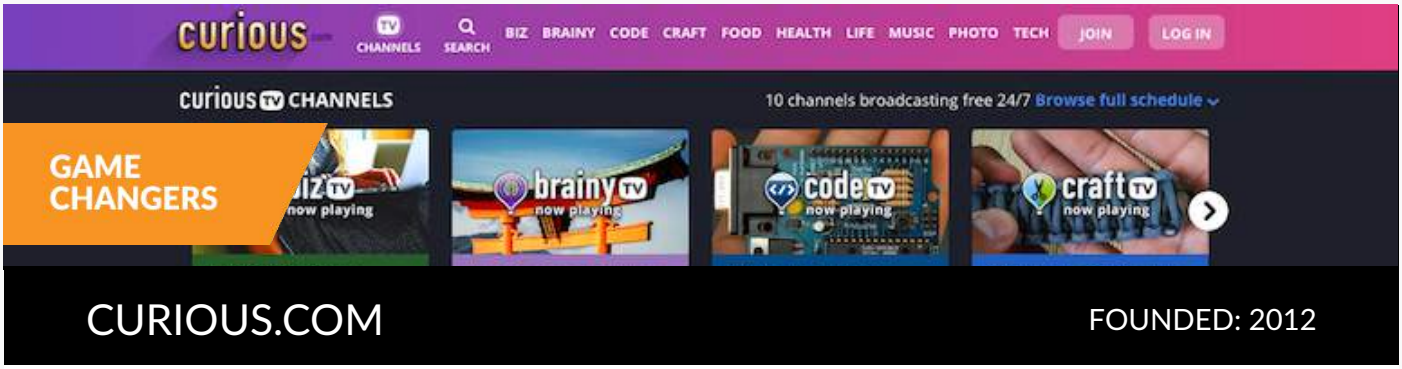
KEY TAKE-AWAYS

Netflix has 65 million subscribers paying $7.99 per month to access virtually all of the media that they can consume. Netflix can afford to spend $100 million to produce a season of *House of Cards* because they only need one million new users to cover the production cost.

In 2015, **Curious.com** launched *CuriousTV*, a freemium service offering a slate of educational channels with thousands of videos grouped into categories such as business, music, crafting, and food. Similar to Netflix, subscribers could pay $8.99

per month for “all-you-can-eat access” to all of the platform’s online content, as well as the ability to stream directly to home TVs through third party distribution partners.

Under the hood, the Curious learning engine was powered by leading cognitive science research which demonstrated that people who stretch their brain for as little as 15 minutes per day are happier, healthier, and more productive. Creating eight core content areas — *Mind/Body*, *Relationships*, *Humanities*, *STEM*, *Aesthetic*, *Music*, *Play*, and *Work* — Curious continuously learned which topics were most important to you and why. Then, it recommended highly engaging, bite-sized “lessons” from a marketplace of 1,500 experts, helping you build out your Personal Knowledge Portfolio every day.



CURIOUS.COM FOUNDED: 2012

WHAT IT IS

Curious co-founder and CEO, **Justin Kitch**, dropped out of graduate school to start his first company. Later, he launched Homestead, which became the World’s largest small business website platform and was acquired by **Intuit** in 2007. Kitch created Curious.com with co-founder **Thai Bui** (COO) to put the lowercase “e” in education. Curious helps people learn anything, from how to play the banjo to basic business skills, through engaging, bite-sized lessons created by experts and mavens.

Headquarters: Menlo Park, CA

Investors: GSV, Redpoint

Capital Raised: $23 million

WHY IT’S A GAME-CHANGER

Curated Content: Curious has identified more than 1,500 experts on topics ranging from how to play guitar, speak French, or master Excel, and built a library of over 18,000 hand-curated video lessons and courses. Emphasizing engaging, short-form content, Curious creates entertaining, on-demand educational experiences for the lifelong learner.

Third-Party Distribution: By launching *CuriousTV*, a streaming service designed for distribution on third-party platforms like **Roku**, Curious is further bridging the gap between education and entertainment, meeting learners on the platforms where they typically consume digital media.

PEER-TO-PEER + MARKETPLACES

The foundation of modern economics is Adam Smith's "invisible hand." As people make economic decisions in their own self interest, it ultimately brings economic benefits to others.

But the rise of modern information technology and ubiquitous mobile computing made the invisible hand a whole lot more collaborative. On any given night, roughly 800,000 travelers who would have typically checked into a hotel were instead using the **Airbnb** marketplace to rent unused houses, apartments, and bedrooms for a better price — and a more unique experience. Millions more were saving time and money by ditching taxis for rides with **Uber** and **Lyft**.

The big change was the availability of more data about people and things, combined with hyper-connectivity, which allowed for physical assets to be disaggregated and consumed as services. Technology reduced transaction costs and created a more efficient customer experience.



We were evolving into a "Sharing Economy." As Airbnb CEO, Brian Chesky observed, anyone could become an entrepreneur in 60 seconds by monetizing their home, their car, or even their spare cash, by selling services through digital Peer-to-Peer Marketplaces. And consumers were paying less than they would if they purchased these services from a traditional provider like a taxi company, hotel, or bank. Innovative companies that capitalized on these new fundamentals were scaling rapidly.

TOP SHARING ECONOMY BUSINESSES BY MARKET VALUE

Company	Founded	Description	Market Value*	Country
Uber	2009	Ride-Sharing/Taxi	$51B	U.S.
Airbnb	2008	Travel/Accommodations	$25B	U.S.
Didi Kuaidi	2012	Ride-Sharing/Taxi	$16B	China
Lending Club	2006	Lending	$5B (NYSE)	U.S.
Etsy	2005	Curated Crafts Marketplace	$1.5B (NASDAQ)	U.S.
Homeaway	2005	Travel/Accommodations	$2.5B (NASDAQ)	U.S.
Lyft	2012	Ride-Sharing/Taxi	$2.5B	U.S.
Ola	2010	Ride-Sharing/Taxi	$5B	India
Instacart	2012	Delivery Service	$2B	U.S.
Prosper	2006	Lending	$2B	U.S.

Source: Wall Street Journal, Forbes, GSV Asset Management
** As of September 2015*

Founded in 2006 by CEO **Andrew Grauer** in his college dorm room, **Course Hero** created a peer-to-peer marketplace for educational resources and expert tutors. Harnessing network effects that have propelled businesses like **Lyft**, **Uber**, and **Airbnb**, Course Hero enabled learners to share and monetize their knowledge. By 2015, Course Hero's platform was home to millions of user-created, crowdsourced notes, study guides, practice tests, and more — tagged to specific courses at high schools and colleges around the World.

Forward March: **Course Hero**

ROE

Course Hero is a peer-to-peer marketplace for educational resources and expert tutors. Harnessing marketplace network effects that have propelled businesses like Lyft, Uber, and Airbnb, Course Hero is aligned with increasing consumer preference for on-demand, digital education resources.

FOUNDED: 2006

HEADQUARTERS: Redwood City, CA

ADOPTION: 5M+ users, 7M+ educational resources (course-specific notes, study guides, and practice tests), 11K+ schools

INVESTORS: GSV, Maveron, SV Angel, Great Oaks Venture Capital, Interplay Ventures, IDG Ventures, Deborah Quazzo (GSV Advisors)

CAPITAL RAISED: $17.4M

MEGATRENDS
BIG DATA, CLOUD, MOBILE, PERSONALIZATION, SOCIAL, KNAAC, ROE

GSV 4Ps ANALYSIS

People

CEO **Andrew Grauer** founded business in Cornell University dorm room to address a market gap in student knowledge sharing.

Product

Online peer-to-peer marketplace for educational resources and expert tutors serving high school and college students.

Predictability

Combined tailwinds of marketplace network effects and customer preference for on-demand + unbundled digital education resources.

Potential

Potential to be the World's leading peer-to-peer education marketplace, unlocking the scale and value demonstrated by comparable models applied to transportation, lodging, and financial services.



Similarly, **Teachers Pay Teachers** (TPT) offered a peer-to-peer marketplace for educators to buy, sell, and share their original lesson plans and course materials. Founded by **Paul Edelman**, a former New York City public school teacher, TPT capitalized on a key fundamental of the education profession — teachers tend to trust their peers. By 2015, the TPT marketplace featured roughly 2 million items for sale. By selling tens of thousands of items on the platform, 12 teachers had become millionaires and nearly 300 earned more than $100,000 per year.



TEACHERS PAY TEACHERS

FOUNDED: 2006

WHAT IT IS

Teachers Pay Teachers (TPT) is a peer-to-peer marketplace for educators to buy, sell, and share their original teaching resources. Founded in 2006 by **Paul Edelman**, a former New York City public school teacher, TPT was acquired by Scholastic the same year. In 2009, Edelman repurchased and spun out the business. Today, TPT is led by former Etsy COO, **Adam Freed**, and it serves over 3 million teachers, generating more than $150 million in payouts to date.

Headquarters: New York, NY

Investors: Spectrum Equity, Tiger Global, True Ventures

Capital Raised: Undisclosed

WHY IT'S A GAME-CHANGER

When it comes to their craft, teachers trust each other more than anyone. In a national survey by *Education Week*, for example, 87 percent of teachers said they trusted other teachers' guidance about Common Core. By contrast, less than two-thirds said they trusted independent panels of experts.

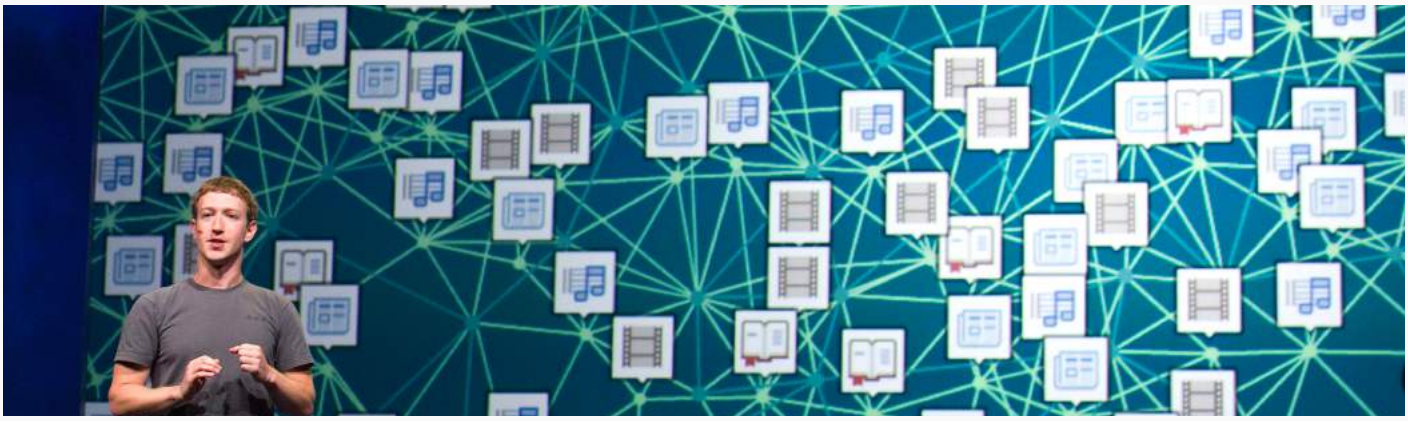
TPT has created a powerful a peer-to-peer marketplace for a community of practitioners that is constantly in need of new teaching materials. There are nearly 2 million education products for sale on the platform listed for and average of $3.50. Twelve teachers have become millionaires using TPT to date and nearly 1,500 teachers earn over $10,000 per year.

TES Global, led by Chairman **Louise Rogers** and CEO **Rob Grimshaw**, expanded on the model by coupling an online marketplace for teacher-generated content (serving over seven million educators around the World) with a suite of adjacent resources for teaching and career management. *Wikispaces*, with over 10 million users, was a wildly popular open classroom management platform that enabled teachers and students to easily communicate and collaborate around key topics and projects. *Blend Space* enabled teachers to efficiently curate, annotate, and share digital content through integrated lessons. Beyond the classroom, TES leveraged its highly engaged network to offer popular job searching, matching, and recruitment resources.

AFFINITY GRAPHS

In a 2007 speech, Mark Zuckerberg, clad in jeans and flip-flops, attributed the power of his company to the "Social Graph," the network of connections and relationships between people on the **Facebook** platform. He said, "It's the reason Facebook works."

MARK ZUCKERBERG INTRODUCES FACEBOOK'S "SOCIAL GRAPH" IN 2011



Source: Bloomberg News

The Social Graph enabled Facebook to develop a new model for distributing information, recommendations, advertisements, and products. Instead of guessing what people wanted, Facebook created a personalized experience for every user based on information gleaned from their network of personal relationships. As

Facebook added more and more people with more and more connections, the power of the platform grew exponentially.

If Facebook was the Social Graph, with the organizing principle centered on your friends and your social life, **LinkedIn** was the *Professional Graph*, organized around your job, your industry, your title and your function. LinkedIn used network effects to optimize talent recruitment, business-to-business marketing, and professional development. Later, **Spotify** and **Pinterest** followed suit, applying the same principles to emerge as the leading *Music* and *Interest Graphs* respectively.

By 2015, **Chegg** had applied the same principles to create the first *Student Graph*. As CEO Dan Rosensweig observed, "If we know where you went to high school, where you applied to college, when you got in, [and] what you are studying, then we can bring you scholarships, help you plan your classes, recommend all your required materials, provide them cheaper than the bookstore, find you an online tutor, and help you begin exploring career opportunities and internships."

CHEGG CEO, DAN ROSENSWEIG
ASU GSV Innovation Summit, 2015



Effectively, Chegg created an ecosystem of apps — a "Connected Learning Platform" — to help students succeed in every aspect of their academic life, from finding the right schools, to succeeding in the classroom, and securing a first internship. Interestingly, Chegg was originally launched in 2005 as a wildly popular

textbook rental marketplace, saving students millions of dollars on new book purchases (Chegg saved students and families over $500 million in 2014 alone). As the textbook industry finally transitioned to digital formats, Chegg strategically evolved its focus to delivering high value apps across the academic lifecycle to its loyal audience.

Forward March: **Chegg**

ROE

Chegg is the Student Hub, a network leveraging the power of community data — a "Student Graph" — to help people learn more, spend less, and find more meaningful opportunities. Providing access to affordable, on-demand education resources and services, Chegg produces measurable positive outcomes for students.

FOUNDED: 2005

ADOPTION: Chegg reaches 50% of college students and 75% of college-bound high school seniors and in 2014 alone saved students and their families more than $500 million in higher education costs.

INVESTORS: GSV, Foundation Capital, Insight Venture Partners, Pinnacle Ventures, Primera Capital, KPCB

MARKET CAP: $732M (2013 IPO)

MEGATRENDS
BIG DATA, CLOUD, FREEMIUM, MOBILE, SOCIAL, KAIZENEDU, KNAAC, ROE

GSV 4Ps ANALYSIS

People

CEO **Dan Rosensweig i**s the former COO of Yahoo and CEO of Guitar Hero.

Product

Chegg is the leading connected learning platform, with on-demand education resources, including Digital Content, Live Online Tutoring, and Job/Internship services.

Predictability

Chegg has built a loyal network of millions of users and paying customers. Network growth is propelled by access to high-quality, low-cost digital learning resources that empower students to learn on their terms.

Potential

Chegg's powerful student network is disrupting old models for cost and access in education. By helping people learn more, spend less, and find opportunities, Chegg is emerging as the central hub for 21st century learning.

Chegg®

By 2015, Chegg's user base included 50 percent of U.S. college students and it reached 75 percent of college-bound high school seniors. To put the company's transformation from textbook rentals into context, in 2012, digital revenue

accounted for less than 15 percent of Chegg's business. By 2017, just five years later, Chegg was projected to generate 100 percent digital revenues. **Netflix** underwent a similar evolution — from physical DVD rentals to digital content — on the way to becoming one of the most important media businesses in the World.

EVOLVING MODELS: CHEGG + NETFLIX





1. CATERPILLAR

1997-2007
Netflix employs a traditional pay-per-rental model for DVDs that evolves into a subscription DVD rental business.

2005-2010
Inspired by Netflix, the founders of Chegg begin a book rental service to help students save on textbook expenses.

2. COCOON

2007-2011
Netflix introduces video on demand as Internet connectivity becomes more robust around the nation to handle high quality video. As a result of this shift in strategy, the company's DVD rental revenue falls from 2006 to 2011. By 2010, Netflix's streaming business has grown so rapidly that it goes from being the fastest growing customer of the U.S. Postal Service to the biggest source of evening Internet traffic in North America. The era of "Binge Watching" has arrived.

2010-2017
Under the leadership of CEO Dan Rosensweig, Chegg aggressively grows and acquires its way into the digital services arena, targeting high school through college students. In early 2015, Chegg announces a deal with Ingram, a leading textbook distributor, that effectively moves Chegg out of the business of owning and distributing physical textbooks (Chegg still markets them on behalf of Ingram and collects a commission on each rental or sale), positioning the company to generate 100% of its revenue from digital services by 2017.

3. BUTTERFLY

2011-2015
Netflix evolves beyond a streaming content subscription service to a content creator, producing wildly popular titles like *House of Cards*. Furthermore, Netflix uses machine learning to generate personalized recommendations for each viewer based on their interests and viewing habits.

2017-2020
Chegg evolves into THE platform for all relevant personalized education services and content for high school and college students around the World.

SOFTWARE AS A SERVICE (SAAS)

2U applied a SaaS model to higher education by partnering with leading universities to deliver online degree programs through a cloud-based platform. Instead of creating and maintaining their own online learning infrastructure, schools that engaged 2U could efficiently set up degree programs, managing the entire lifecycle — from enrollment marketing to course delivery — through a single platform. At any given time, 2U had 502 active faculty teaching over 1,000 course sections, including 1,600 hours of live instruction per week.

Forward March: **2U**

ROE

2U offers a SaaS solution for leading universities to create and deliver high-quality online degree programs, broadening their student base and ensuring predictable outcomes. This value proposition will continue to accelerate as consumers demand affordable postsecondary education options.

FOUNDED: 2008

ADOPTION: 2014 enrollment, revenue and EBITDA outperforms management plan; Average class size of 10.8 and student retention rate of 84%+ meets or exceeds rates at on-campus programs

INVESTORS: GSV, Redpoint Ventures, Highland Capital Partners, Novak Biddle Venture Partners, Bessemer Venture Partners

MARKET CAP: $1.5B (2014 IPO)

MEGATRENDS
BIG DATA, MOBILE, PERSONALIZATION, SOCIAL, KAIZENEDU, KNAAC, ROE

GSV 4Ps ANALYSIS

People

Co-Founder & CEO **Chip Paucek** formerly led Hooked on Phonics. Chief Impact Officer **Jim Shelton** is the former Deputy Secretary and COO of the U.S. Education Department.

Product

Partners with leading universities to deliver online degree programs through a cloud-based, SaaS platform; Provides recruitment, retention and support services.

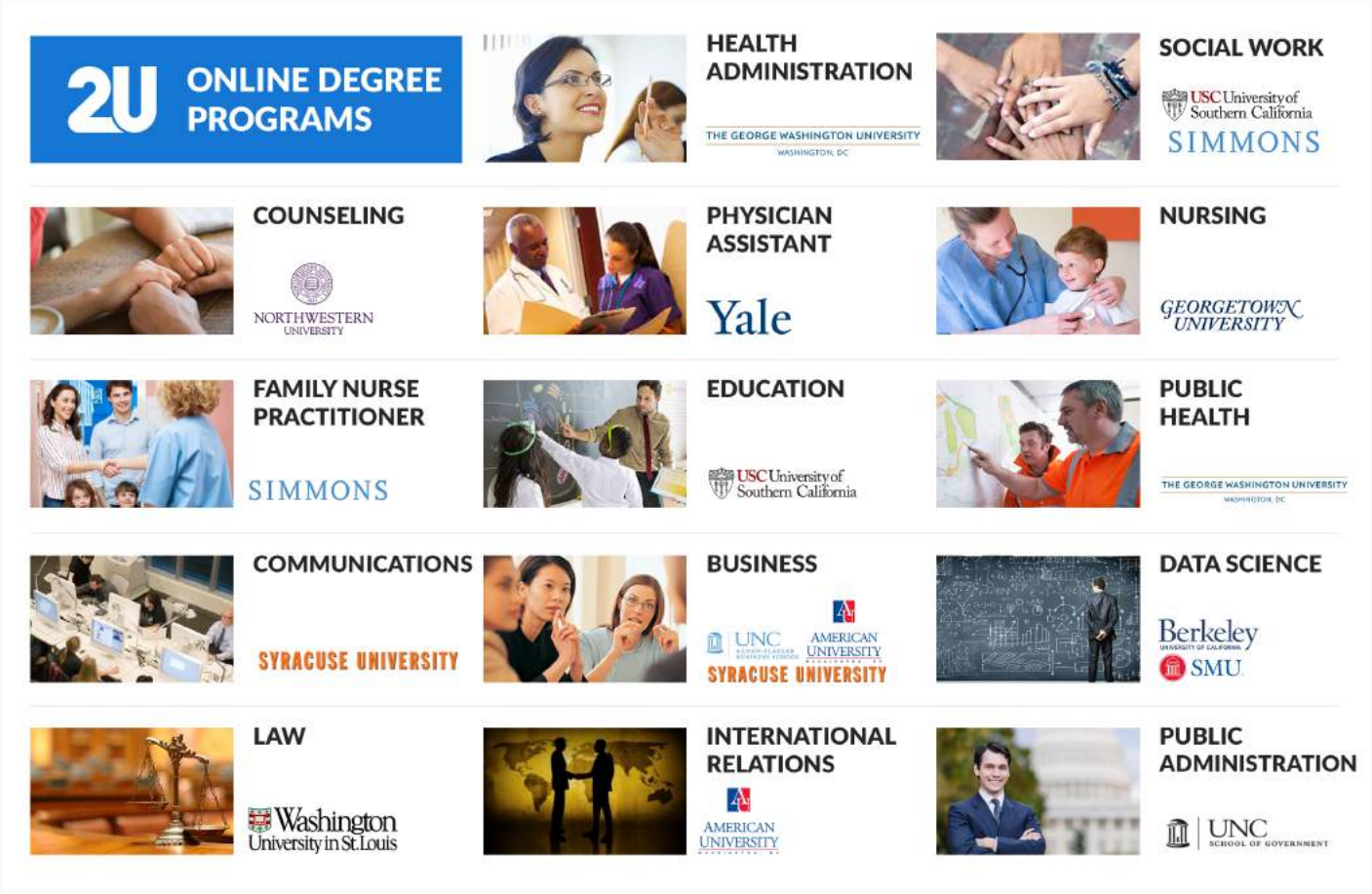
Predictability

Exceptional visibility, driven by long-term revenue-sharing contracts with university partners; Strong revenue backlog based on 18- to 24-month student enrollment cycles.

Potential

2U has created an engaging platform for online degree programs, a value proposition that will continue to surge as cost pressures challenge conventional university operating models.

Additionally, 2U demonstrated the power of investing heavily in education content production quality, and then leveraging the cost over a large audience. 2U developed highly engaging online learning experiences, blending live instruction through their groundbreaking “No Back Row” collaborative learning platform, with highly engaging rich media to animate concepts.



Minerva applied the same principle to create an Ivy League University in the cloud to meet exploding global demand for elite higher education. Whereas the World’s best institutions struggled to scale beyond offering courses through MOOCs and select programs through online platforms, scale was a part of Minerva's DNA. The key, to paraphrase founder and CEO Ben Nelson observed was to, “lose the irrelevant.” Peeling away extraneous costs — from institutional research to fielding a football team — Minerva dialed in on what mattered.

GAME CHANGERS



MINERVA

FOUNDED: 2012

WHAT IT IS

Named for the Roman goddess of wisdom, Minerva is combining superior academic quality, an immersive global experience, and a technology platform designed based on the science of learning to create a scalable Ivy League school in the Cloud.

Headquarters: San Francisco, CA

Investors: Benchmark, ZhenFund, TAL Education

Capital Raised: $95 million

WHY IT'S A GAME-CHANGER

Elite University 2.0: Led by founder and CEO, **Ben Nelson**, the former CEO of the photo-sharing company, Snapfish, Minerva has the potential to address massive global demand for elite higher education by creating an institution that can scale. Students are selected through a rigorous admissions process and are taught by World class faculty. Cost savings (tuition is pegged at $10,000 per year) and reach are achieved by replacing physical infrastructure with courses delivered in a synchronous online format. Further efficiencies are gained by opting for a standard, rigorous curriculum over a sprawling elective course catalog.

Talent Agency: Minerva's curriculum focuses on high-demand 21st century skills, including critical thinking and effective communication. Personal coaches position students for post-graduation success, guiding them through the creation of a career plan, as well as securing jobs and internships.

Conducting classes entirely through a web-based learning platform that connected rigorously-vetted students and World-class professors in a synchronous virtual "classroom," Minerva's $10,000 tuition was a fraction of Ivy League schools at no cost to quality. Instead of offering a costly, sprawling course catalog, Minerva emphasized 21st century skills through a deeply-integrated

curriculum that revolved around critical thinking and effective communication skills.

At the same time, Minerva cultivated a learning experience that was immersive, social, and global. Students lived with classmates in Minerva's international residence halls, rotating through cities like San Francisco, Berlin, and Buenos Aires for each year of their education. Online classes were supplemented with hands-on activities that took advantage of the local landscape — from Minerva-organized museum tours to internships with innovative companies.

What We Did About It

Building on our analysis of "Models that Work", we implemented the following initiatives to create equal access for all Americans to participate in the future.

1. FDA for EDU

IDEA: To both accelerate the creation of innovative new education models, as well as to implement a framework of quality control, we implemented an *Education Efficacy Evaluation* (e3) that drew on a variety of sources to apply ratings to educational products and services. Ratings were driven by Return on Education, or "ROE," creating transparency around real outcomes. Any education provider receiving federal funds needed to meet minimum efficacy thresholds under *e3*.

To form the rankings, we relied on a cross-functional team of expert evaluators (e.g. education leaders, technologists, neuroscientists, advocacy organizations, etc.), as well as feedback and data curated from trusted education intelligence platforms like **Common Sense Media** (*Graphite*), **EdSurge**, and **Noodle**. We integrated findings from "Test Beds" like the **Bill & Melinda Gates Foundation** and **LEAP Innovations** that facilitated and tracked pilot programs between public education institutions and emerging education technology providers.

IMPACT: The result was increased transparency around efficacy, which improved the quality of products that reached students. Companies could win on quality,

not marketing or opaque, unsubstantiated claims about outcomes. At the same time, this "FDA for education" accelerated the time to market for innovative new companies that in the past had often been hamstrung by risk-averse buyers. A "nobody ever got fired for picking IBM" mentality had historically advantaged the safe-choice incumbents, even if their products were less efficacious and engaging than the newcomers.

2. Funding for Innovation Education

IDEA: To encourage further innovation around new models in education, we offered incubators and accelerators the opportunity to become eligible for federal education tuition support if they offered substantial "academic" programming. We prioritized participation from groups like **Imagine K12**, **1776**, **1871**, and **GSVlabs** that offered dedicated programming for EdTech entrepreneurs.

IMPACT: With the opportunity to participate in an accelerator experience on equal footing with other academic programs receiving federal tuition support, more talent was pulled into the mix, particularly for those accelerators that offered EdTech-focused programming. The result was a growing pipeline of new products and services that challenged old assumptions. Because we created an FDA-like program to validate these new offerings, innovation found its way to market faster, to the benefit of students, educators, and families.

MOOC LANDSCAPE

Company	Founded	Capital Raised	Investors	Students	Courses	Universities
Coursera	2011	$145+ million	GSV, KPCB, NEA, Learn Capital, IFC (World Bank), Laureate	15+ million	1,100+	120+
edX	2012	$60 million *non-profit grant*	Harvard, MIT	4+ million	500+	40+
Udacity	2011	$56 million	CRV, A16Z, Bertelsmann	2+ million	100+	Multiple + Corporate Partners
NovoED	2012	$5 million	Stanford, Costanoa Ventures	100K+	75+	17+
France Univ. Numérique	2013	$22 million	Ministry of Higher Education and Research	650K+	100+	50+
Canvas *(Instructure)*	2012	$90 million	OpenView Venture Partners, EPIC Ventures, Bessemer, University Venture Fund	100K+	70+	100+
FutureLearn	2012	$11 million	The Open University	2+ million	220+	51
Iversity	2011	$7 million	WestTech Ventures, T-Venture, bmp media	600K+	60+	41
MiriadaX	2012	Undisclosed	Joint Venture: Telefonica + Banco Santander	1.5+ million	130+	50+

Source: Company Disclosures, Campus Technology, CrunchBase, New York Times, GSV Asset Management

TOP ONLINE PROGRAM MANAGEMENT (OPM) PROVIDERS

Outsourced Online Program Creation + Management for Postsecondary Institutions

Company	Founded	Market Value	Investors
2U	2008	$1.5+ billion*	GSV, Redpoint Ventures, Highland Capital Partners, Novak Biddle, Bessemer Venture Partners
Academic Partnerships	2007	Undisclosed	Insight Venture Partners
Bisk	1971	Undisclosed	Undisclosed
Colloquy *Kaplan*	2008	N/A *Division of Kaplan*	N/A
Deltak *Wiley*	1997	N/A *Acquired by Wiley in 2012 for $220 million*	Frontenac, Salt Creek Ventures
Embanet *Pearson*	1995	N/A *Acquired by Pearson in 2012 for $650 million*	TCV,Knowledge Universe Education
Everspring	2011	Undisclosed *$26+ million raised to date*	Carrick Capital Partners, Park Loop, Accretive
HotChalk	2004	$500+ million *$15+ million raised to date*	McGraw-Hill Education, NBC News, Peacock Equity Fund, Mohr Davidow Ventures
Learning House	2001	Undisclosed *Acquired by Weld North in 2011*	Weld North
Qubed	2012	Undisclosed	University Ventures
Synergis Education	2011	Undisclosed *$38 million raised to date*	Bertelsmann, University Ventures

*Source: Company Disclosures, CrunchBase, Forbes; *As of September 2015*

GAME CHANGERS

HotChalk

People + Services + Technology = Success

HOTCHALK

FOUNDED: 2004

WHAT IT IS

HotChalk founder and CEO, **Edward Fields**, has education in his DNA. His father chaired the Molecular Genetics program at Harvard and his mother taught art courses at the School of the Museum of Fine Arts in Boston. Fields created HotChalk, a turn-key platform for nonprofit universities to create online programs, to expand global access to high quality education opportunities.

Headquarters: Campbell, CA

Investors: McGraw-Hill Education, NBC News, Peacock Equity Fund, Mohr Davidow Ventures, Deborah Quazzo (GSV Advisors)

Capital Raised: $15+ million

WHY IT'S A GAME-CHANGER

The HotChalk platform applies operational efficiency, network scale, and user-centric design to create online postsecondary programs rooted in the pedagogical excellence of non-profit higher education institutions. HotChalk serves over 13,000 students through six university partners and is the largest online platform powering the delivery of Master's degrees to qualified teachers.

For Students: Broad marketplace of affordable, high-quality online Master's degree programs across disciplines valued by employers.

For Universities: Online program design and delivery expertise — from student recruitment to course creation — using data science to identify and enroll prospective students, optimize their learning experience, and ensure their success.

Edison Schools Family



A major catalyst in rapidly-expanding industries has been the successful spawning from parent enterprise to multiple offspring. An example of this, the Paypal "mafia" has become notorious for its involvement in many of the new big idea companies that are reshaping Silicon Valley, including Facebook, Palantir, Tesla, SpaceX, LinkedIn and many more.

Godfather: Chris Whittle

Co-Founder, Edison Schools; Co-Founder, Avenues: The World School

Chris Cerf CEO	Amplify insight.	Dr. Leroy D. Nunery II Founder & Principal	PLŪS ULTRÉ LLC
Justin Cohen Former President	Mass Insight EDUCATION	Joel Rose Co-Founder & CEO	New Classrooms™ Innovation Partners for Learning
Kathy Hamel Partner	Charter School Growth Fund	Jim Shelton Former Deputy Secretary of Education; Investor & Entrepreneur	Department of Education, United States of America
Deborah Kenny Founder & CEO	Harlem Village Academies	Adam Tucker Senior Program Officer	Bill & Melinda Gates foundation
Deborah McGriff Managing Director	newschools venture fund	Gene Wade Founder & Chairman	UNIVERSITYNOW
Richard Barth CEO	KIPP	Anthony Kim Founder & CEO	Education Elements

FOREFATHERS

PIONEERS IN EDUCATION INNOVATION



"American higher education cannot assume that its competitive position in the World is unassailable."

Michael Crow

President, Arizona State University

Michael Crow is a disruptor, challenging the norms of higher education with the concept of the "New American University". In what Newsweek called "one of the most radical redesigns in higher education," Crow has transformed Arizona State University into a research powerhouse, whose 70,000 face-to-face students on five urban campuses are supplemented with 13,000 online students. ASU now offers over 70 degrees that can be earned entirely online, and Crow continues in his efforts to technologically empower the school's approaches to learning.

Mike Feinberg + Dave Levin

Co-Founders, KIPP

Mike Feinberg and Dave Levin are the founders of the Knowledge is Power Program, or KIPP, which has redefined what is possible for a classroom of public school students. KIPP schools offer longer school days, weeks and years, more focused instruction time, and a strong emphasis on college-readiness. Now a national network of 162 tuition-free, open-enrollment, college-preparatory schools, serving 59,000 students, KIPP has made enormous strides in closing the achievement gap in low income communities.



"It's up to us to change that one word — can — to will. Yes we can build a better tomorrow, so now we will build a better tomorrow."



"Technology now gives us the means to extend the reach of high quality education around the World and to provide millions of people with access to learning and opportunities for advancement."

Rick Levin

Former President, Yale University; CEO, Coursera

After completing a twenty-year term as Yale University's president, Rick Levin became the CEO of Coursera in 2014. While at Yale, he led a number of initiatives including strengthening the university's programs in science, engineering and medicine, improving Yale's international relationships and open knowledge sharing, and launching a visionary foray into online education. He has contributed a strong strategic voice in how technology can be used to educate people at scale, and is reimagining how people will teach and learn in the Global Knowledge Economy.

Michael Bloomberg

Founder & CEO, Bloomberg; Former Mayor, New York City

During his terms as Mayor of New York City, Michael Bloomberg made education reform the focal point of his agenda. Bloomberg replaced the school board set up by the state with direct mayoral control over public education. He raised the salaries of teachers by fifteen percent, and the saw the test scores of students in the city and the graduation rates rise as well.



"The most important lesson we've learned is that progress is possible. As far as we've come, the work is not over."



6

THE MARCH

Strength through Diversity

We focused on critical leverage points in our talent pipeline to ensure that entrepreneurs, investors, business executives, and government leaders actually looked like the diverse population of the United States.

Problem

Women and people of color were underrepresented in key roles across every industry. Beyond the blatant lack of equity, our diversity gap posed a material risk to our democracy and position as a leader in global innovation. Entrepreneurs from underrepresented populations are more likely to tackle society's BIG problems, instead of inventing the next food delivery app. Countries with more diversity in critical industries and leadership roles are more adaptable, innovative, and resilient.

MODELS THAT WORK

- **High-Value Skills + Mentorship**: Immersive learning programs that engage young, diverse audiences around 21st century career skills, as well as employment and leadership opportunities *(e.g. Black Girls Code, NFTE, Girls Who Code, Code2040, Hackbright Academy, ReBoot)*
- **Corporate Innovation**: Dedicated, expert-led corporate programs that eliminate hiring bias and use technology + media to cultivate a diverse talent pipeline *(e.g. Google CS First, Intel 2020)*
- **Purpose Networks**: Powerful "Purpose Networks" that connect underrepresented groups around career advancement. *(e.g. Ellevate, The Surge Fellowship, ASU GSV Ladies Lunch, Platform)*
- **Investments as a Lever**: Investment vehicles that back businesses with diverse founders and teams *(e.g. Camelback Ventures, Kapor Capital, Pax Ellevate)*

SOLUTION

1. **Coding Camps in a Box**: Partner with leading technology companies to fund + resource programs teaching key STEM, technology, and innovation skills to young people
2. **Level the Playing Field with 21st Century Skills**: Collaborate with education providers focused on 21st century skills + job placement to reach broader populations in underrepresented communities
3. **Cultivate a Diverse Population of School Leaders**: Replicate + scale the **Surge Institute's** *Surge Fellowship* model to accelerate the development of diverse K-12 and postsecondary school leaders

By the Numbers: Diversity

Fundamentals	2015
U.S. White Population	63%
U.S. African American Population	13%
U.S. Hispanic Population	17%
U.S. Population Male/Female	49% / 51%
Minority (Non-White) Fortune 500 CEOs	5%
Minority (Non-White) Fortune 500 Board Members	13%
Female Fortune 500 CEOs	5%
Female Fortune 500 Board Members	17%
African American + Latino K-12 Students	48%
African American + Latino K-12 Teachers	14%
African American + Latino K-12 Principals / Superintendents	17% / 6%
African American + Hispanic Tech Workforce, Silicon Valley	10%
Female Tech Workforce, Silicon Valley	23%
New Businesses Started by Women	65%
Venture Capital Funding Secured by Women	8%
Venture Capital Funding Secured by African Americans	1%
White, Male Venture Capitalists	76%
Female U.S. Representatives	19%
Female U.S. Senators	20%
Minority (Non-White) U.S. Representatives	21%
Minority (Non-White) U.S. Senators	6%

Source: Forbes, Harvard Business Review, PewResearchCenter

My favorite eleven football players of all time are: Joe Montana, Joe Namath, Joe Kapp, Johnny Unitas, Fran Tarkenton, Dan Marino, Brett Favre, Steve Young, Roger Staubach, John Elway, and Kenny Stabler.

If they were to play my favorite College Football TEAM, the Minnesota Golden Gophers, they would get *crushed*.

Yes, part of the reason is that fortune doesn't typically favor old guys competing against athletes who are fit as fiddles. BUT, even if my guys were in their prime, the score would be 100 to 0.

What's wrong with my Hall of Famers? They are all QBs. So unless they could morph bodies, learn how to block, snap, run, catch, punt, rush, kick and defend — to name a few fundamentals — they would get beaten worse than Nebraska beat my Gopher squad 84-13 in 1983, when the Cornhuskers won a National Championship.

To win games, you need to put the best talent on the field. But that comes from players with different skills, different backgrounds, and different body types. Even my Gophers would be in trouble if they didn't recruit players with diverse abilities. As my coach Lou Holtz used to say, "The heart and soul needs to come from Minnesota… But the arms and legs need to come from somewhere else."

Corporate America and Government have long been dominated by a bunch of white quarterbacks. Many went to the same schools, were in the same fraternities, dated the same people, and essentially had the same background. Group think was a normal behavior pattern when things were easy and especially when things got tough.

In 1970, women accounted for less than five percent of the major orchestras in the United States. The explanation was that men were just better musicians than women. Interestingly, when the "Blind Audition" process was implemented, women's representation in the top 15 orchestras shot up to 35 percent by 2010.

The main reason it's not higher is that many women are pushed away from certain instruments when they are younger — such as the tuba, trombone, trumpet and bass — because they aren't "ladylike." The concept of "Blind Auditions," where opportunity is determined by ability, skill, work ethic, and grit, is how we create a fair system that optimizes our human capital as a society.

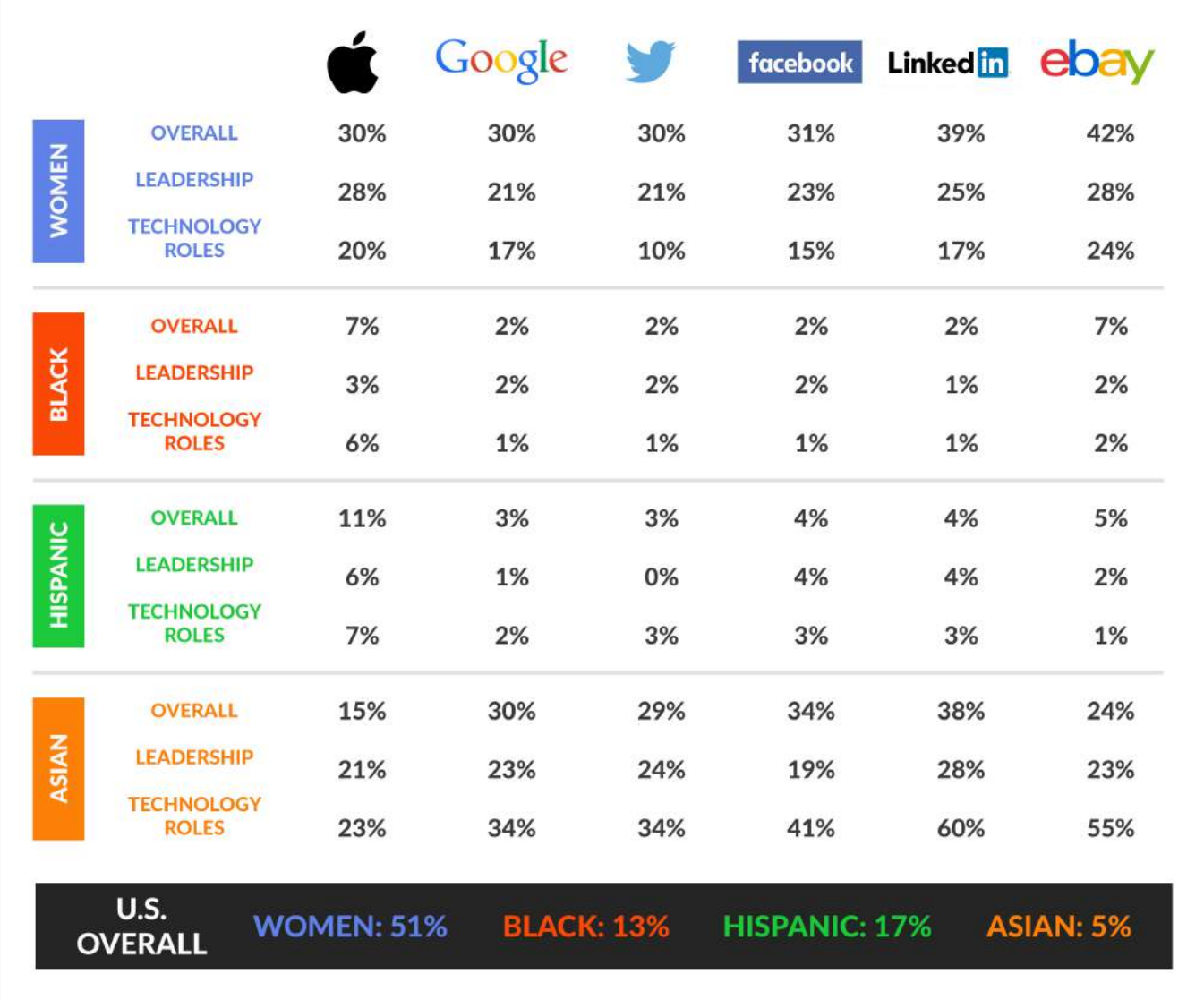
Problem

In Silicon Valley, up is often down. As computers become more powerful, their prices drop. "Free" products like **Dropbox**, **Facebook**, and **Google** create billions of dollars in revenue and market value. "Failing" is succeeding — "Failing Fast" is even better. As Vinod Khosla has remarked, "I've probably failed more often than anybody else in Silicon Valley. Those don't matter. I don't remember the failures. You remember the big successes." But when it comes to diversity in America's Mecca of innovation, down is still down and failure is still failure.

While immigrants were founders of nearly 50 percent of the start-ups in Silicon Valley, most were Chinese or Indian men. In fact, over 70 percent of the employees at tech titans like Google, Facebook, and **Twitter** were men. **LinkedIn's** mission is to, "Connect the World's professionals to make them more productive and successful," but African Americans and Hispanics make up just six percent of their team *combined*.

While women created businesses at *twice* the rate of men in the United States, they captured less than *eight percent* of VC funding. Just *one percent* went to African Americans. Maybe not surprisingly, given this data, 76 percent of Venture Capitalists were white men.

DIVERSITY AT LEADING TECHNOLOGY FIRMS



Source: Gigaom, Company Diversity Reports

The picture was equally bleak in the broader market. Just five CEOs of Fortune 500 companies were African American and only 25 were women. Add up the salaries of the top five employees at every Fortune 500 company, and women took home just eight percent of the pie. Minorities represented just seven percent of law firm partnerships and 12 percent of the nation's 38,000 journalists.[28]

[28] *PewResearchCenter*, "Little Change in Share of Minority Employment at Newspapers" (2014)

SILICON VALLEY DIVERSITY DISCONNECT

The More Things Change, The More They Stay The Same…

THEN



In 1957, eight promising young engineers quit their jobs at Shockley Semiconductor Laboratory to found Fairchild Semiconductor. Labeled the "Traitorous Eight," two of those men, Gordon Moore and Robert Noyce, would go on to found **Intel**. Another, Eugene Kleiner, would become one of the original founders of venture capital firm **Kleiner Perkins Caufield & Byers**. Fairchild Semiconductor would spawn more than 30 Silicon Valley companies.

NOW



Still a man's World, in 2015 Silicon Valley swapped slacks for sweatshirts. Over 70 percent of the employees at **Apple**, **Google**, and **Twitter** were men. Despite accounting for 30 percent of the U.S. population, Black and Hispanic Americans filled less than 5 percent of the management and technology roles at Silicon Valley companies. While immigrants founded nearly 50 percent of technology start-ups, most were Chinese or Indian men.

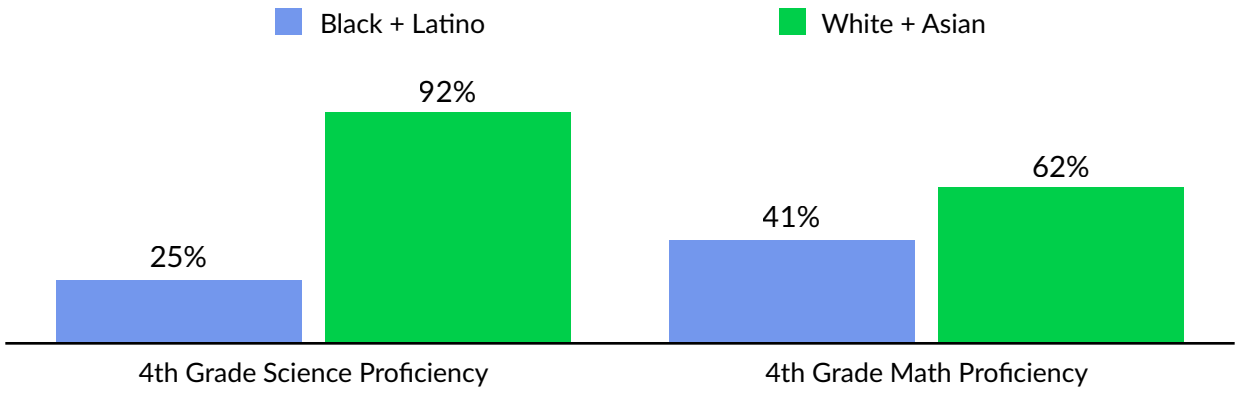
LEAKY TALENT PIPELINE

Examining our talent pipeline revealed a diversity gap that opened up early and persisted for life. Consider the path to a career in the technology sector, which was among the fastest growing industries in the U.S. economy and was projected to create 1.4 million new jobs by 2020.

A strong foundation in Math and Science was a non-negotiable to thrive in the innovation economy, and skills developed in middle school were the basis for honing competencies later in life. But by the fourth grade, Black and Latino students were on the outside looking in, a trend that held constant through the end of elementary school.

Elementary School: Math and Science Achievement Gap

By the 4th Grade, the Math and Science Proficiency Rate of White and Asian Students is 3x Higher than that of their Black and Latino Peers



Source: NAEP, CODE2040

By high school, the path to participate in the Global Silicon Valley was effectively coming to an end for many. White and Asian students were over 4x more likely to take AP Math and Science exams and 6x more likely to take the AP Computer Science exam than their Black and Latino peers.

But the problem was much broader than lagging participation in AP courses. Black and Latino students were far less likely to graduate from high school at all. And when they did, they consistently scored lower on college entrance exams like the ACT and SAT that determined access to the best higher education opportunities.

THE DECK IS STACKED AGAINST BLACK + LATINO STUDENTS

Median ACT and SAT Score + Graduation Rate by Race, 2014

Race	ACT	SAT*	HS Graduation Rate
Asian	24	1651	93%
White	22	1576	85%
Hispanic	19	1352	76%
African American	17	1278	68%

Source: ACT, College Board, NCES

Ultimately, a clear cycle emerged where Black and Latino students — as well as students from low-income families — were systematically being locked out of the best colleges and careers.

- 75 percent of students enrolled in the 200 most selective colleges came from top quartile income families. *Just 5 percent of students came from the bottom quartile*.
- 80 percent of white students attended top 500 colleges, while 75 percent of African Americans attended schools ranked *outside* of the top 500.[29]
- Only 41 percent of students from low-income families graduated from college in four years, compared to over 66 percent of students from high income families.
- Over 77 percent of students from top quartile income families graduated from college, *compared to just 9 percent of students from the bottom*.[30]

The leaky talent pipeline was compounded by biases, both blatant and hidden, from the classroom to the board room. While Black and Latino students captured 18 percent of Computer Science degrees, for example, they made up only 9 percent of the technology industry workforce.[31]

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[29] *New York Times*, "Class, Cost and College", 2014

[30] *University of Pennsylvania Alliance for Higher Education and Democracy and the Pell Institute*, "Indicators of Higher Education Equity in the United States", 2015

[31] CODE2040

SYSTEMIC RISK

Despite the shock factor of dismal diversity numbers in the workforce, many dismissed the data as a lagging indicator, looking upstream to K-12 and college for solutions. But these challenged fundamentals posed a material risk to our economy *near term*.

According to McKinsey, businesses with better diversity are quantifiably more successful, with returns that consistently beat peers by over 40 percent. Diverse companies have lower volatility, lower risk, and superior execution. When stacked against more experienced management teams with a successful track record, diverse leadership teams almost always outperform.

Any business today that embraces the status quo as an operating principle is going to be on a death march.

HOWARD SCHULTZ

Diversity deprivation was also starving our innovation economy. Companies in the Silicon Valley Hall of Fame all have a common success story. Extraordinary entrepreneurs saw big problems and invented new technologies to solve them. Invention was born from life experience. In this sense, the lack of diversity was a signal that in communities across the country, the BIG ideas we needed most were dying on the vine.

Diverse communities offer diverse skill sets and perspectives, which is critical to solving complicated problems or developing compelling new ideas. History has treated diverse cultures more kindly, particularly in moments of profound change. During the Industrial Revolution, multi-ethnic countries in Western Europe adopted new technologies more readily than those from less diverse regions in

Eastern Europe and Asia. The historian, Max Weber, famously attributed England's rapid rise during this period to the "Protestant Ethic."

But "Protestant Assimilation" might have been a better descriptor. There were Protestants all over Europe at the time — they just happened to migrate to England by the thousands 100 years before the Industrial Revolution and assimilate. These are lessons to be heeded as we enter an age of digital disruption.

Models that Work

FOUNDATIONAL SKILLS

A key legacy of the Civil Rights and Women's Rights Movements is that they unleashed an enormous pool of talent into the American economy. By breaking down barriers to education and employment, desegregation and the women's movement made our nation stronger by making it more competitive. Accordingly, in 2015, to create a future that was diverse and inclusive, we needed to prepare chronically underrepresented populations with the skills that would define who would lead the industries of the future.

The key was to patch a talent pipeline that was leaking at every stage of the K-12 to career continuum. At the earlier end of the spectrum, **Kimberly Bryant**, a San Francisco biotech engineer and mom, launched **Black Girls Code** in 2011 after sending her daughter to a coding camp at Stanford and learning that she was the only girl of color in her class. It was a flashback to Bryant's college days as an undergraduate at Vanderbilt University, and it was a wakeup call that nothing had changed.

Black Girls Code, which served 3,000 students in seven cities, taught fundamental computer programming skills to girls of color, aged seven to 17, in after school programs and workshops. But it also focused on what it takes to be an entrepreneur. The aim wasn't to create coders. It was to inspire the next Mark Zuckerberg or Bill Gates.

CREATING ACCESS WITH HIGH VALUE SKILLS

Technology + Innovation Skill-Building Programs Serving Underrepresented Populations

Bootcamp	Founded	Type	Description	Impact
Black Girls Code	2011	Computer Programming + Entrepreneurship (K-12, Workshops + After School)	Workshops and after school programs that introduce underserved girls ages 7 to 17 to basic programming skills.	In less than two years, the organization served 3,000 students in 7 institutions operating in the U.S. and South Africa
Hack the Hood	2012	Website Development (K-12, Bootcamp)	Trains youth of color to careers in tech by hiring and training them to build websites for community businesses	95% completion rate, 100% of school-aged participants are enrolled in school, 40% are continuing to work after the program
Girls Who Code	2012	Computer Programming + Mentorship (K-12, Bootcamp)	Summer program and network of clubs that teaches 6th-12th grade girls computer science	Served over 3,300+ girls in 24 states, 100% alumnae of the program plan to pursue a major in a STEM field
LPFI	2001	STEM Enrichment + Mentoring (K-12, Multi)	STEM and computer science skills enrichment through short and long form programs + mentorship	600+ students served per year
NFTE	1987	Entrepreneurship Curriculum + Business Plan Competitions (K-12, Multi-Year)	Delivered through public schools; Focused on developing a long term entrepreneurial mindset + fundamental technology skills	600,000 young people from low income communities served to date
Qeyno Labs	2011	Hackathons in a Box (K-12, Hackathon)	Launched Hackathon Academy, which prepare high potential, low income youth	Leading school provider of youth hackathons, launched 14 Hackathon Academies and over 200 registered youth
Hackbright Academy	2011	Computer Programming + Job Placement (Adult Learner, Bootcamp)	10-week software engineering fellowship that teaches women fundamentals of computer science	Over 90% of graduates receive full-time job offers in tech
Sabio.la	2013	Computer Programming + Job Placement (Adult Learner, Bootcamp + Virtual)	12-week intensive training program covering key software development + soft skills; Ongoing mentoring post job placement	Featured partner of the White House *TechHire* initiative to support high demand skills training; Dedicated to training Latinos and African Americans
Telegraph Academy	2015	Computer Programming + Job Placement (Adult Learner, Bootcamp)	12-week software engineering + job placement program for people of color, partnered with Hack Reactor (for profit).	Early school launched under the White House *TechHire* initiative to support high demand skills training; Flexible financing, including "pay when hired".
Year Up	2000	Career Preparation, Soft Skills Building + Internship Program (Young Adult Learner, Full-Time Program)	Provides urban young adults with the skills, experience, and support to thrive in a professional career	85% of graduates are employed or attending college full-time within four months of completing the program

Girls Who Code launched a year later, creating an intensive seven-week summer immersion program that included computer science courses, hands-on experience in computing concepts (from robotics to mobile app development), and mentorship opportunities with women working in related technology roles. Beginning with a single program, Girls Who Code expanded to 60 in less than three years.

Broadening the lens from technology and STEM, the **Network for Teaching Entrepreneurship** (NFTE) attacked the leaky talent pipeline by empowering students to develop an "Entrepreneurial Mindset" — a foundational component of a 21st century Personal Knowledge Portfolio. Whether you started a company or not, the ability to adapt, re-imagine, and operate with imperfect information — basic elements of an entrepreneurial mindset — were must-have skills.

GAME CHANGERS

NETWORK FOR TEACHING ENTREPRENEURSHIP Start it up.

NFTE

FOUNDED: 1987

WHAT IT IS

The Network for Teaching Entrepreneurship (NFTE) provides classroom-based and digital entrepreneurship training to young people from low-income, urban communities. The program has served over 600,000 students across the United States. NFTE couples an engaging curriculum with recurring national business plan competitions, where students pitch their ideas to business leaders.

WHY IT'S A WINNING MODEL

Entrepreneurship is a fundamental skill in a global innovation economy. In an age of outsourcing and digital disruption, the best advice to young people is: "If you want a job… Start a company." But as NFTE demonstrates, Entrepreneurship is a skill set with much broader advantages.

Persistence: Over 99% of NFTE alumni over the age of 25 earn a high school diploma, compared to 85% of their peers. More NFTE students enroll in a 2 or 4-year college (88% vs. 60% of U.S. population) and persist to a degree.

Career Readiness: NFTE alumni have a higher rate of employment than their peers (88% vs. 69%) and on average they earn 58% more. Additionally, NFTE alumni start businesses at twice the rate of people in their age group.

In the "It Takes a Village" model, the White House launched **My Brother's Keeper** in 2014 under the leadership of then Deputy Secretary of Education, **Jim Shelton** (Chief Impact Officer, 2U) to implement multi-pronged strategies in partnership with local organizations, focused on both early skills development and risk factor mitigation.



MY BROTHER'S KEEPER

FOUNDED: 2014

WHAT IT IS

President Obama established My Brother's Keeper to help close the opportunity gaps faced by too many young men of color. Led by Task Force Executive Director, **Jim Shelton** (then Deputy Secretary of Education), MBK pooled $300 million in funding from public and private organizations to implement a variety of strategies to promote early interventions. MBK also aimed to systematically reduce recurring risk factors that plagued this population.

WHY IT'S A WINNING MODEL

MBK demonstrated the importance of multi-pronged strategies to empower at-risk young people. The organization emphasized six key intervention points:

1. Entering School Ready to Learn
2. Reading at Grade Level by Third Grade
3. Graduating from High School Ready for College and Career
4. Completing Postsecondary Education or Training
5. Successfully Entering the Workforce
6. Reducing Violence and Providing a Second Chance

PURPOSE NETWORKS

"Purpose Networks" connecting underrepresented populations with peers, professional mentors, and employment opportunities were a critical component in creating equal access to opportunity.

At a basic level, **Hackbright Academy** and **Telegraph Academy** offered immersive training programs that focused on placing women and people of color into technology jobs respectively. While they were classic bootcamps at the core, if you could master the skills, the value was gaining access to a systematic process for job placement, as well as tapping into a network of peers.

Telegraph, a partner program to **Hack Reactor**, was one of the first schools announced under the President's Obama's *TechHire* initiative, and through a collaboration with **LendLayer**, provided financing to all admitted students.



The greatest danger for most of us is not that our aim is too high and we miss it, but that it is too low and we reach it.

MICHAELANGELO



CODE2040 created an elite career accelerator program, bridging the last mile to coveted careers for African American and Latino students with excellent technical skills. Coupling soft skills training with private networking events, CODE2040 aimed to connect the best talent from overlooked communities with Silicon Valley's best companies.

One Hundred Black Men of America linked young people with education and mentoring opportunities through a network that connected students with Fortune 500 employees. Over 10,000 trained mentors worked with 100,000 students

annually, coupling mentoring activities with high impact organizational services ranging from scholarships to health and wellness programs.

Ellevate, another network with deep Fortune 500 roots, was created by Former Citibank CFO, Sallie Krawcheck connecting accomplished women around the World. Its glue was a shared conviction among members that investing in themselves and in other women was good business.

A compelling way to leverage the power of a network was to organize members around specific, purpose-driven events. The ***ASU GSV Summit***, for example, was a vehicle to catalyze innovation in education, but by convening entrepreneurs, investors, policymakers, and business leaders, it was also a vehicle to advance equity in the education industry.

Launched in 2015, the *Education Innovators of Color Initiative* elevated transformative leaders like **Fred Swaniker**, Co-Founder of the **African Leadership Academy**. The annual *ASU GSV Ladies Lunch* connected thought leaders actionable ideas to advance the Summit's mission.

The cascading impact was that in 2015, over 30 percent of 270 presenting companies at the *ASU GSV Summit* were founded or led by women and 75 percent had a female in the top executive team. More than 22 percent of companies were or founded by a person of color.

ASU GSV SUMMIT LADIES LUNCH



The **Surge Institute**, led by **Carmita Vaughan** and supported by the **Bill & Melinda Gates Foundation**, applied many of these network principles into an ingenious program designed to cultivate school leaders of color. In 2015, the glaring system risk in education policy circles was that reform efforts were underway across the country, but people of color effectively didn't have a seat at the table.

They were chronically underrepresented in school leadership roles. African Americans and Latinos accounted for over 30 percent of the U.S. population, but represented just 17 percent of school principals and 6 percent of superintendents.

So rather than sit on the sidelines, Vaughn created the *Surge Fellowship*, the Institute's signature program, to identify and groom emerging talent in education and provide them with leadership development resources, as well as access to networks, visibility, and new ideas. The aim? Get a seat at the table to drive education reform. The first class of fellows was announced in 2015.

INVESTMENTS AS A LEVER

Mitch Kapor, founder of Lotus 1-2-3, and his wife **Freada Kapor Klein**, a global authority on diversity issues, were longtime champions of diversity. Drawing on the best ideas from the for-profit and non-profit worlds, Mitch and Freada founded the *Kapor Center for Social Impact*, offering intensive STEM learning and college prep programs to underrepresented student populations.

But Mitch and Freada coupled this effort with Kapor Capital, a venture capital fund targeting minority and female entrepreneurs.

Silicon Valley was overflowing with companies building photo apps and food delivery services. But with Latinos and African American entrepreneurs capturing just one percent of VC funding respectively, nobody was effectively targeting the problems afflicting the most underserved communities. Kapor Capital aimed to back founders who understood these problems personally.

INVESTMENTS AS A LEVER Creating Diverse Portfolios

WHY IT'S A GAME-CHANGER: Investment vehicles are a compelling mechanism to propel entrepreneurial talent from diverse backgrounds into leadership roles. It is also an important signal to the market that capital is looking for entrepreneurs and businesses that reflect traditionally overlooked segments of the population.



Camelback Ventures

Venture Capital firm launched in 2013 to create a more diverse social innovation ecosystem leveraging the genius of all participants. Camelback supports local entrepreneurs who are creating social impact.



Kapor Capital

Venture Capital firm launched by **Mitch Kapor** (founder of Lotus 1-2-3) and his wife **Freada** (global expert on corporate diversity strategy) to back businesses launched by people of color and women.



Pax Ellevate Global Women's Index Fund

Launched by **Sallie Krawcheck** (former CFO, Citigroup), this fund aims to capture superior investment returns associated with gender diversity and women's leadership.



NVCA Diversity Task Force

Launched in 2014, the National Venture Capital Association (NVCA) created this task force to develop a "clear and measurable path" to increase opportunities for women and men of diverse backgrounds to thrive in venture capital and entrepreneurship.

As the diversity divide — particularly in the innovation economy — increasingly occupied public attention, top technology companies responded with high profile financial and policy commitments to promote equality. Many of these strategies blended early skills building in underserved communities with hiring and seed funding commitments for underrepresented talent and entrepreneurs.

Apple — $50M

- Spent $3B working with small and diverse suppliers
- Teach kids computer science through Hour of Code
- Collaborates with the Thurgood Marshall College Fund, to identify and hire interns from minorities

Google — $150M

- Doubled the number of schools to recruit to promote employee diversity
- Allows employees contribute to company-wide diversity efforts
- Hosts CS First, designed to allow anyone to teach kids basics of coding

Intel — $300M

- Created a $125M fund to invest in startups run by women and minorities
- Aims to spend $1 billion with diverse-owned suppliers
- Sponsors education initiatives and scholarships to cultivate new talent

What We Did About It

Building on our analysis of "Models that Work," we implemented the following initiatives to create equal access for all Americans to participate in the future.

1. Coding Camps in a Box

IDEA: We partnered with large technology companies like **Intel**, **Google**, and **Apple** — which had committed hundreds of millions of dollars to creating a more diverse workforce in their organizations and in the broader Global Silicon Valley — to expand access to highly effective programs that introduced young people from underserved communities to key technology, STEM, business, and innovation skills. Key programs included **Black Girls Code**, **Girls Who Code**, **Year Up**, the **Network for Teaching Entrepreneurship**, and many others.

Additionally, with the funding and input from our coalition of technology company partners, we created rich digital curriculum and support resources for a "coding camp in a box." The idea, initially championed by Google through their *CS First* initiative, was to provide a toolkit for various local organizations to create their own weekend and after-school technology "bootcamps" for young people.

IMPACT: More young people were exposed to the key skills that would be the currency of the competitive talent marketplace that they were entering. Equally as important as developing early skills, however, was the cultivation of a "Growth Mindset" in young people from underrepresented communities. Research demonstrated conclusively that the more people believed they could learn, the more they actually would. One of the reasons the economy — and particularly the innovation economy — lacked diversity was that some people consistently grew up believing that certain skills and professions were beyond their reach. We aimed to eradicate these psychological barriers.

2. Level the Playing Field with 21st Century Skills

IDEA: Expanding on the White House *TechHire* initiative, we provided incentives for organizations to connect people from underrepresented communities with 21st century skills and employment opportunities, targeting companies like **Dev Bootcamp**, **Hack Reactor**, and **General Assembly**. **Pluralsight**, a model *TechHire* partner, provided more than $20 million in free courses to unemployed populations in low-income communities, disproportionately impacting people of color.

Providing a blend of tax relief and cost subsidies drawing on existing funding from federal agencies like the Department of Labor (including the extension of $100 million in funding for the *TechHire* initiative), we encouraged these organizations to more actively recruit and train people that had historically been locked out of the innovation economy. We specifically encouraged the replication of **Telegraph Academy**, effectively a spinout of Hack Reactor that adopted its core curriculum to exclusively serve minority populations.

IMPACT: The impact was that as more underrepresented populations secured skills, the better persistence into the innovation economy we saw across the talent pipeline. Combined with the impact of early engagement, more kids pursued STEM credentials. More aspiring young professionals enrolled in bootcamps and were placed into jobs. As workplaces became more diverse, it began to erode persistent hidden hiring bias.

As people from historically underrepresented communities began to succeed in blue chip technology companies in larger numbers, they spun out to start their own businesses. The more they started businesses, the more venture financing followed. Great businesses are created when you solve big problems, and nobody knew big problems like the people from communities that had been marginalized for generations. With successful business exits, women and people of color became more active angel investors who flowed money back into their communities. Effectively, our aim was to unlock powerful feedback loops.

3. Cultivate a Diverse Population of School Leaders

IDEA: A critical leverage point in our efforts to elevate people from underrepresented backgrounds was school leadership. Without a more diverse corps of school leaders, from K-12 to college, it was difficult to imagine our education institutions serving as effective vehicles to level the playing field. In K-12, just 17 percent of school principals and six percent of superintendents were African American or Latino. In higher education, just 13 percent of college presidents were people of color.

To help reverse course, we replicated and scaled the *Surge Fellowship* model developed by the **Surge Institute**, an innovative Chicago-based organization led by **Carmita Vaughan** with backing from the **Bill & Melinda Gates Foundation**. The *Surge Fellowship* identified and groomed emerging talent in education, providing them with leadership development resources, as well as access to networks, visibility, and new ideas.

IMPACT: Creating Surge Fellowships in key cities across the United States, we empowered a generation of school leaders in both K-12 and higher education with the network of relationships and ideas to create schools that were equitable vehicles of upward mobility. Infusing schools with more diverse leadership had a powerful cascading effect. Broadly, education policy became more attuned to the challenges of historically marginalized communities. Practically, diverse leaders recruited more diverse TEAMS, which in turn led to a more inclusive pipeline of emerging leaders. It was a virtuous circle.

FOREFATHERS

PIONEERS IN EDUCATION INNOVATION



"I don't know about a 'fiscal cliff,' but there is an 'educational cliff' we are walking over right this very second."

Geoffrey Canada

Founder & President, The Harlem Children's Zone

Geoffrey Canada is an educator, social activist and author, renowned for his work helping children and families in Harlem, and as a thought leader and passionate advocate for education reform. Since 1990, Canada has been president of the Harlem Children's Zone, an organization that supports kids from birth through college, and whose goal is to increase graduation rates to break the cycle of poverty.

Richard Barth

CEO, KIPP

Richard Barth was made CEO of the KIPP foundation in December of 2005. Over the course of 9 years, he has overseen significant growth of the network from 45 to 162 schools, dramatically expanded KIPP's leadership development programs, and secured significant long-term philanthropic commitments. Prior to joining KIPP, Barth was an early leader of Edison Schools and Teach for America.



"At the end, the unit of change is the school."



"By discouraging women – or underrepresented minorities for that matter – from pursuing careers in science and engineering is to guarantee that the outcome, and thus the future prosperity of the United States, will be less than it could be."

Shirley Tilghman

Former President, Princeton University

Shirley Tilghman is the former president of Princeton University, where she served from 2001 to 2013. She was the second woman in history to lead an Ivy League institution. During her administration, Princeton became more accessible to students from all income levels, as financial aid offerings increased from 38 to 60 percent of the student body, and the amount of financial support more than doubled. Dr. Tilghman is a World-renowned scholar, an exceptional teacher, and respected worldwide for her pioneering research and advocacy of women in science.

Marian Wright Edelman

Founder & President, Children's Defense Fund

Mariam Wright Edelman has been an advocate for disadvantaged Americans her entire professional life. She is the founder and president of the Children's Defense Fund (CDF), which, under her leadership, became the nation's strongest voice for children and families. She served on the Board of Trustees of Spelman College and was the first woman elected as a member of the Yale University corporation.



"If you don't like the way the world is, you change it. You have an obligation to change it. You just do it one step at a time."



7

STEPLADDER

Prepare a Modern Workforce

We evolved our workforce to thrive in an age of globalization, digital disruption, and automation.

Problem

Our "modern" education system was designed in the early 1900s to produce predictable talent for process-driven work, from factory floors to the massive bureaucracies that supported industrial corporate titans. In this model, you learned until age 25 and then transitioned to a predictable career. But in an era of globalization and technology automation, career obsolescence was the new normal. You needed a baseline skill set that enabled you to function in a call center one day and to interpret MRI scans the next. In the new model, lifelong learning was imperative. We needed *adaptable* talent for *entrepreneurial* work.

MODELS THAT WORK

- **21st Century Curriculum**: Emphasize entrepreneurship, learning how to learn, quantitative reasoning, and communication
- **Accelerated Career Preparation Programs**: Intensive education programs targeting entry-level talent that develop high-demand skills *(e.g. Andela, Fullbridge, and Koru)*
- **Immersive Learning Programs**: Concentrated-education programs and "Bootcamps" focused on specific career skills *(e.g. General Assembly, Dev Bootcamp, Hack Reactor, The Flatiron School)*
- **On-Demand Skills Platforms**: Short-form, mobile + video-centric learning platforms for just-in-time career skills *(e.g. Lynda, Grovo, Khan Academy, Curious.com)*
- **Accelerators + Incubators**: Communities that cultivate entrepreneurs + integrate high-value education offerings *(e.g. GSVlabs, 1776, Galvanize, 1871, Y Combinator, Imagine K12)*

SOLUTION

1. **Department of Talent**: Create a "Department of Talent" to execute a coherent national human capital strategy, from early education to employment and lifelong learning
2. **Open Human Capital Data**: Create an open data platform to aggregate and accelerate the dissemination of a wide variety of education and labor market data for job seekers; Encourage data use and app development by commercial third-parties, including LinkedIn, CEB, and Burning Glass
3. **21st Century Skills Curriculum**: Create a free digital curriculum with Hollywood-style production value addressing high priority 21st century skills (Learning How to Learn, Entrepreneurship, Critical Thinking); Verified digital credential for program completion + concept mastery

By the Numbers: **U.S. Workforce**

Fundamentals	2015
% of Adults with a College Degree (1900)	3%
% of Jobs Requiring College Education (1900)	5%
% of Adults with a College Degree (2015)	34%
% of Jobs Requiring College Education (2015)	70%
% of College Graduates Employed in a Job Related to Major	51%
% of College Graduates Employed in a Job That Doesn't Require a Degree	37%
Projected Average Number of Lifetime Careers (Millennials)	15+
U.S. International Rank for Literacy + Numeracy Skills (Millennials)	19
Kodak Peak Employees (Filed for Bankruptcy in 2012)	145,000
Instagram Peak Employees (Acquired by Facebook for $1+ billion in 2012)	15
Projected Computer Science/Specialist Job Openings in 2020	1.4 million
Projected Qualified Candidates to be Produced by U.S. Universities for Computer Science/Specialist Job Openings	29% of openings
% of U.S. High Schools Offering Computer Science Classes	10%

Source: KPCB, U.S. Department of Labor, Yahoo Finance

Weapons of Mass Instruction: Modern Workforce



Company	Founded	Type	Impact
Codeacademy	2011	Interactive Coding Learning Platform	100M+ exercises completed by 25M+ learners
Degreed	2012	Personal Knowledge Portfolio	Cataloged 250K+ online learning courses and 3 M+ informal learning activities from 1,200+ sources
Fullbridge	2010	Accelerated Career Preparation	Programs deployed in U.S., Europe, Asia + Middle East
General Assembly	2011	Immersive Skills	250K users, 14 cities worldwide, 99% job placement
Grovo	2010	On-Demand Skills	200+institutional clients, 3M+ training videos viewed
Koru	2013	Accelerated Career Preparation	85%+ graduates placed into high demand jobs
Lynda	1995	Subscription-Based Digital Learning Platform	4M+ users from 30% of U.S. colleges and Fortune 500 companies
Pluralsight	2004	Technical + IT Training Platform	400K users in 150+ countries, with 100M+ exercises completed by 24M+ users
Skillshare	2010	On-Demand Skills	850K students, $3.5M paid to teachers
StormWind	2008	Technical + IT Training Platform	1K+ corporate clients
Treehouse	2011	On-Demand Skills	160K+ students across 190 countries
Udacity	2012	Immersive Skills	2M+ users; 100+ courses
Udemy	2010	Online Learning Marketplace	8M+ learners, 32K+ courses

Throughout history, whether in pre-industrial or industrial times, great nations developed based on their access to physical resources or their ability to surmount physical barriers. England and Spain crossed oceans, Germany turned coal and iron into steel, and the United States exploited a wealth of agricultural and industrial resources to become the World's breadbasket and industrial superpower.

But the advent of the personal computer, the Internet, and the digital delivery of information shifted the World's focus from physical capital to human capital. The most valuable resources in a physical economy are commodities like coal, iron, and oil. Their value is judged by metrics like purity and volume. In a knowledge economy, the most valuable resource is talent. Talent is valued based on brainpower, and the ability to acquire, deliver, and process information effectively.

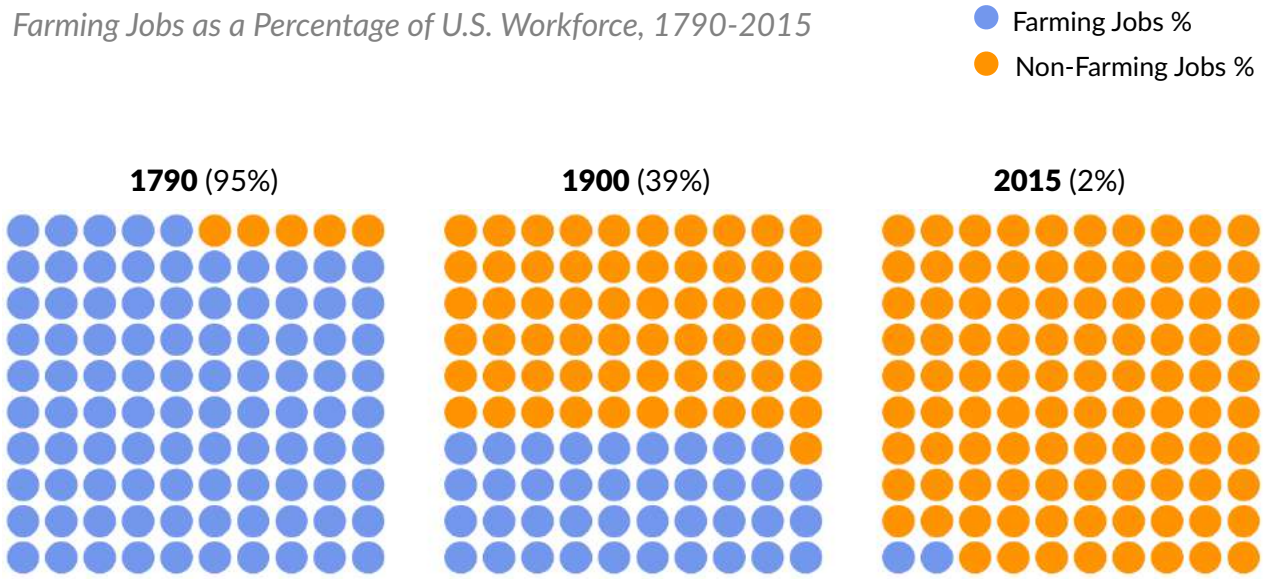
If investments in factories were the most important investments in the Industrial Age, the most important investments in an Information Age are surely investments in the human brain.

LARRY SUMMERS

In 18th and 19th century agrarian economies, extended formal education had little economic value. In fact, when John Hancock put quill to paper on the Declaration of Independence, 95 percent of all U.S. jobs were related to farming. By 1900, the majority of American jobs were industrial or in related "skill-lite" services. Though these jobs required different skills than farming, they required little to no education. Just two percent of Americans had a college degree (primarily in fields such as theology, medicine, and law) and not having one wasn't a barrier to success. Remarkably, only six percent of the adult population had a high school degree at the beginning of the American Century.

U.S. Farming Jobs Decline from 95% to 2%

Farming Jobs as a Percentage of U.S. Workforce, 1790-2015



Source: U.S. Census Bureau

KEY TAKE-AWAYS

In 1790, when America was formed, 95% of the U.S. workforce was in farming jobs. At the time, in a letter to George Washington, Thomas Jefferson wrote, "Agriculture is our wisest pursuit, because it will in the end contribute most to real wealth, good morals, and happiness." By 1900, farming had dropped to 39 percent of the workforce, and in 2015, it was just 2 percent.

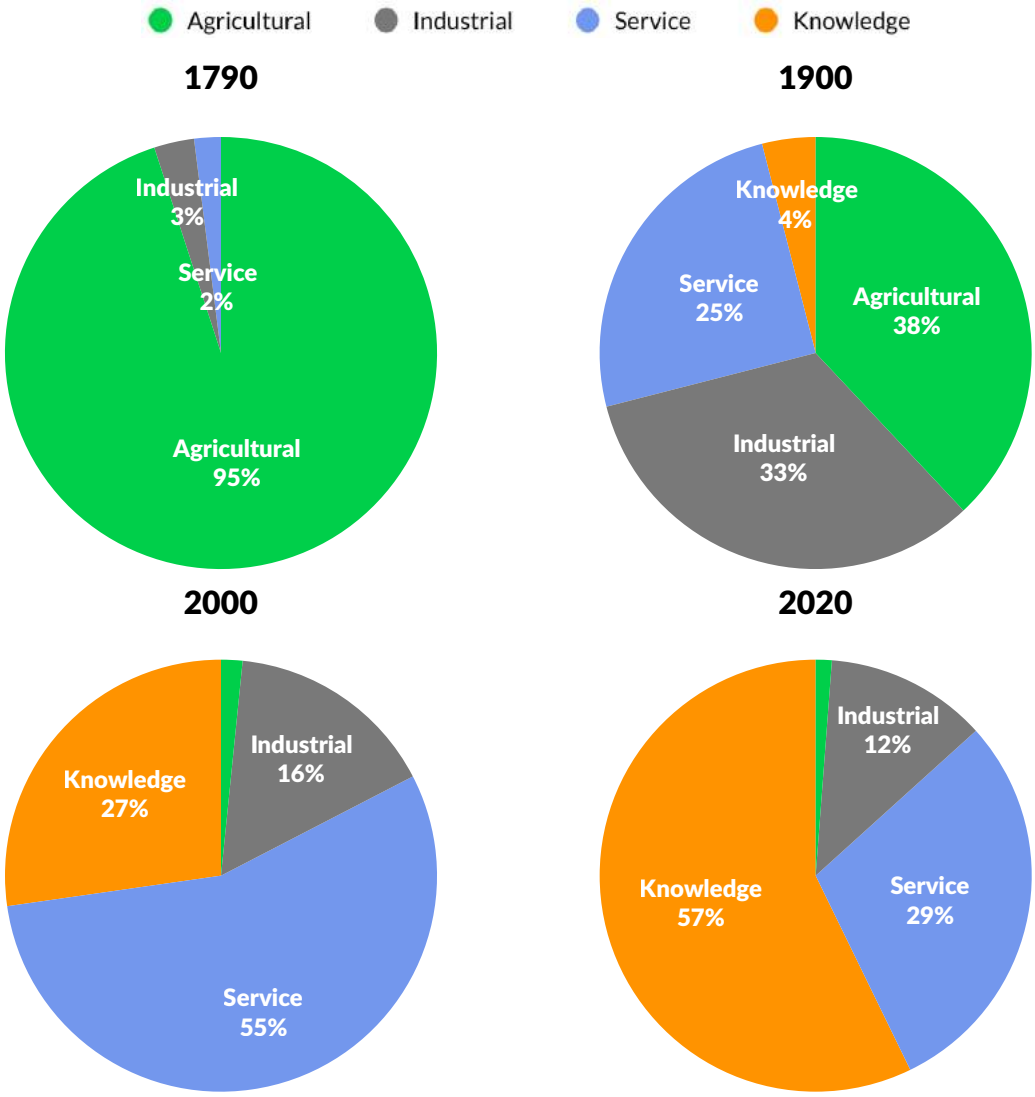
The Service Economy that developed after World War II started to shift education requirements. If you wanted to participate in the service industry — in jobs ranging from accounting to retail sales to entertainment — some formal education was required. Brains started to win out over brawn.

Gaining knowledge was worthwhile; these jobs were safer, less strenuous, and often better paid. Nevertheless, the education demands were still fairly low: in 1950, roughly 20 percent of the rising U.S. workforce had *some* college education by age 30, and only 20 percent of jobs required a postsecondary credential.[32]

[32] Claudia Goldin and Lawrence Katz, *The Race Between Education and Technology* (2008)

Brains over Brawn: U.S. Workforce Mega-Transformations

Rise of the "Knowledge" Sector, 1790-2020



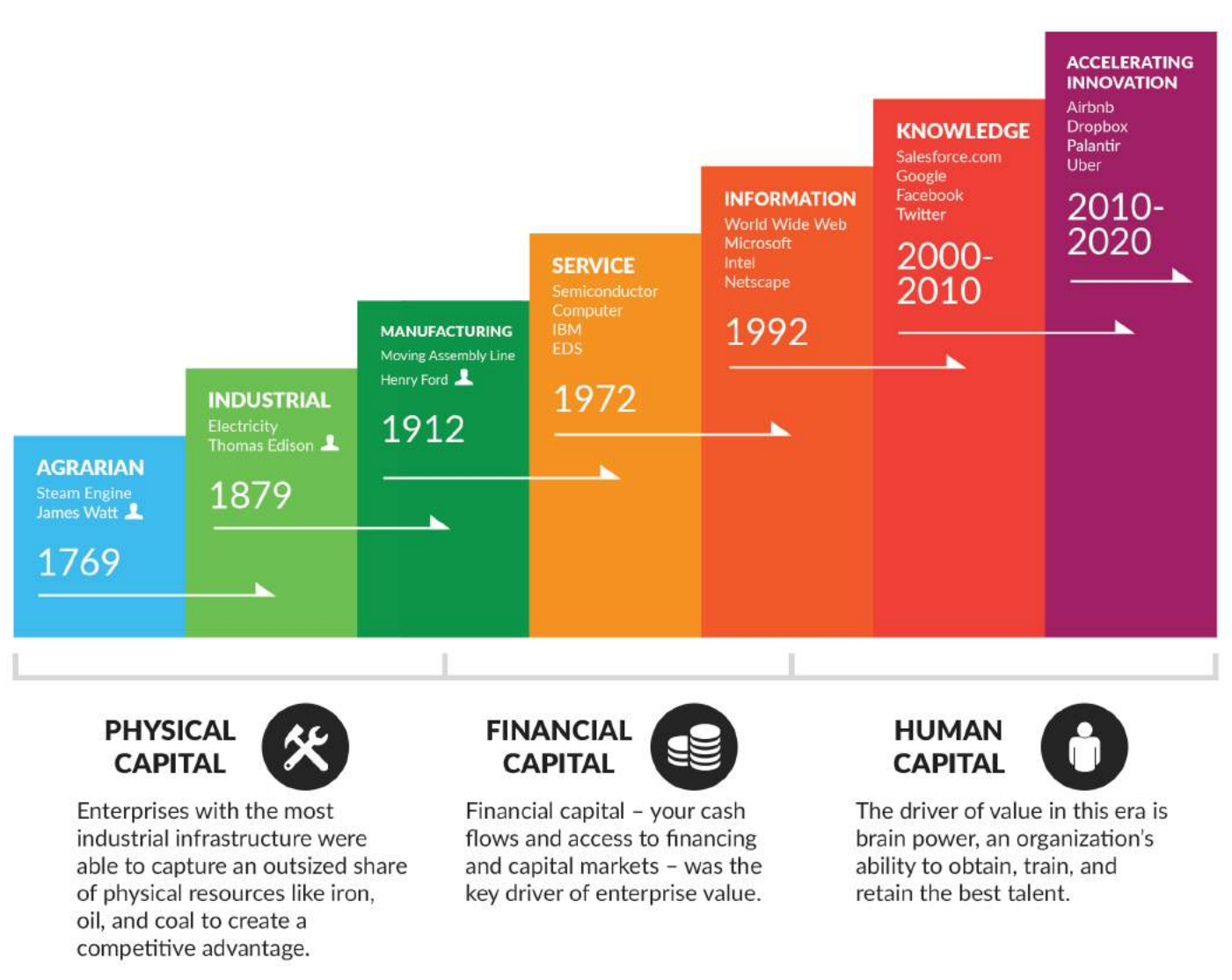
Source: Bureau of Labor Statistics, GSV Asset Management

KEY TAKE-AWAYS

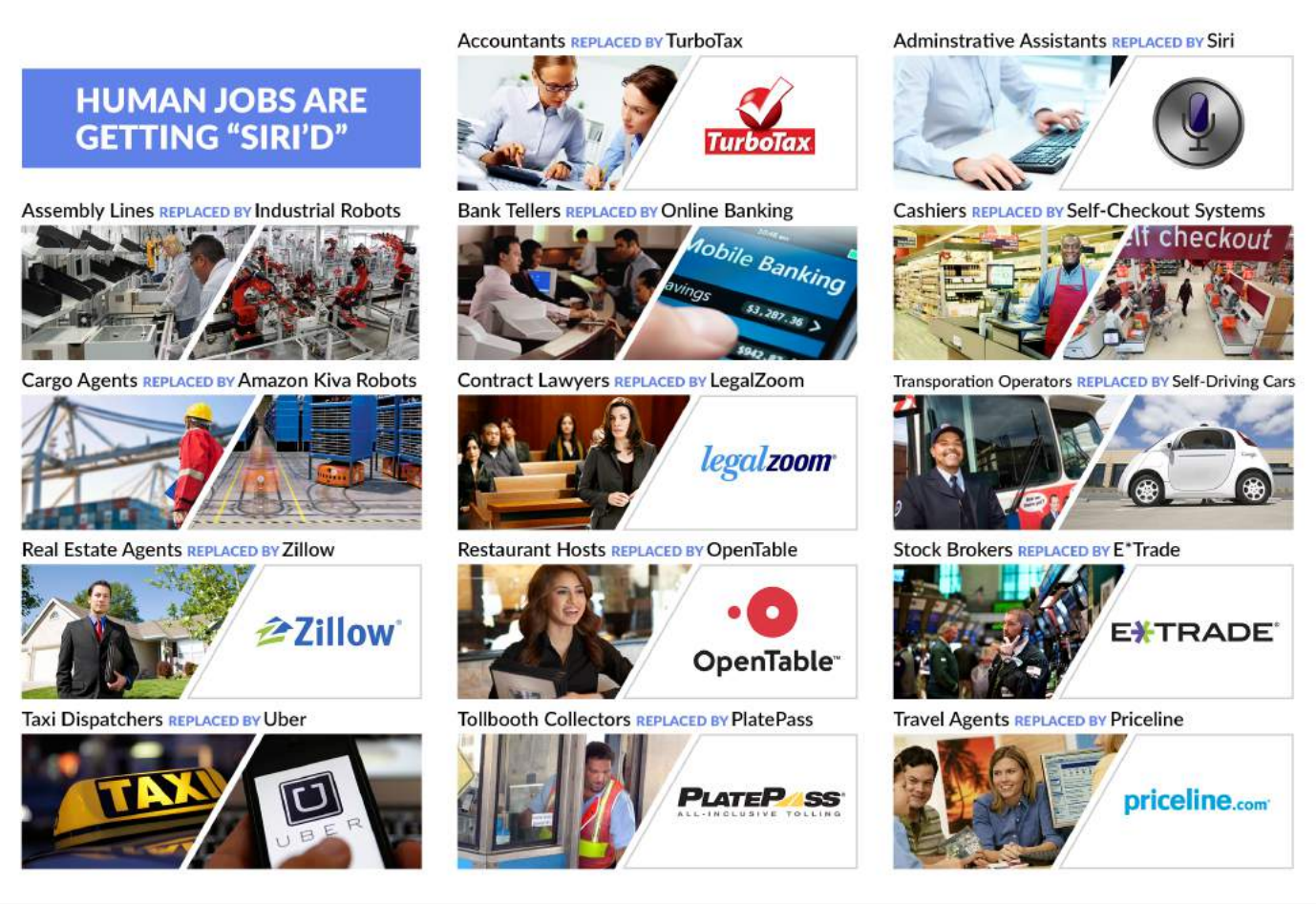
From 1790-1900, the U.S. economy flipped from an agrarian to an industrial workforce, supported by a variety of "skill-lite" services. The rise of personal computing and the Internet ushered in a service economy, powered by automation and connectivity. By 2020, rapid technology advances will have created a "Knowledge" economy that values critical thinking, creativity, and the ability to learn.

The Personal Computer revolution that began in the mid-1970s displaced a wide range of manual labor, administrative, and clerical jobs — many that were lucrative and desirable. The World changed again when **Netscape** debuted on Wall Street in 1995. Broad Internet connectivity transformed communication, making an individual's actual workplace less relevant. Now, U.S. workers faced competition not only from computers, but also from low-cost talent pools thousands of miles away. One click and you were connected to your service representative in Mumbai.

U.S. ECONOMIC DEVELOPMENT, 1769-2020



Companies like **LegalZoom** reduced the need to consult an attorney for many small businesses. ATMs replaced bank tellers, while technologies such as **PlatePass** did away with toll booth collectors. The replacement of human beings by technology across every industry was rapidly rendering low-skilled jobs, and even undifferentiated high-skilled jobs, obsolete. We were being "Siri'd."



Source: GSV Asset Management

Problem

Imagine how farmers would have responded if you told them in 1790 that essentially all of the agricultural jobs were going to vanish in less than two hundred years — or, in other words, that the entire agrarian economic ecosystem was going up in smoke. Many would have lobbied the government to protect their

livelihood. Others might have shrugged off the news, betting that it wouldn't happen on their watch. But indignant, indifferent, or ignorant, change happens.

In 2015, the whispers from the future were getting louder. If **IBM's** "Deep Blue" could handily defeat a World chess master like Garry Kasparov (not to mention Watson destroying its human competition in *Jeopardy!*), and **Google's** self-driving cars could hit the highway, what couldn't computers replace? Some seemed inclined to throw in the towel and concede that all jobs would eventually be replaced with robots. Others preferred to pray for the "Good Old Days" to come back, demanding policies to repeal progress.

I'd bring a hammer.

JAN HEIN DONNER

Dutch Chess Grandmaster (On How He Would Prepare for a Chess Match against IBM's Watson)

But the only realistic and enlightened philosophy was to embrace change and make a commitment to participate in it. The first step was to examine our human capital pipeline and determine if it was a good match for the World that appeared poised for faster cycles of change. Our "modern" education system was effectively designed in the early 1900s to produce predictable talent for process-driven work, from factory floors to the massive bureaucracies that supported emerging industrial corporate titans.

Fundamentally, schools produced two basic types of talent: people who would become extensions of machines (industrial workers) or people who could together operate as an administrative machine (corporate bureaucracy workers). Whether you were assembling a *Model T* **Ford** or reproducing numbers in a ledger, talent was a function of executing repeatable tasks and minimizing errors. In this sense, our schools in 2015 were not "broken" — they were obsolete. Technology advances, from machine automation to personal computing, demanded a new

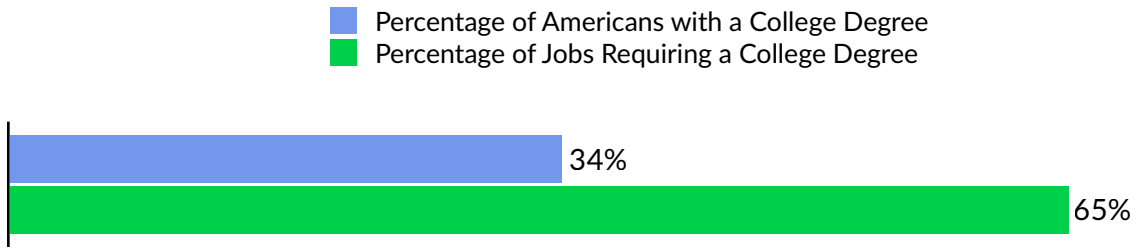
type of workforce with continually-evolving skills. We needed *adaptable* talent for *entrepreneurial* work.

BROKEN TALENT PIPELINE

We projected that of the 55 million new job openings likely to be created over the next decade, 65 percent would require a postsecondary credential.[33] Yet only 34 percent of Americans held a degree, a number that dipped substantially for students of color — 16 percent of African Americans and 14 percent of Latinos.

Americans Aren't Ready for the Jobs of Tomorrow

Percentage of Americans with College Degree vs. Percentage of Jobs Requiring College Degree



Source: Georgetown University Center on Education and the Workforce

Ironically, almost half of the people with degrees were not putting them to good use, working in jobs that were unrelated to their major. *Only 63 percent had jobs that even required a high school diploma*, including 25 percent of bartenders and 15 percent of taxi drivers.[34]

Applying this lens to America's $1.2 trillion in outstanding college debt meant that over $600 billion had been borrowed and spent on education that was misallocated, unneeded, or both. Not surprisingly, delinquencies on student debt

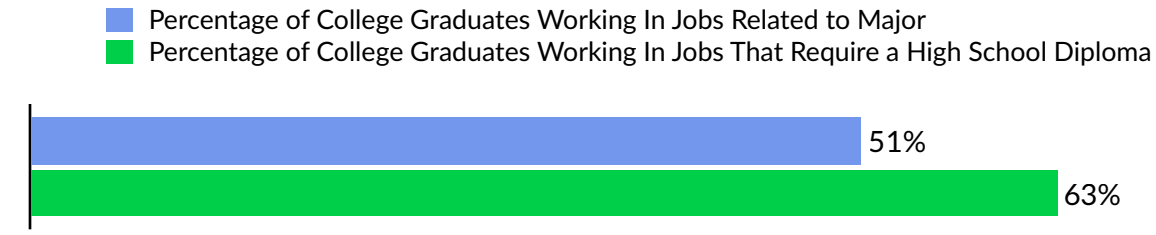
[33] Georgetown University Center on Education and the Workforce

[34] Center for College Affordability and Productivity

remained uncomfortably high in 2015 at over 12 percent, compared to 3.5 percent on auto loans. But the problem was actually much worse. Over half of student loans were in some kind of deferment or grace period, hidden from the repayment cycle.

Americans Getting Wrong Degrees, Wrong Jobs

Percentage of College Graduates Working in Jobs Aligned to Their Expertise or Qualifications



Source: Center for College Affordability and Productivity

Americans were not just getting the wrong degrees. We lacked the fundamental skills to effectively compete in a Global Knowledge Economy. Millennials in the United States consistently scored below their international peers on literacy, numeracy, and problem-solving skills assessments.

TOP 10 COUNTRIES BY MILLENNIAL SKILLS

Country Rank + Average Literacy + Numeracy Skills Score

Rank	Country	Rank	Country
1	Finland (299)	7	Czech Republic (284)
2	Japan (298)	8-T	Estonia (283)
3	Netherlands (292)	8-T	Australia (283)
4	Belgium (286)	**10**	Denmark (280)
5	South Korea (286)	—	**OECD Average (279)**
6	Sweden (285)	**19**	**United States (265)**

Source: ETS

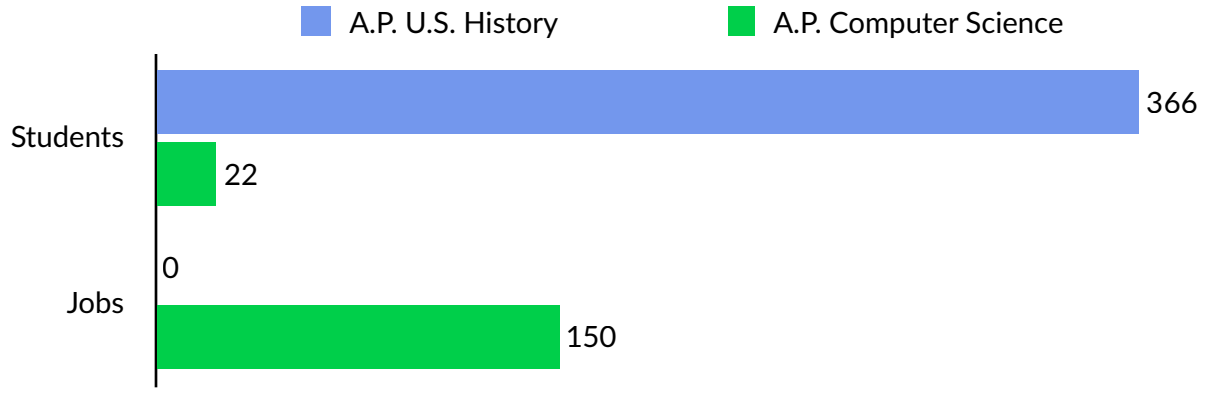
America's skills gap became clear upstream. Over 366,000 high school students were enrolled in AP U.S. History, compared to 22,000 in AP Computer Science, despite 150,000 computer science job openings and zero for U.S. History.[35]

By 2020, the U.S. Department of Labor projected total computer science and specialist job openings would grow to 1.4 million. While these jobs were projected to pay 75 percent more than the national median salary, 90 percent of secondary schools failed to offer *any* computer science program at all.

At their current pace, U.S. universities were expected to produce enough qualified graduates to fill only 29 percent of the openings. We were stuck teaching History when we needed to teach "Future." It was time to rethink the model.

Teaching History vs. Teaching Future

AP Course Enrollments (Thousands)

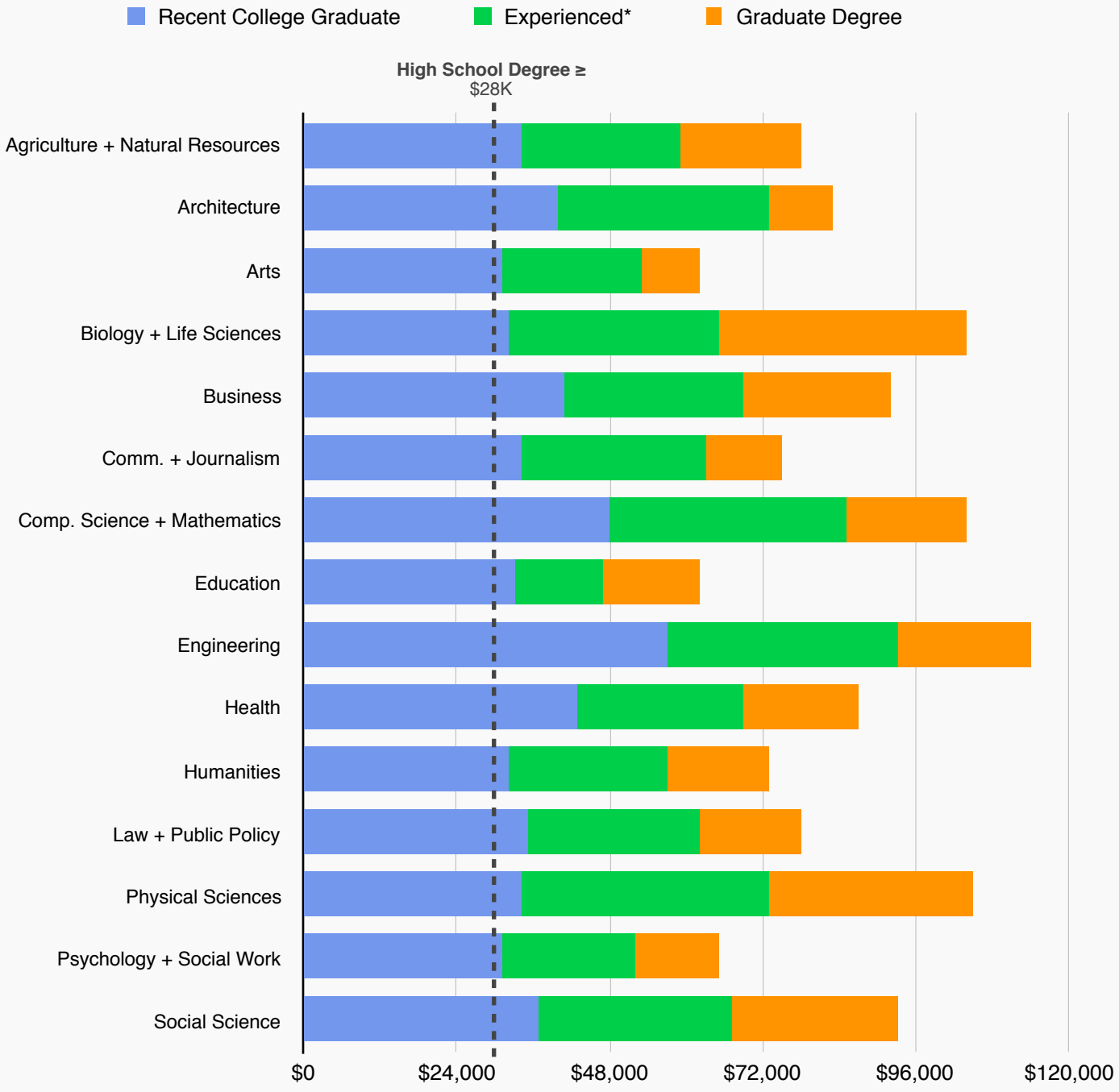


Source: College Board, GSV Asset Management

[35] U.S. Bureau of Labor Statistics

ENGINEERING + HARD SCIENCES ARE PAID THE BEST IN THE KNOWLEDGE ECONOMY

Annual Earnings by Undergraduate Major + Graduate Degree



**Experienced = College Graduates with Bachelor's Degree aged 35-54Source: Georgetown University Center on Education and Workforce ("From Hard Times to Better Times," 2015)*

MILLENNIALS: TATTOO GENERATION

Any strategy to develop a modern workforce had to be developed against the new fundamentals of the Millennial generation, a group of Digital Natives born between 1980 and 2000 who were beginning to come of age.

In 2015, the old guard of American public policy and corporate leadership hailed from the Baby Boomer generation, which is made up of the kids hatched in the United States between 1946 and 1964 — the bookends being the end of World War II and the invention of the birth control pill.

This era was characterized by an America that seemed invincible, upwardly mobile, and safe. The American Dream was alive and well. We put a man on the moon. Our enemy, the Soviet Union, was well-defined, and the 1980 "Miracle on Ice" Olympic hockey TEAM victory over the U.S.S.R. seemed to confirm an inevitable triumph in the Cold War.

U.S. GENERATIONS BY THE NUMBERS

Breakdown	Baby Boomers	Generation X	Millennials
Birth Years	1946-1964	1965-1980	1981-2004
Current Age	51-70	36-50	15-35
Total Population	75 million	65 million	90+ million
Famous People	Steve Jobs Oprah Winfrey Joe Montana	Marissa Mayer Leonardo DiCaprio Steffi Graf	Mark Zuckerberg Taylor Swift LeBron James
Key Characteristics	Optimistic Driven Conservative	Cynical Pragmatic Independent	Entrepreneurial Informal Hyper-connected

Source: Goldman Sachs, GSV Asset Management

Unlike the "Leave it to Beaver" Baby Boomer environment, the Millennials grew up in a hot World with countries disintegrating in front of their eyes and institutions of all stripes losing credibility.

The “Fall of the Wall” in Berlin in 1989 was a catalyst for Global Capitalism — but also for a global map of power politics prone to rapid change.

In the United States, the Oklahoma City bombing in 1995, the Columbine shooting in 1999, and the September 11th terrorist attacks left parents feeling much less secure about exposing their children to the outside World.

Playing video games at home was a safe activity compared to being out in a dangerous society. Growing up as Digital Natives in a global community allowed Millennials to create their own language and customs.

SPEAKING “MILLENNIAL”

Common Phrases + Translations

Term	What it Means	Term	What it Means
BTDT	Been There, Done That	**IYW**	If You Wish
BTW	By the Way	**LOL**	Laughing Out Loud
DEGT	Don’t Even Go There	**LYMYWY**	Love You, Miss You, Want You
DWTTAI	Don’t Want to Talk about It	**SMH**	Shaking My Head
ITRW	In the Real World	**TBH**	To Be Honest
IWY	I Want You	**WTF**	*You Know…*
IYKWIM	If You Know What I Mean	**YOLO**	You Only Live Once

Watching their parents lose their jobs, houses, and self-esteem during the 2008 financial crisis — along with big banks being cut down to their knees — instilled a self-reliant ethos among Millennials.

Going to War in Iraq under the premise that Saddam Hussein had Weapons of Mass Destruction and finding none further fed distrust.

Why did nearly 40 percent of Millennials have a tattoo?

Often, the people who have the strictest parents go wild when they first set off on their own. For a generation that grew up with families trying to shield them from threats of all kinds — terrorist, financial, and cyber — self-expression was a natural response.

THE TATTOO GENERATION

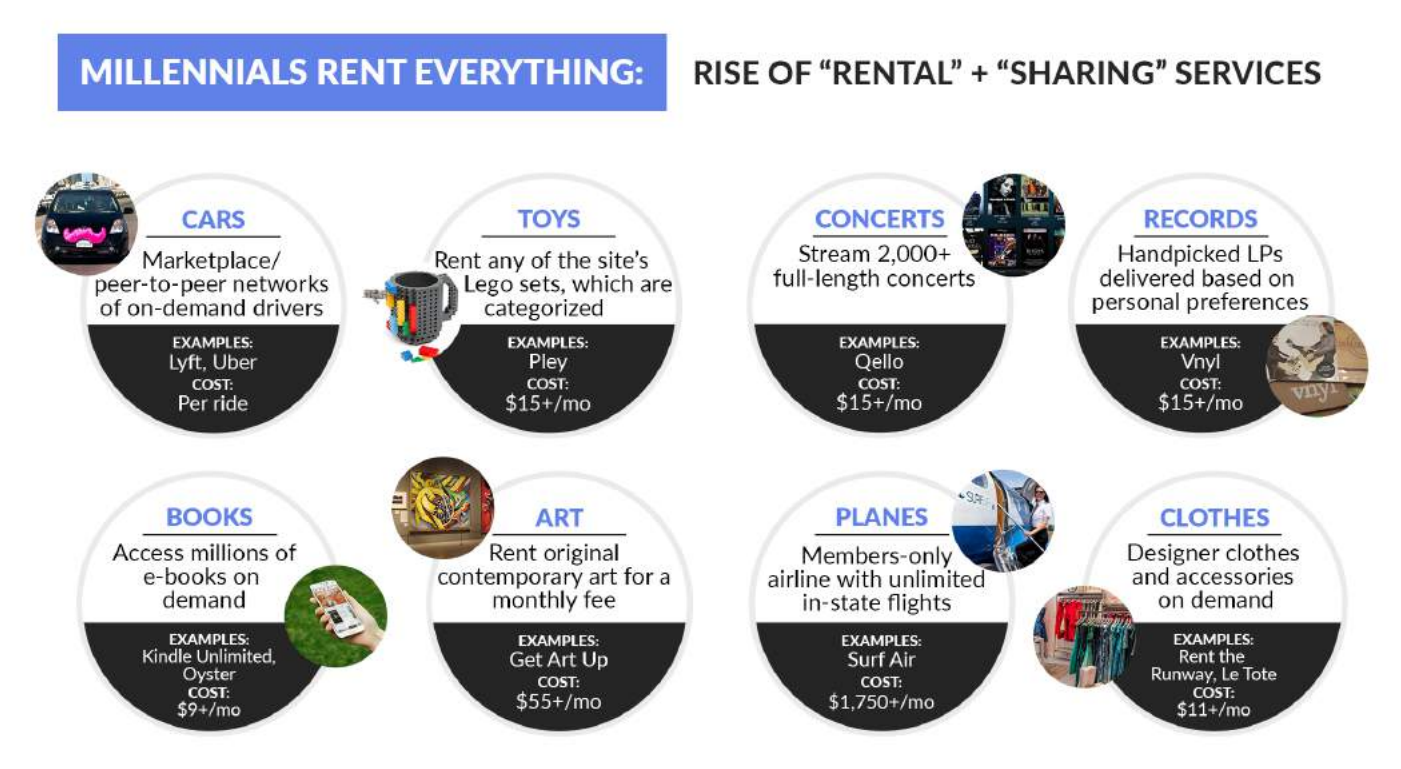
40 Percent of Millennials Have a Tattoo



Source: New York Times

<1. MILLENNIALS: **MIND**>

From homes to cars, music, and luxury goods, Millennials were reluctant to buy. Instead, they turned to a new set of services that provided access to products without the burdens of ownership.



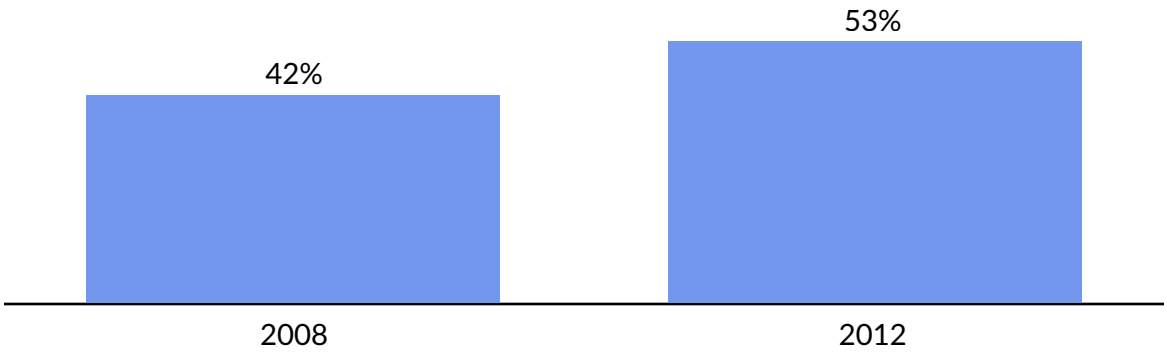
Source: Wired, GSV Asset Management

Millennials did not make purchases the same way prior generations did. Accounting for more than $1 trillion in U.S. consumer spending, they were heavily influenced by the perception of social impact. In fact, 89 percent of Millennials indicated that they actively aimed to make purchases from companies that were committed to solving societal issues, from pollution to poverty.

Over half of Millennials indicated that when the price and quality of two products were the same, a company's mission was the *most important factor* in their purchase decision.

With Millennials, Mission = Margin

Millennials Identifying a Company's "Mission" as Being Critical to Their Buying Decision



Source: Edelman

KEY TAKE-AWAYS

With Millennials, "mission" truly drives margin. In fact, over 53 percent of Millennials identify a company's mission as the most important factor in their purchasing decision when the price and quality of two products are the same.

This mindset was equally evident in the places Millennials wanted to work. Seventy percent of Millennials indicated that a company's commitment to the community would influence their decision to work there, and over 64 percent would rather make $40,000 per year at a job they loved than $100,000 per year at a job they thought was boring.

Millennials advocated strongly for work-life balance and had few qualms about leaving jobs that didn't meet their expectations. A 2012 Net Impact survey found that young workers were more concerned with finding happiness and fulfillment at the office than workers of past generations: 88 percent saw a "positive culture" as essential to their dream job, and 86 percent felt the same way about work they found "interesting."

FOR MILLENNIALS, CAREERS ARE BECOMING A REVOLVING DOOR

Millennials Are Projected to Have 15+ Careers in Their Lifetime



<2. MILLENNIALS: **BODY**>

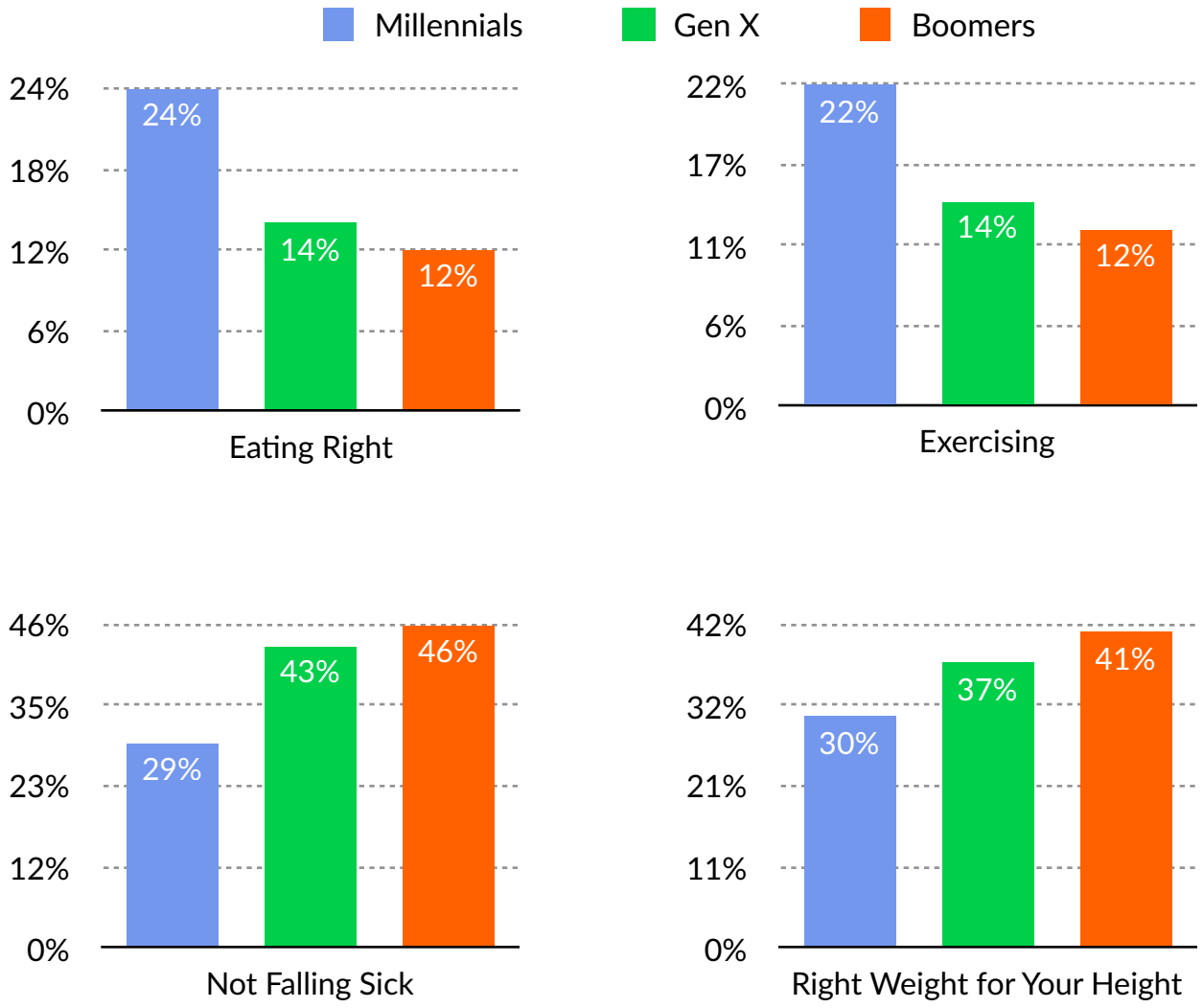
Standing in stark contrast with prior generations, for Millennials, "healthy" didn't just mean "not sick." It meant a daily commitment to living "well." Millennials exercised more, ate smarter, and smoked less than previous generations. They were more open to alternative medicine and less likely to use prescription drugs.

As they looked out to later life, Millennials were most concerned with losing their physical autonomy — walking, cooking, driving, and shopping. Boomers and Gen Xers worried about their financial freedom.[36]

[36] Nielsen

With Millennials, Health = Lifestyle

How Different Generations Define Being Healthy



Source: Brookings Institution, Goldman Sachs, Nielsen

KEY TAKE-AWAYS

For Millennials, "healthy" doesn't just mean "not sick." It means a daily commitment to eating right and exercising. This mindset stands in stark contrast with that of prior generations, who care less about lifestyle and more about simply avoiding bad health outcomes.

<3. MILLENNIALS: **SOUL**>

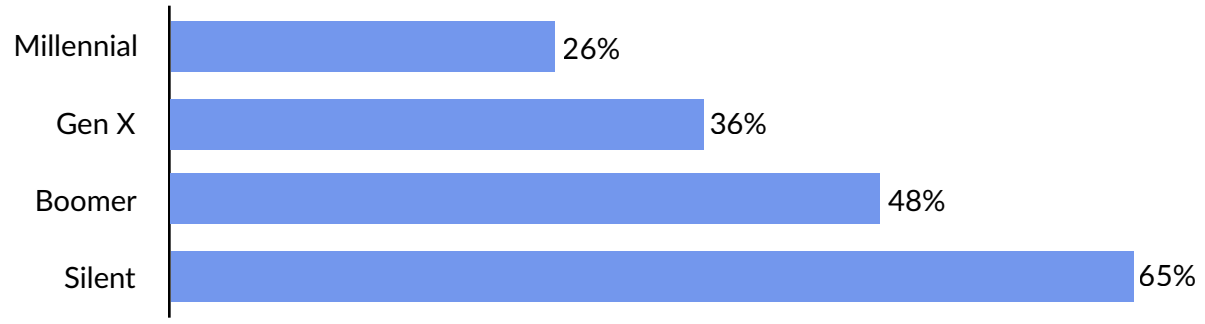
While Millennials were called the "ME" generation by some, nearly 87 percent made a charitable donation in 2014.[37] But Millennials didn't just give; they evangelized. Three-quarters of this generation, for example, shared information about events from a non-profit on **Facebook**.

At the same time, Millennials kept their distance from a core institution of society — marriage. In fact, just 26 percent of Millennials were married. When they were the same age as Millennials, 36 percent of Generation X, 48 percent of Baby Boomers, and 65 percent of the Silent Generation were married.

In 1970, the median marriage age was 23. In 2015, it was 30. Despite this, over 70 percent of Millennials indicated a desire to get married and have children… at some point.

Millennials Avoid Marriage

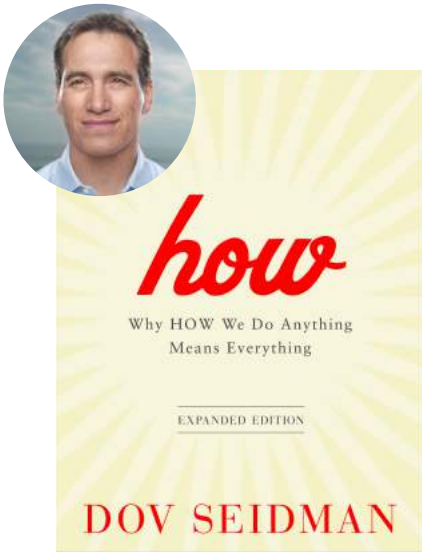
Percentage of Population Married at Age 18 to 32, by Generation



Source: Brookings Institution, Goldman Sachs, Nielsen

[37] *The Case Foundation*, "2014 Millennial Impact Report," 2014

Perhaps the most important lesson from the Tattoo Generation was the power of *inspiration*. Fundamentally, there are three ways to drive human action. You can *coerce*, *incentivize*, or *inspire*. Coercion and incentives rely on external rewards (carrots) and punishments (sticks). In the hyper-connected World pioneered by Millennials, the limitations of carrots and sticks were quickly becoming clear. Rules and directives could not keep pace with technology innovation — a challenge that China grappled with as it sought to limit the ability of social networks to amplify political unrest.



HOW WE DO ANYTHING MEANS *EVERYTHING*

In his signature book *How*, **Dov Seidman** argues that in an era of digital connectivity, increasing transparency, and global interdependence, *how* we do anything means *everything*.

1. Inspiration Drives Action: Threats and incentives are becoming ineffective motivators. Inspiring people with how we do things is the key to driving behavior.

2. Risk + Reward: Defining and adhering to sustainable values is the key to mitigating global risk — financial, geopolitical, or otherwise. It's also the key to creating commercial and strategic advantage. Defensible values are a rare asset that cannot be commoditized.

On the other end of the spectrum, the "Return on Incentives" was declining as increasing access to information enabled people to find better "deals" elsewhere — from the products they bought to the jobs they pursued and the cities they lived in. It was getting harder to buy loyalty.

Inspiration was the new difference-maker. Companies like **Roadtrip Nation** (RTN) demonstrated how impactful this paradigm could be in achieving our 2020 Vision. *To create a 21st century workforce, you had to inspire one*. With the average millennial having 15 careers, Roadtrip Nation had the possibility to be your *travel partner for life*. A "mEDia" model to the core, RTN organized and filmed "roadtrips" where Millennials travelled across the country in RVs, connecting with compelling

people from a variety of professions who loved what they did. RTN followed the action, producing original content that was syndicated to millions through networks like *PBS*. The aim was to inspire people to seize their future.



ROADTRIP NATION

FOUNDED: 2001

WHAT IT IS

For co-founders **Mike Marriner**, **Nathan Gebhard**, and **Brian McAllister**, Roadtrip Nation (RTN) began with a question: "What should I do with my life?" After college, they purchased a semi-functioning RV and travelled across the country to meet people who do what they love and ask them how they figured it out. Fifteen years later, Roadtrip Nation has become an organization dedicated to helping people find career and life fulfillment, reaching over 21 million people each year.

Headquarters: Costa Mesa, CA

Investors: USA Funds, Deborah Quazzo *(GSV Advisors)*

Capital Raised: Undisclosed

WHY IT'S A GAME-CHANGER

Roadtrip Nation's Interview Archive is a compilation of over 3,000 original videos that connects students and job-seekers with compelling people who love their line of work — from video game designers to lawyers, journalists, STEM professionals, and everything in between. The aim is to inspire young people to seize their future.

RTN is fundamentally a "mEDia" business. Filming roadtrips to create inspiring, educational, original programing, RTN reaches millions through syndication partners like *PBS*. The content is so compelling because RTN demystifies career exploration, acknowledging uncertainty while encouraging people to embrace the discovery process. The roadtrips RTN captures are the foundation for a variety of media assets — including documentary-style programming, books, live events, and digital curriculum.

Draper University, dreamed up by the renowned venture capitalist **Tim Draper**, was a school in name only. It was an accelerator for people who wanted to change the World. Its pedagogy was to ignite ideas by cramming as much inspiration, innovation, and opportunity as possible into a seven-week program. Draper University's "classroom" was "Hero City," a co-working space for superheroes (literally). Its mission was simple: "Tackle big challenges with innovative play."

But in the "play," you learned. Silicon Valley luminaries distilled the fundamentals of entrepreneurship. Company visits provided unique perspectives on game-changing businesses. For those students with the aptitude and motivation, there were opportunities to connect with funders.

THE DRAPERS: SILICON VALLEY'S FIRST FAMILY



Left to Right: Tim Draper (Founder, Draper Fisher Jurvetson), Billy Draper (Founder, Mobber.net), Bill Draper (Co-Founder, Draper & Johnson Investment Co.), Adam Draper (Founder, Boost VC), and Jesse Draper (Creator, The Valley Girl Show)
Source: Fast Company

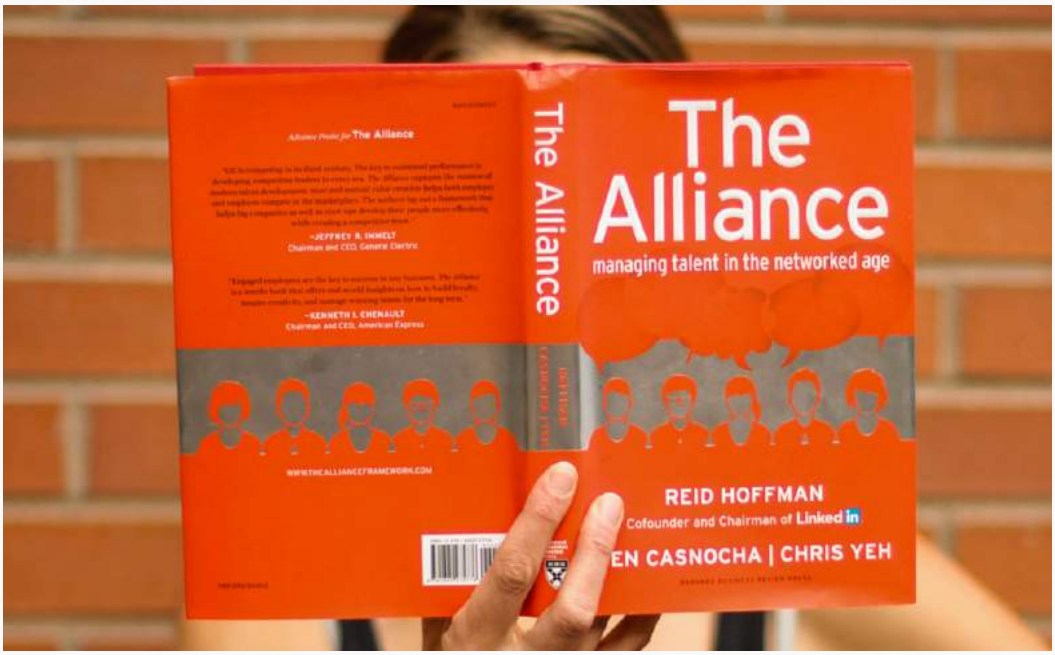
Like Roadtrip Nation, Draper University was the engine of a broader mEDia platform. ABC broadcasted a primetime reality show to millions — "Startup U" — that tracked a semester of Draper heroes. At the same time, Draper University produced digital courses for distribution online.

Models that Work

THE ALLIANCE

The evolution of the workforce demanded that companies transform their culture and hiring approach to find and retain the best talent. In an important book on this topic, *The Alliance*, authors Reid Hoffman, Ben Casnocha, and Chris Yeh argued that the relationship between employees and employers must become an "alliance."

In 2015, business managers confronted a challenging dilemma: They could not afford to guarantee lifetime employment as they competed to survive in an environment of Digital Disruption. But they could not build lasting, innovative businesses when their employees had little long-term commitment to the company. The solution was to stop thinking about employees as family or free agents and to start thinking of them as allies on a "tour of duty."

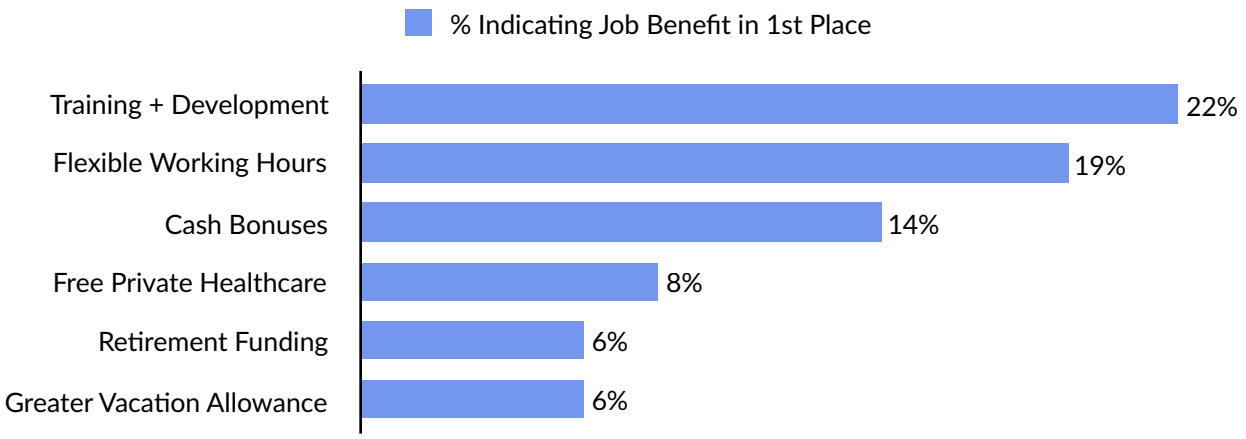


In an alliance, employers and employees develop relationships based on how they can add value to each other — a mutually beneficial deal, with explicit terms.

Companies need to tell their employees, “Help make our company more valuable, and we’ll make you more marketable in the labor market.” Employees need to tell their companies, “Help me transform my career, and I’ll help the company grow and flourish.” Confirming this critical point, Millennials ranked “Training and Development” as the #1 coveted job benefit, *ahead of flexible working hours and cash bonuses*.

The Alliance: Millennials in the Workforce

For Millennials, “Training + Development” Is the Most Coveted Job Benefit



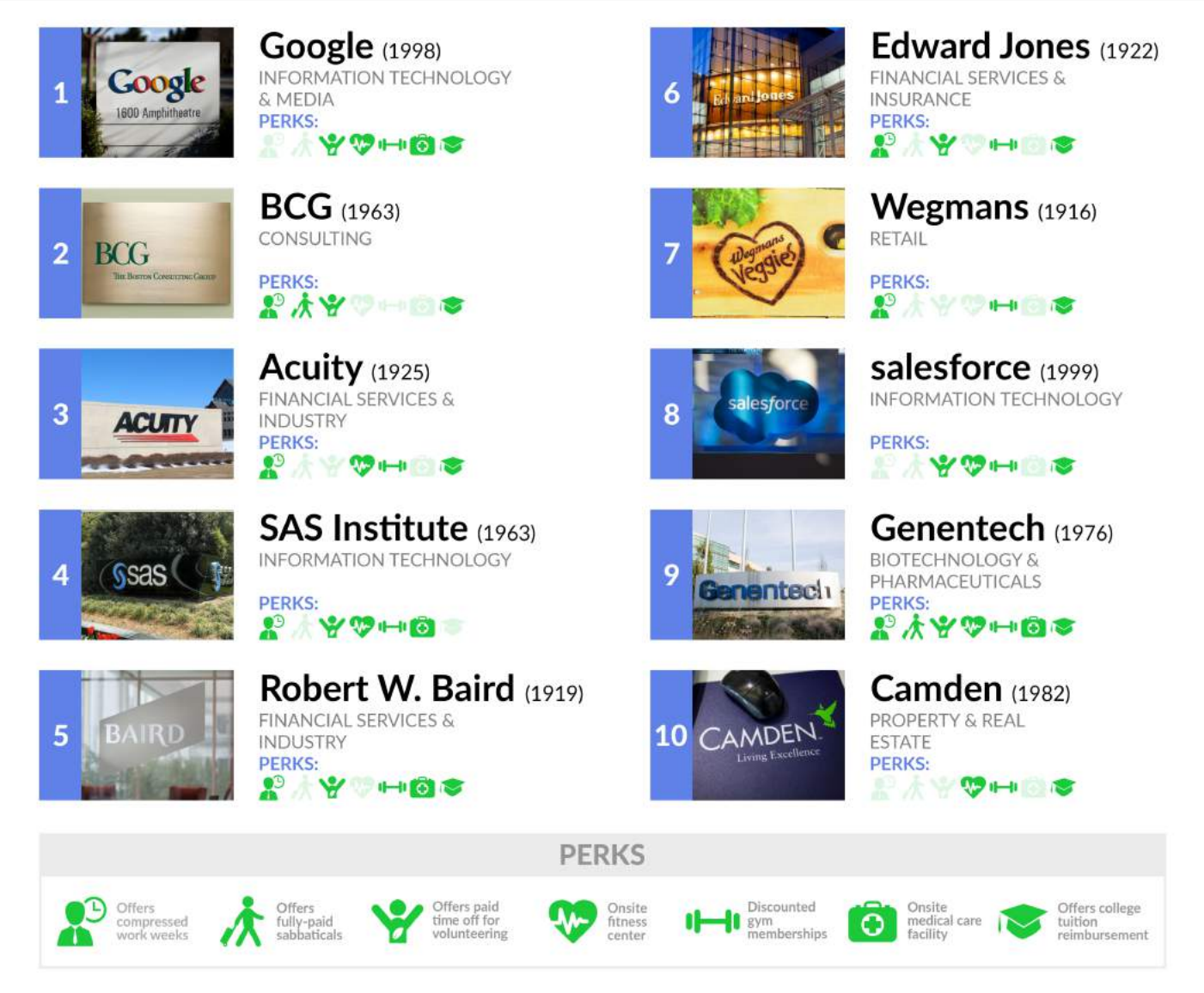
Source: KPCB

In the old model, HR leaders and company executives became frustrated when they spent money on training and development programs, only to see employees walk out of the door months later. The natural instinct was often to limit these budgets to a bare minimum. Why train a competitor’s new hire?

But in an *alliance*, managers could speak openly about the investments they were willing to make in employees and what they expected in return. Employees, for their part, could speak honestly about the type of professional growth they expected and at what pace. For Millennial talent, this model was already becoming a must.

For 18 years, *Fortune Magazine* had ranked "The Best Companies to Work For." A common denominator for these companies, which were widely admired by their own employees, was the value they placed on human capital — obtaining, training, and retaining talent. **Google** ranked first as the best place to work not only by *Fortune* but also by *Forbes*, *Business Insider*, and *Bloomberg*. It had long put people at the forefront of its priorities. Looking ahead, the most successful businesses were going to be the ones that emphasize developing their talent.

FORTUNE: BEST PLACES TO WORK, 2014



Source: Fortune, GSV Asset Management

21ST CENTURY SKILLS

In 2015, after analyzing years of data surrounding who succeeded at the company and who didn't, **Google** almost completely de-emphasized GPAs, brand name schools, and interview brain teasers as part of their hiring process. Why? Because succeeding in academia was not a reliable indicator that someone would succeed in the innovation economy. College was an "artificial environment" that conditioned people for one type of thinking. IQ was less valuable than cognitive ability — the ability to learn on the fly.

The key is the ability to learn… and solve problems. A knowledge set that will be invaluable is the ability to apply information.

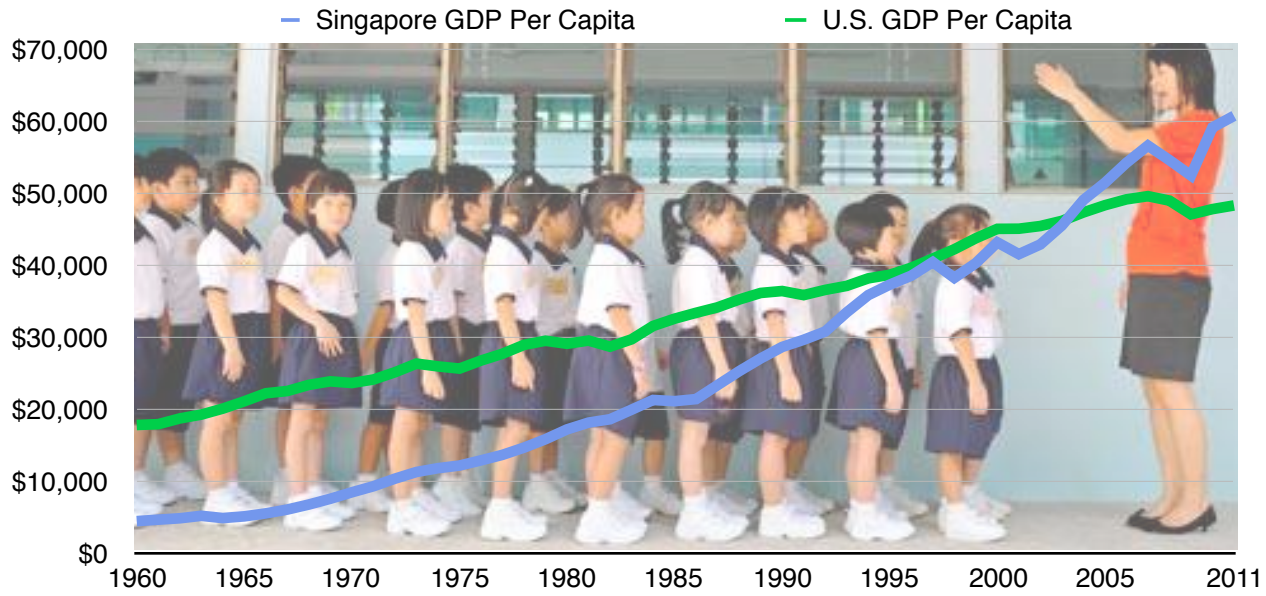
LASZLO BOCK

SVP, People Operations, Google

In a World that increasingly required people to synthesize disparate, constantly evolving pieces of information, *the ability to learn* was the most valuable asset. In other words, you needed a baseline skill set that enabled you to function in a call center one day and interpret MRI scans the next.

Google's new hiring priorities distilled a 21st century skill-set that was inadequately emphasized across our education system, which too often favored rote learning and memorization. But there was a precedent for a large-scale education evolution, particularly if we approached the problem as a matter of national survival.

Singapore: **Thinking Schools, Learning Nation**



WHAT: Singapore transitioned from a regional backwater to a global economic power by constantly anticipating, and then developing, the skills needed to compete and thrive in the global economy. In 1960, Singapore's GDP per capita was $4K, compared to $18K in the United States. Since then, it has increased 14x to $62K, surpassing America in 2004.

While mastering complex technical skills fueled Singapore's ascendence for the last 50 years, the Garden Nation turned its attention to new skills that would propel it for the next 50: critical and creative thinking.

SINGAPORE'S 20-MILE MARCH:

- **Survival (1960-1980)**: The government's initial focus was on expanding basic education for all ages to enable diversification to a variety of manufacturing functions. Schools were built rapidly, teachers were recruited at scale, and the government aggressively courted foreign manufacturers to hire their emerging talent.
- **Efficiency (1980-1995)**: Singapore evolved its education strategy in an effort to move from a labor-intensive economy to a capital- and skill-intensive country capable of developing sophisticated technology. Singapore abandoned its standardized approach to schooling and created multiple learning pathways to better cultivate technical talent. In 1992, Singapore developed the state-of-the-art Institute for Technical Education.
- **Knowledge (1995-Present)**: The emergence of the global knowledge economy required a paradigm shift in education. Low-cost outsourcing and automation meant that adaptability and innovation were at a premium. So Singapore's focus moved from developing technical skills to emphasizing critical thinking and creativity. The country's strategic plan was titled, "Thinking Schools, Learning Nation."

When Singapore secured independence from Malaysia in the 1960s, the idea that it would become a global economic powerhouse would have seemed preposterous. Most of the country's population of two million were illiterate, and 70 percent of the GDP was derived from port and warehousing activities.

In 1960, Singapore's GDP per capita was $4,000, compared to $18,000 in the United States. By 2015, it had increased 14x to $62,000, surpassing that of the United States in 2014.

For Singapore to survive, we have to be extraordinary… If we were ordinary, we would just disappear.

CHAN HENG CHEE

Former Singapore Ambassador to the United States

Singapore willed itself into the modern era through innovation, grit, and a relentless commitment to improvement — an ethos that still occupied the city-state in 2015. Constantly evolving their school models to align to global talent demands, Singapore branded its 21st century education system as, "Thinking Schools, Learning Nation."

Roughly 5,000 miles from Singapore in Tempe, Arizona, another transformation was taking place. Arizona State University, under the leadership of President Michael Crow, had turned from an institution that was famous for being a party school into the most innovative public university in the World. It was a story that immediately resonated with me.

I grew up in Minneapolis and had heard of Dartmouth, Harvard, and Yale. But as a 17-year-old, I had no earthly idea that the Ivy League was a ticket to advantages for your whole life. To me, the University of Minnesota had it all — great academic tradition, beautiful campus, Big 10 football. What could be better than that?

Harvard and Dartmouth both recruited me to play football, but when I learned that the Ivy League didn't offer scholarships, my reaction was simple. Why would I go there?

Early in my career, when I was running a group at Lehman Brothers and building my team, I learned that it wasn't just hard to hire someone with my background — I couldn't. Lehman recruited new talent from only five schools, and the University of Minnesota wasn't one of them.

That's one of the reasons why I believe so strongly in the work Arizona State University (ASU) is doing under the leadership of President Michael Crow. ASU's mission is two-fold. They're committed to educating as many people as they can while providing a high-quality and rigorous academic experience.

The idea that schools are viewed as better academic institutions because they reject more people is wrong. It's shortsighted to think that schools like ASU or the University of Minnesota can't provide the same type of academic quality offered by tiny, elite institutions.

ASU is so fascinating and compelling because it married that vision with technology to achieve scale. They have been driven by a conviction that it's the right thing to do. Ten years ago, Crow laid out the vision. Seven years ago, you saw the wheels starting to spin across ASU. Today, ASU is reinventing higher education.

Michael Crow is widely regarded as the most forward-thinking college president in the United States and is the intellectual force behind the idea of the "New American University," a topic he has written and lectured on extensively. His entrée to academia? A track scholarship to Iowa State University.



ASU: The New American University

Old schools are based on the belief that education is preparation for a single career and that quality is based on exclusivity. Arizona State University (ASU), under the leadership of President Michael Crow, is driven by the principle that the future needs more capable, adaptable thinkers and that expanding access to quality education is a moral imperative.

ASU is creating a "New American University." It has emerged as an innovative knowledge enterprise that is empowering a new generation of critical thinkers and lifelong learners. Eight design aspirations have guided the ongoing evolution of ASU, which is using technology as a force multiplier wherever possible to scale models that work.

ASU'S INNOVATION LEADERS



Michael Crow
President



Mark Jacobs
VP + Dean, Barrett Honors College



Jonathan Koppell
Dean, College of Public Service



Sasha Barab
Executive Director, Center for Games + Impact



Annie Warren
Program Director, Sustainability Science Education Project



Phil Regier
Dean of EDU Initiatives, ASU Online + CEO, EdPlus



Adrian Sannier
CTO, ASU Online



Lindy Elkins-Tanton
Director, School of Earth and Space Exploration



Julia Rosen
Associate Vice Provost, ASU Online



Leland Hartwell
Co-Director, Center for Sustainable Health

ASU: Game-Changing Initiatives

	WHAT IT IS	WHY IT'S A GAME CHANGER	
EdPlus	Led by **Phil Regier** (CEO), **Adrian Sannier** (CTO), and **Leah Lommel** (COO), EdPlus is ASU's innovation engine. By applying technology to ASU's teaching and learning ecosystems, EdPlus creates greater scale and efficiency while improving learning outcomes.	EdPlus is positioning ASU as a global change agent, bringing powerful new ideas to scale across the University's network. It is creating a culture of collaboration and innovation by developing unconventional, technology-enabled education models that reduce cost while improving quality and access.	
Global Freshman Academy	A partnership between ASU (led by EdPlus) and edX, the Global Freshman Academy gives learners anywhere in the world the opportunity to earn low-cost first year college credits through open online courses.	Student are invited to complete foundational ASU coursework through the edX platform. They are charged only if they want to earn credit for the course. An unprecedented $200-per-credit fee is applied only after they pass.	
ASU + Starbucks	ASU and Starbucks have developed *The Starbucks College Achievement Plan* to help working students overcome the most daunting hurdles on the path to achieving an undergraduate degree.	This first-of-its-kind partnership creates an opportunity for all Starbucks employees to earn their bachelor's degree through ASU's top-ranked online degree program. Benefits include full tuition coverage and personalized guidance from a virtual coach.	
Barrett Honors College	Led by Vice Provost and Dean **Mark Jacobs**, Barrett is a selective, residential program that recruits academically outstanding undergraduates from across the nation. It has more National Merit Scholars than MIT, Duke, Brown, Stanford or UC-Berkeley.	Beyond a world-class education, Barrett students have access to unique interdisciplinary research experiences, internships from Silicon Valley to Wall Street, and mentorship opportunities from leading practitioners across a variety of industries.	
Center for Games + Impact	The Center for Games + Impact convenes leading researchers, learning scientists, game designers, software developers, and entrepreneurs to innovate game-infused solutions to society's biggest challenges. It is led by Executive Director, **Sasha Barab**.	By combining an interdisciplinary team with a mandate across the full lifecycle of game development (Research, Design, Development, Publishing, Assessment + Optimization), ASU is positioned to pioneer and scale high-impact games.	
Public Service Academy	Under the leadership of **Jonathan Koppell** (Dean), ASU's Public Service Academy develops undergraduates with a commitment to service to be effective 21st century leaders.	In a four-year program, students apply their area of study to a bigger purpose that fuels it. Students take supplementary courses that compliment core academics. Aligned internships and leadership labs amplify the experience.	
Biodesign Institute	Created on the premise that scientists can overcome complex issues by re-imagining the "design rules" found in nature, the institute's researchers are addressing an expansive array of global challenges across medicine, sustainability, and technology design, by creating "bioinspired" solutions.	The institute has attracted more than $400 million in external funding, including support from philanthropic and industry sources. Working in an entrepreneurial culture, researchers generated 50 invention disclosures and patents in 2014 while fostering more than a dozen spinout companies.	

The private sector stepped up in a major way, with innovative, non-degree education providers bridging skills gaps that prevented people from becoming effective workers. **Fullbridge**, for example, effectively served as a 21st century finishing school for college and advanced degree program graduates who invested in a diploma but still lacked the skills to get a job and contribute productively from day one. Partnering with education institutions and employers, Fullbridge created immersive learning programs that emphasized core business skills like communication, financial analysis, and collaboration.

Forward March: **Fullbridge**

ROE

Fullbridge provides students with real-World experience they need to land high demand jobs. By emphasizing fundamental competencies that deepen business acumen, but are overlooked by traditional education programs, Fullbridge accelerated early professional development.

FOUNDED: 2011

HEADQUARTERS: Boston, MA

ADOPTION: Fullbridge has run programs in the U.S., Europe, Asia, and the Middle East, with participants ranging from Harvard Law School students to veterans, U.S. liberal arts college students, and female vocational students in Saudi Arabia.

INVESTORS: GSV, Tomorrow Ventures

CAPITAL RAISED: $28 million

GSV 4Ps ANALYSIS



People

Led by Co-CEOs Peter Olson (former CEO of Random House) and Candice Carpenter Olson (founder and CEO of iVillage).

Product

Fullbridge offers rigorous instruction in an immersive setting around key business skills, including critical thinking, financial analysis, communication, and collaboration.

Predictability

By utilizing asynchronous learning modalities, Fullbridge can create a highly scalable and global delivery model. In addition, by partnering with key institutions, Fullbridge can drive a highly efficient "top-down distribution" model.

Potential

Fullbridge is addressing a very large unmet need in the marketplace — effectively filling a "white space" between the skills universities provide and the skills employers need in their entry-level talent base.

MEGATRENDS
BRANDS, GLOBALIZATION, PERSONALIZATION, SOCIAL, KAIZENEDU, KNAAC, ROE



Launched in 2011, **General Assembly** (GA) enabled people to quickly learn high-demand innovation economy skills, ranging from graphic design to data science and digital marketing. GA courses were delivered by respected practitioners in a blend of on-site and digital formats, and by 2015, GA had built a network of 250,000 enthusiastic learners, professionals, and teachers across a footprint of 14 international cities. GA boasted a 90 percent job placement rate for students within 90 days of course completion and *99 percent* within a year. *Graduation from General Assembly was getting a job.*

Forward March: **General Assembly**

ROE

General Assembly (GA) is feeding the huge global demand for demonstrable skills necessary for digital-age jobs, which extends to millions of learners worldwide. GA has created an education model and brand that can be scaled globally — for both individual learners and corporate partners.

FOUNDED: 2011

ADOPTION: Campuses launched in 14 cities, including New York, San Francisco, Los Angeles, Washington, DC, Boston, London, Sydney, Hong Kong, Melbourne, and Singapore; 90% job placement rate within 90 days, 99% in a year; network of 250K learners, teachers, and professionals across high-growth technology and design-centric occupations; 60 Fortune 500 companies as members of enterprise education platform

INVESTORS: GSV, IVP, Maveron, Rethink Education, Jeff Bezos, Learn Capital

MEGATRENDS
BIG DATA, BRANDS, CLOUD, GLOBALIZATION, MOBILE, PERSONALIZATION, SOCIAL, KAIZENEDU, KNAAC, ROE

GSV 4Ps ANALYSIS

People

Co-Founder + CEO **Jake Schwartz** is a former Entrepreneur-in-Residence at Associated Partners (PE fund backed by Goldman Sachs); named an Ernst & Young Entrepreneur of the Year

Product

Next-generation education platform offering short- and long-form classes, through online and on-campus modalities

Predictability

Strong efficacy in customer acquisition and learner satisfaction; building compelling alumni network of lifelong learners

Potential

Opportunity to build the largest and most valuable global talent community, using knowledge and skills gained in GA to transform companies and industries

GENERAL ASSEMBLY

GENERAL ASSEMBLY TOP COURSES

Immersive Courses with Career Support



Dev Bootcamp opened the floodgates of interest further when it launched a nine-week "web development bootcamp" in 2012. It was relentlessly focused on placing students in jobs as full-stack web developers, achieving an 85 percent placement rate in profession with an $80,000+ median salary and a projected employment growth rate of over 20 percent by 2022.[38]

Acquired by **Kaplan** in 2014, Dev Bootcamp inspired a second wave of derivative models that collectively began to change the tenor of the education policy dialogue. These were "schools" competing to create efficiencies for learners that measured success based on immediate job placement.

By 2015, there were nearly 20,000 bootcamp graduates, paying an average fee of $11,000 — *a $200+ million industry in its infancy*.[39]

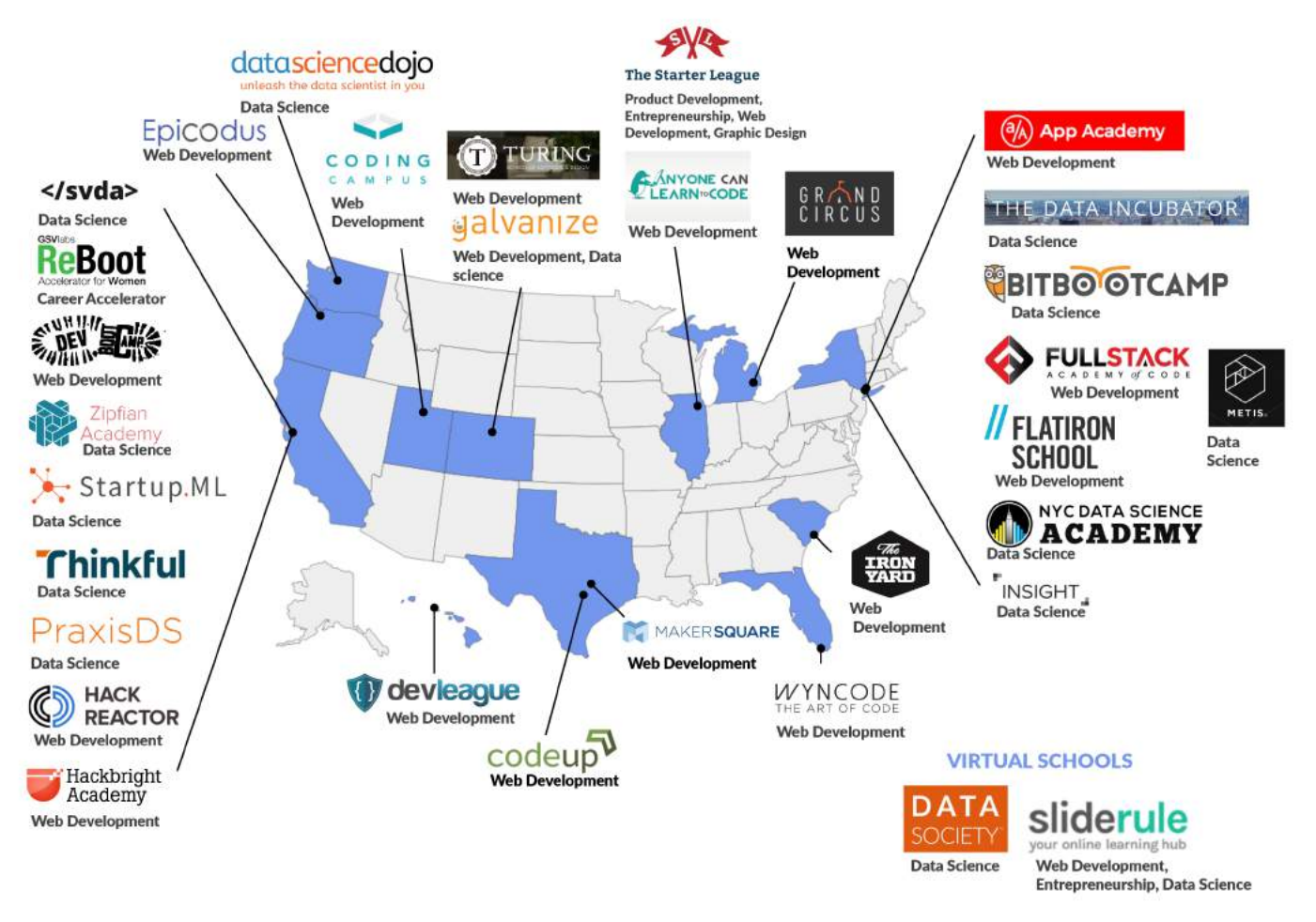
Programs like **App Academy** and **Silicon Valley Data Academy** (SVDA) at **GSVlabs** flipped the economic models in favor of their students. App Academy was paid by a portion of salaries earned by graduates when they secured a new job. SVDA

[38] Bureau of Labor Statistics, Dev Bootcamp

[39] *Course Report*, "Bootcamp Study," 2015

charged employers for access to its talent — when a company hired an SVDA graduate, it paid a "head hunting" fee.

LEADING TECHNOLOGY + INNOVATION "BOOTCAMPS"



The gigantic momentum behind "Bootcamp" programs is a direct result of providing tangible skills that make knowledge workers more valuable. This trend has been further propelled by models that remove barriers to program enrollment, including finding sources other than students to pay for tuition. Importantly, no degree is associated with completing a Bootcamp program, but typically, an attractive employment opportunity is waiting for the graduate.

LinkedIn's $1.5 billion acquisition of **Lynda.com** in 2015 highlighted a growing appetite for on-demand learning resources that target timely career skills. Less intensive than Bootcamps but equally pragmatic, mobile and video-centric platforms like Lynda, **Grovo**, **Pluralsight**, **Cognotion**, and **StormWind** enabled people to learn *anytime*, *anywhere*. But LinkedIn's Lynda move signaled a broader trend, where the professional network would become an organizing force for lifelong learning.



LYNDA.COM

FOUNDED: 1995

WHAT IT IS

Acquired by LinkedIn for $1.5 billion in 2015, Lynda is an online platform founded by **Lynda Weinman** (pictured above, speaking at the ASU GSV Education Innovation Summit, where the transaction was announced) that helps anyone learn business, software, technology, and creative skills to achieve personal and professional goals. Members have access to the Lynda.com video library of engaging, top-quality courses taught by recognized industry experts.

Headquarters: Carpinteria, CA

Investors: Accel, Spectrum Equity, Meritech Capital (Acquired by LinkedIn for $1.5 billion in 2015)

WHY IT'S A GAME-CHANGER

Used by over four million lifelong learners, Lynda emphasizes tangible skill development taught through an intuitive, rich media experience.

Binge Learning: Like Netflix, Lynda offers a subscription model where users can learn all they want from the Lynda library, organizing an educational "play list" in a personal portfolio.

Mobile: Lynda optimizes content for mobile devices, encouraging frequent, short-burst learning exercises.



LINKEDIN

In 2007, Mark Zuckerberg described **Facebook**'s "Social Graph" — the network of relationships on the platform — as the lifeblood of his company. The #1, #2, and #3 fundamental of a social media network is *Engagement*. Facebook's acquisitions of **Instagram** for $1 billion in 2012 and **WhatsApp** for $22 billion in 2014, make all the sense in the world based on that engagement lens.

LinkedIn owns the World's "Professional Graph", and while it has enhanced many dimensions of networking, recruiting, and thought leadership since its launch in 2002, the education to career pipeline remains virtually unchanged. But as it nears 400 million users, the company is unveiling potentially game-changing "apps" that will create unprecedented engagement about how we choose what to learn and what to do with it. This could mean that all roads lead to LinkedIn.

1 PLAN

Released with little fanfare in 2014, LinkedIn's "YOUniversity" rankings score colleges based on their ability to launch graduates into desirable jobs. The data comes from LinkedIn's network. Rankings like these were impossible in its early days as the data was too limited. But with 13 years of operating history and nearly 400 million users, LinkedIn is quietly creating transparency around the way people choose what to learn and where. In addition to school rankings, people can now explore careers by geographic cluster of LinkedIn users, the colleges they went to, and their specific role within their company.

2 LEARN

LinkedIn acquired Lynda.com in 2015 for $1.5 billion in a bid to be a hub of high-impact, on-demand digital learning resources. Lynda expands LinkedIn's efforts to engage users across the "News to Knowledge" continuum. In 2012, the company began soliciting influential business personalities like Richard Branson, founder of the **Virgin Group**, to write original content for the site. LinkedIn hired former *Fortune* editor, Dan Roth, to serve as its "Executive Editor", and in 2013, it acquired the newsreader app *Pulse*. LinkedIn's popular app for editing and sharing slides, *SlideShare*, has over 70 million users.

3 CONNECT

LinkedIn revenue from talent recruitment accounts for over 60 percent of its total revenue because the core value of the network today is connecting with a qualified, searchable audience. By integrating validated digital certificates from education platforms like **Coursera** and **Duolingo**, LinkedIn is increasingly developing user profiles that move beyond self-reported data. They are creating "Knowledge-as-a-Currency" by enabling people to demonstrate what they know. LinkedIn reports that users with digital certificates have 6x more profile views than those without one.

What's Next

While LinkedIn is unquestionably the leading professional network, it has the opportunity to completely transform how our talent pipeline works. Lynda, specifically, can catalyze this transformation, if it is properly integrated into the LinkedIn platform. The ability to find on-demand resources to sharpen skills is a nice to have. But it's not a game-changer. LinkedIn must quantifiably assess the skills people have, benchmark them against peers and their career goals, and then proactively recommend specific learning resources. Looking at a job? Here's what you need to learn right now to be competitive. Here are the skills your peers have and here's how you stack up. That's a killer app.

By 2015, LinkedIn's underlying data asset was quietly becoming a center of gravity. With 400 million users and 13 years of operating history, LinkedIn could predict where people wanted to work and why. It could forecast the types of talent employers needed and point to the schools that would produce it. But much of what LinkedIn knew about its network was by inference or user-reported data — where they went to college, for example. To be a true game-changer in education, LinkedIn needed to quantify its users' knowledge portfolios, benchmark them against the skills demanded by their desired career path, and then recommend relevant learning resources.

Integrating with education providers that produced verified digital credentials and evidence of learning — including **Coursera**, **Udacity**, **General Assembly**, and **Duolingo** — was the first step. Capturing quantified skills through innovative assessment platforms like **Sokanu** and **Smarterer** (**Pluralsight**), which could measure core career aptitudes in as few as ten questions, would be a paradigm shift. All roads in the fragmented lifelong learning market would lead to LinkedIn.

NEXT GENERATION "ASSESSMENT" PLATFORMS

Determining Your Knowledge, Skills, and Abilities

Smarterer (2010)

Smarterer offers a sophisticated assessment engine that enables individuals and enterprises to quantify core skills in as few as 10 questions. Acquired for $75 million in 2014 by Pluralsight — the World's largest learning platform for professional training — Smarterer bridges the gap between proving and improving skills. Smarter has administered over 2.5+ million assessments and 78+ million questions across an 800 assessment library.

INVESTORS: Google Ventures, True Ventures, Boston Seed Capital, Rethink Education

ACQUIRED: Acquired by Pluralsight in 2014 for $75 million

Knack (2012)

Co-founders **Guy Halfteck** (CEO) and **John Funge** (Founder & CTO) have created Knack's breakthrough technology uncovers your talents, traits, and skills and reveals the strengths that make you stand out—all from patterns of behavior that emerge when you play games. Once you find you "Knacks," you can share them with employers to pursue aligned careers. Businesses, in turn, use Knack to recruit the right talent for the right roles.

INVESTORS: KPCB (Undisclosed capital raised)

Pymetrics (2012)

Pymetrics assess cognitive and personality traits using a series of fun and quick neuroscience games, making it easier than ever to understand where your inherent characteristics can lead to success. It helps users build career paths and enables employers to identify optimal hires.

INVESTORS: Khosla Ventures ($2.5 million raised)

ALLL ROADS LEAD TO LINKEDIN

Lifelong Learning Converges on the "Professional Graph"



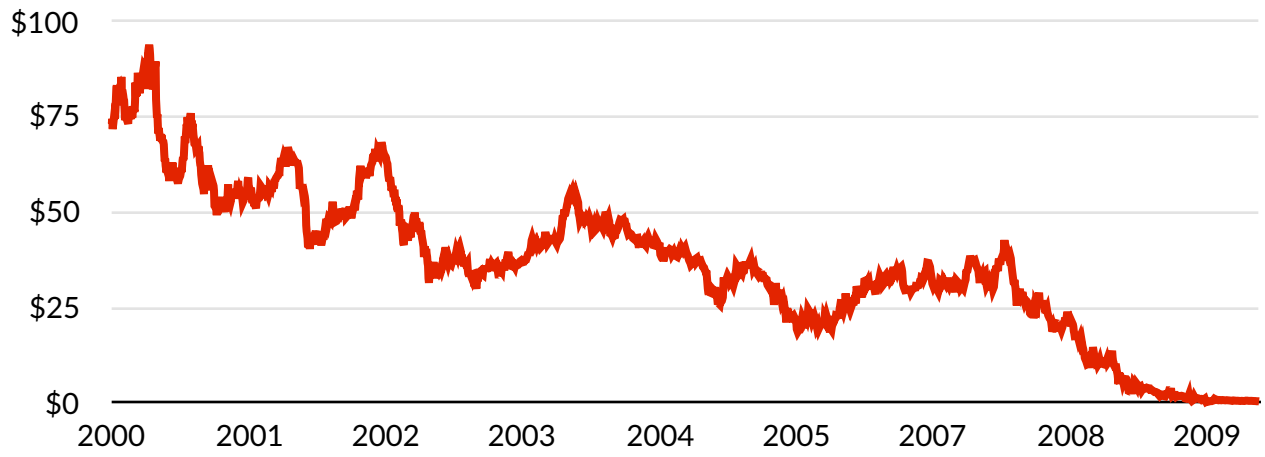
IF YOU WANT A JOB, CREATE IT YOURSELF

In 1953, Charles Wilson, then CEO of General Motors, was President Dwight Eisenhower's nominee to become the Secretary of Defense. Asked in his Senate confirmation hearings whether he would have a problem making governmental decisions that might not be in the interest of GM, he famously replied that he found it hard to imagine a conflict of interest because, “as General Motors goes, so goes the nation.”

Thankfully, Wilson was wrong.

As GM Goes, So Goes the Nation?

GM Share Price, 2000 - 2009



Source: U.S. Census Bureau

KEY TAKE-AWAYS

General Motors (GM), a $46 billion market value business at its peak, filed for bankruptcy in 2009, a move once viewed as unthinkable that became inevitable after years of losses and market share declines. Until 2008, when it was overtaken by Toyota, GM was the World's biggest carmaker, producing over 9 million vehicles a year in 34 countries. It had 463 subsidiaries and employed 234,500 people, 91,000 of them in America.

** As of September 2015*

But GM's 2009 bankruptcy put an exclamation point on a new truth. Anybody counting on a large industrial manufacturing company was likely to be disappointed, unemployed, or both. The engine of the future had become the entrepreneurs who were creating all of the opportunities and jobs.

Consider that only 12 percent of the companies in the Fortune 500 in 1955 remained there in 2015. From 1990 to 2015, the Fortune 500 lost an estimated 25 million jobs, while 75 million jobs had been created by new businesses.

LEADING U.S. ACCELERATORS + INCUBATORS



The best advice was that if you want a job, create it yourself. The natural response was the emergence of start-up incubators and accelerators. These communities provided would-be entrepreneurs with information, education, insights, resources, relationships — and, in some cases capital — to help bring their ideas to life. In 2010, there were just a handful of incubators and accelerators in the United States. By 2015, it was estimated that there were over 1,000.



GSVLABS

FOUNDED: 2012

WHAT IT IS

GSVlabs is a global innovation center focused on accelerating high-impact entrepreneurship in the areas of Education Technology, Sustainability, Big Data, and Mobility. Anchored by its Silicon Valley campus, GSVlabs is an ecosystem of entrepreneurs, mentors, investors, global corporations, and international agencies. Its vision is to connect Silicon Valley to the World and the World to Silicon Valley.

Led by **Marlon Evans** (CEO), **Dianne Flynn** (CMO), and **Alec Wright** (COO), GSVlabs is home to over 140 startups, connecting entrepreneurs with resources around core verticals to create transformative businesses. Beyond mentorship, networking, and core skills development — "apps" for entrepreneurs — GSVlabs offers a variety of targeted programming to accelerate growth and innovation.

Headquarters: Silicon Valley

Investors: GSV Capital

Capital Raised: Undisclosed

WHY IT'S A GAME-CHANGER

Innovation Labs: Member companies are segmented across four expert-led innovation labs: EdTech, Mobile, Big Data, and Sustainability.

Corporate Innovation: Leading global corporations partner with GSVlabs to accelerate innovation, including Intel, which launched a dedicated accelerator for EdTech as part of its involvement in the ecosystem.

Silicon Valley Data Academy (SVDA): Eight-week immersive training program to become an enterprise class data scientist or engineer launched in partnership with Silicon Valley Data Science, an elite consulting firm.

ReBoot: Accelerator that empowers women to restart their careers through immersive technology education and professional networking.



1776

FOUNDED: 2013

WHAT IT IS

Founded by Co-CEOs **Donna Harris** and **Evan Burfield**, 1776 is a global incubator and seed fund that helps engineer the success of promising startups tackling important challenges like Education, Health, Energy & Sustainability, and Transportation & Smart Cities.

Headquarters: Washington, DC

Investors: Undisclosed

Capital Raised: Undisclosed

WHY IT'S A GAME-CHANGER

1776 empowers entrepreneurs tackling complicated industries to succeed through a blend of educational resources, a broad support network, and unique access to investors and influential organizations. Each year, 1776 hosts the Challenge Cup, a global startup competition across 45 cities focused on solving the major challenges of our time.

Education: Proprietary curriculum covering entrepreneurship fundamentals and industry insights (e.g. Market Dynamics, Regulatory Issues, etc.), coupled with offerings from education partner, General Assembly.

Mentorship + Network: Access to subject-matter experts, successful entrepreneurs, industry executives, policymakers, and investors.

Organizations like **GSVlabs**, **1776**, **1871**, **Galvanize**, and **Y Combinator** applied variations of the model, blending educational programming with business acceleration resources in a community of highly engaged participants. Founded in 2008 by **Dr. Peter H. Diamandis**, Founder and CEO of the XPRIZE Foundation, and **Ray Kurzweil**, futurist and Director of Engineering at **Google**, **Singularity University** focused on inspiring current and future leaders to apply exponential technologies to address humanity's grand challenges. Operating immersive education programs and an adjacent accelerator, Singularity effectively created a media platform around the incubation of ideas.

What We Did About It

Building on our analysis of "Models that Work," we implemented the following initiatives to create equal access for all Americans to participate in the future.

1. Create a Federal Department of Talent

IDEA: Public policy was positioned to play a far more constructive role in U.S. talent development if we could align federal priorities and resources around the goal of creating a 21st century workforce. Drawing on a compelling strategy outlined by **Lumina Foundation** CEO **Jamie Merisotis** in his insightful book, *America Needs Talent*, we created a *Department of Talent* (DOT), merging the *Department of Education* with the employment and training functions of the *Department of Labor*, as well as the Office of Headstart (which formerly resided under *Health and Human Services*).

Creating a workforce that can compete in the Global Knowledge Economy is dependent on cultivating individuals that have a complex set of integrated skills and capabilities. Success depends on quality foundational education, provided in K-12 schools and universities, as well as through non-traditional channels. It depends on acquiring the right skills and training, learned in community colleges and on the job. And a high quality workforce depends on its values, such as determination, initiative, ingenuity, and service to others.

IMPACT: A fragmented federal policy — where early childhood development, public education, and workforce training were addressed in silos by three separate agencies — was a recipe for mediocrity, or worse. We needed integrated vision and action to give everyone an equal chance to participate in the future.

The *Department of Talent* created greater efficiency and focus, obliterating the distinction between "education" and "training." It developed and implemented strategies for workforce-development programs that aligned public education with high demand skills and core competencies. Importantly, it created a logical

strategy for regulating and accrediting education providers that delivered proven outcomes, favoring models that effectively developed 21st century skills over models that conformed with the old way of doing things.

2. Unlock Actionable Human Capital Data

IDEA: To create better transparency around key workforce trends, we developed an open platform with valuable federal data about the U.S. human capital pipeline to power impactful commercial applications. Too often, government data about education and employment trends languished in obscure, inaccessible silos. By the time it was prepared and released through an alphabet soup of government agencies, it was already obsolete.

Building on the *Data.gov* initiative, which committed to releasing more data that could power commercial applications, we integrated proprietary federal data from the *Bureau of Labor Statistics*, the *U.S. Census Bureau*, and the *National Center for Education Statistics* into open repositories.

IMPACT: The **Corporate Executive Board's** (CEB) *TalentNeuron* platform, for example, provided actionable insights for employers and policymakers using aggregated employment data from more than 800 public, primary, and proprietary sources of employment data, representing over 100 countries, more than 1,000 cities, and over 42,000 data points per city. The platform covered over 150 job functions and 1,200 skill sets by mining data from job sites, company career sites, digital and social media, and patent databases. **Burning Glass** used artificial intelligence technology to analyze hundreds of millions of job postings and real-life career transitions to provide insight into labor market patterns. By releasing the data, we made these platforms smarter, more relevant, and impactful.

3. 21st Century Skills Curriculum

IDEA: To jumpstart the creation of a "Learning Nation" in the United States, we created a digital curriculum for core 21st century skills, with a focus on "entrepreneurship" and "learning how to learn." Collaborating with subject-matter experts like **General Assembly**, **Grovo**, **Lynda**, **Pluralsight**, **Koru**, and **Fullbridge** — who had a proven track record in arming people with relevant skills — we assembled the best ideas into a toolkit for the modern worker.

IMPACT: Our curriculum was widely adopted because we invested heavily to make it entertaining and personalized. In 2013, **Disney's** animated film, *Frozen*, was released to worldwide acclaim, attracting 50 million U.S. viewers of all ages and surpassing $1 billion in box-office revenue. It cost $150 million to produce. Compared to the $4.3 billion Race to the Top initiative launched in 2009, an investment of this size to create a national curriculum seemed like a modest approach.

Emphasizing production quality and engagement, we applied the best design techniques available to create a foundational curriculum that could plug into adaptive learning platforms like **Knewton** and **Acrobatiq** and be delivered through leading online course delivery platforms. To further broaden the appeal of the curriculum, we "versioned" the content for multiple age groups and created professional development and teacher resources for educators that wished to implement the courses in their classroom. People who completed the courses were awarded validated digital credentials at no cost.

CAREER PREPARATION PROGRAMS

Immersive Career Preparation Programs

Company	Founded	Capital Raised	Investors
Fullbridge	2011	$28 million	GSV, Tomorrow Ventures
Koru	2013	$13 million	A16Z, Maveron, First Round, QueensBridge Ventures, Trilogy, City Light Capital, Battery Ventures
Purposely	2013	$2+ million	Undisclosed
Modern Guild	2012	$1.4 million	Angels

Source: CrunchBase, Forbes, Purposely, GSV Asset Management



ANDELA

FOUNDED: 2014

WHAT IT IS

Andela is a global accelerator that trains the top talent in Africa in software development and connects them top employers. Led by **2U** co-founder **Jeremy Johnson**, Andela aspires to train 100,000 developers across the African continent in the next decade.

Headquarters: New York, NY

Investors: Spark Capital, Learn Capital, SparkLabs, Global Ventures, Peak Ventures, Arena Ventures, Omidyar Network, Deborah Quazzo (GSV Advisors)

Capital Raised: $13 million

WHY IT'S A GAME-CHANGER

Andela finds and trains untapped talent in Africa, which they believe to be home to the World's largest pool of untapped potential. They filter through over tens of thousands applicants to find those that have the most talent. Andela then provides these developers with over 1,000 hours of technical training and professional development.

Instead of charging tuition, Andela pays their students to learn by financing their education through the client work that the students complete during their initial training. Andela recently hosted an all-female technology bootcamp, in an effort to level the playing field for women entering technology.



KORU

FOUNDED: 2013

WHAT IT IS

Growing up on a farm in Canada, co-founder **Kristen Hamilton** (CEO) was no stranger to hard work. She cites two key lessons from her childhood that inspired Koru, an intensive job training program that prepares soon-to-be and recent college graduates for high-demand careers: 1) People typically find fulfillment when they accomplish difficult tasks, and 2) the best way to learn is often by *doing*. Hamilton launched Koru with co-founder **Josh Jarrett** (Chief Learning Officer) — a founding member of the Postsecondary Success team at the **Bill & Melinda Gates Foundation** — to address a broken talent pipeline where companies struggle to find entry-level talent while college graduates struggle to find jobs.

Headquarters: Seattle, WA

Investors: A16Z, Maveron, First Round, QueensBridge Ventures, Trilogy, City Light Capital, Battery Ventures

Capital Raised: $13 million

WHY IT'S A GAME-CHANGER

Over 85 percent of Koru graduates are placed in jobs because the program is intensive, highly structured, and directly aligned with the skills employers are seeking.

Skills + Experience: Four-week immersive training programs revolve around a "featured employer" like **LinkedIn** that informs real-World business challenges at the core of Koru's curriculum. Office visits provide a snapshot of live working environments.

Mentorship + Networking: Students receive daily feedback and guidance from Koru coaches, hiring managers, and company leaders. Koru partners offer interviews at program completion, benefitting from access to a talent pipeline armed with the skills they are seeking.

ON-DEMAND LEARNING PLATFORMS

Company	Founded	Capital Raised	Investors
Codeacademy	2011	$13 million	KPCB, USV, Index Ventures, SV Angel, CrunchFund, Y Combinator, Bowery Fund, Thrive Capital
Craftsy	2010	$106 million	Tiger Global, Adams Street Partners, Access Venture Partners, Stripes Group, Silicon Valley Bank
Curious	2012	$23 million	GSV, Redpoint
Grovo	2010	$22 million	Accel, SoftTech VC
Khan Academy	2006	Non-Profit	Key Funders: Google, Gates Foundation, Ann & John Doerr, Reed Hastings, The O'Sullivan Foundation, Valhalla Foundation, BofA, Comcast, AT&T
Lynda *LinkedIn*	1995	*Acquired by LinkedIn in 2015 for $1.5B*	N/A *Original Investors: Accel, TPG, Spectrum Equity, Meritech Capital*
mLevel	2012	$5 million	BIP Capital
OpenSesame	2011	$10 million	Partech Ventures, Harmony Investments
Pluralsight	2004	$163 million	Insight Venture Partners, Sorenson Capital, Iconiq Capital, Felicis Ventures
Skillshare	2010	$11 million	Union Square Ventures, Spark Capital, BoxGroup, SV Angel
Stormwind	2008	$10 million	GSV Asset Management
Treehouse	2011	$13 million	Greylock, Kaplan Ventures, The Social+Capital Partnership
Udemy	2010	$113 million	Insight Venture Partners, Norwest Venture Partners, Learn Capital, Stripes Group, MHS Capital
YouTube *Google*	2005	*Acquired by Google in 2006 for $1.7B*	N/A *Original Investors: Sequoia, ARTIS Ventures*

Source: CrunchBase, Forbes, GSV Asset Management

GAME CHANGERS

pluralsight
hardcore developer training

PLURALSIGHT

FOUNDED: 2004

WHAT IT IS

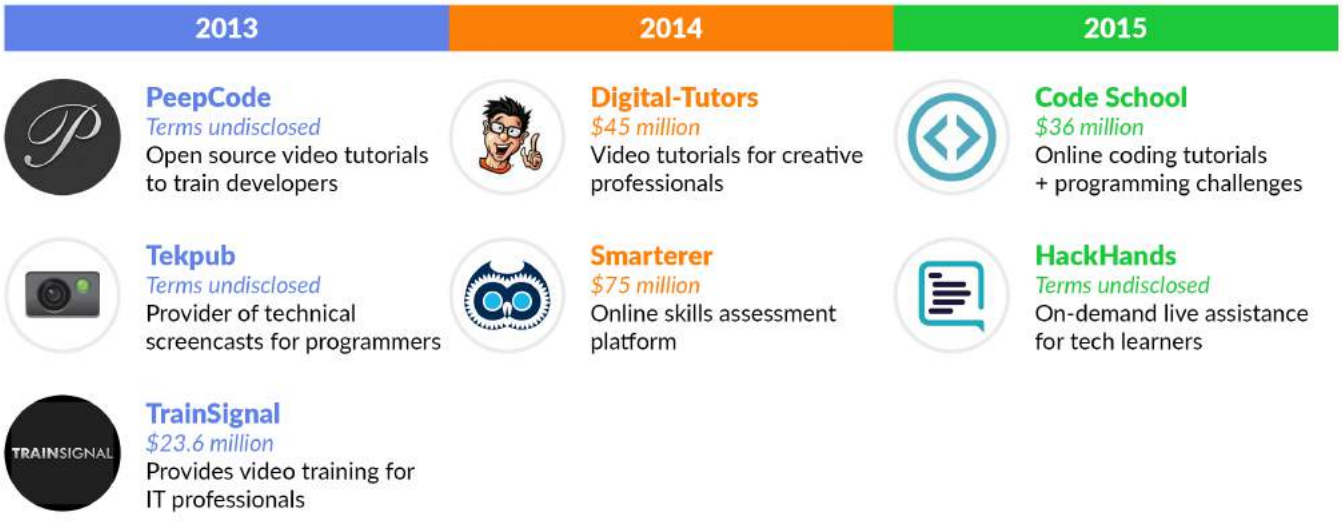
Pluralsight is the largest online learning platform for professional software developers and IT specialists. Offering over 4,000 courses authored by leading industry practitioners, Pluralsight is a career catalyst, delivering hands-on practical training for in-demand jobs.

Headquarters: Farmington, UT

Investors: Insight Venture Partners, Sorenson Capital, Iconiq Capital, Felicis Ventures, Deborah Quazzo (GSV Advisors)

Capital Raised: $163 million

Key Acquisitions (2013-2015):



WHY IT'S A GAME-CHANGER

Pluralsight has emerged as the leading full-service online education hub for technical professionals to pick up new skills, learn how to use new tools, and find answers across a broad range of technology topics from carefully vetted instructors.

On Demand: Blend of short- and long-form on-demand course content — organized in logical learning sequences that culminate in mastery of key skills — coupled with on-demand expert "tutoring" resources.

Skills Certification: Pre- and post-course assessments to track progress, coupled with digital certificates to build a "knowledge portfolio" of mastered skills.

GAME CHANGERS

GROVO

Today's Education

GROVO

FOUNDED: 2010

WHAT IT IS

Grovo addresses the skills gap by teaching Internet and modern professional skills with highly-curated 60-second videos in a beautiful and engaging training platform.

Headquarters: New York, NY

Investors: Accel, SoftTech VC

Capital Raised: $22 million

WHY IT'S A GAME-CHANGER

In 2015, the digital skills gap drove almost a $1.3 trillion productivity loss for the U.S. economy. More than 200 million people were part of the digital workforce, yet 58 percent believed they were not productive with the digital tools their organizations used.

Grovo provides a solution with brief, clear, and high-production value training that is relevant to daily life and work. In a process called "microlearning," complex ideas and skills are addressed through short and focused segments. Grovo personalizes content for users based on an assessment of their baseline skills.

GAME CHANGERS



STORMWIND

FOUNDED: 2008

WHAT IT IS

StormWind applies Hollywood-quality production techniques to create highly engaging online training for IT professionals. Led by online learning pioneers **Tom Graunke** (CEO) and **Corey Frank** (EVP Sales + Marketing), StormWind focuses on high-demand skills across leading technology platforms, including Microsoft, VMware, and Cisco.

Headquarters: Scottsdale, AZ

Investors: GSV

Capital Raised: $10 million

WHY IT'S A GAME-CHANGER

Companies look to StormWind for online IT training that effectively educates in half the time and at a fraction of the cost of traditional instructor-led offerings.

By applying the most engaging audiovisual design techniques to courses delivered by World-class IT experts, StormWind bridges education and entertainment in an engaging, memorable learning experience. StormWind's roster of over 1,000 customers spans the Fortune 500 to the Federal Government.

GAME CHANGERS

GALVANIZE

FOUNDED: 2012

WHAT IT IS

Co-Founded by CEO **Jim Deters** and Managing Director **Lawrence Mandes**, Galvanize bridges entrepreneurship and education in a network of communities that combine shared workspace with high value technical education.

Headquarters: Denver, CO

Investors: University Ventures

Capital Raised: $21 million

WHY IT'S A GAME-CHANGER

Galvanize serves over 1,000 members across six campuses that combine bootcamp-style technical education offerings, accredited programs, and fee-based shared space and incubation services for startups. Effectively serving as a hub for entrepreneurial talent, Galvanize empowers members to develop 21st century skills including web development and data science in a purpose-driven community.

Beyond core programs and services, Galvanize operates a seed-stage venture capital fund, backing promising founders, connecting them with resources and talent across its network of connected campuses.

GAME CHANGERS

1871

FOUNDED: 2012

WHAT IT IS

Named for the Year of the Great Chicago Fire, 1871 celebrates what happened next. Some of the nation's most brilliant engineers, architects, and inventors came together to build a new city. In this spirit, 1871 has created an innovation community under the leadership of CEO **Howard Tullman** that gathers Chicago's brightest entrepreneurs, engineers, and digital designers, providing them with the resources to create the future.

Headquarters: Chicago, IL

Funders: Cisco, Chase, E&Y, the Motorola Mobility Foundation, Comcast, CDW, State of Illinois

WHY IT'S A GAME-CHANGER

While 1871 attracts a broad range of entrepreneurs, education is at the core of its model.

Programming: From classes and lectures designed to empower entrepreneurs to on-site educational offerings from highly effective providers like the Flatiron School, 1871 has created a community that is constantly learning.

Universities: 1871 actively engages universities in the community, with programming for entrepreneurial undergraduates, satellite space for education institutions, and dedicated support resources for businesses that were started in college.

DV X Labs: DeVry Education Group's EdTech incubator is embedded in the 1871 community, supporting cohorts of innovative companies for 3-6 months with financial resources and industry expertise.

Kaplan Family



A major catalyst in rapidly-expanding industries has been the successful spawning from parent enterprise to multiple offspring. An example of this is the PayPal "mafia," which has become notorious for its involvement in many of the new big idea companies that are reshaping Silicon Valley, including Facebook, Palantir, Tesla, SpaceX, LinkedIn, and many more.

Godfather: Jonathan Grayer
Former Chairman & CEO, Kaplan; Chairman & CEO, Weld North

Mark Coggins Founder & CEO	M2 Education	William MacPherson CEO	QA
Jeffrey Conlon & Beth Hollenberg Co-Founders	everspring	Josh Reibel CEO	wireless generation Insight for Inspired Teaching
Sari Factor CEO	Edgenuity where learning clicks	Charles Thornburgh Founder & CEO	CIVITAS LEARNING
Jose Ferreira Founder & CEO	KNEWTON	Rob Waldron CEO	Curriculum Associates
Steve Fredette CEO & Chairman	barbri	Alan Tripp Founder & Chairman	insidetrack

FOREFATHERS

PIONEERS IN EDUCATION INNOVATION



"I had one good idea, but it was a darn good idea."

John Sperling

Founder, University of Phoenix

Sperling revolutionized the business of college education and access to it by founding the for-profit University of Phoenix in 1976, providing degrees for working adults. On his watch, the school grew from a small California operation to a publicly traded Fortune 500 company and established itself as the national leader in adult education and online classes.

Dennis Keller

Co-Founder, DeVry University

In 1987, Dennis Keller and his longtime partner Ron Taylor acquired DeVry Education Group, with a vision for increasing access to high-quality post-secondary education. Today, DeVry has over 90 campuses in the United States, Canada and Brazil serving nearly 60,000 students, and there are nearly 250,000 Devry alumni living in the U.S. In 2014, Dennis also co-founded Blyth-Templeton Academy in Washington, DC, to provide student-centered, individualized education that is affordable to a diverse community.



"Private investment capital has a great deal to offer in private education, because we are all owners. Nobody cares like an owner. We are driven to be as efficient and as high quality as we can possibly be."



"Regulation can either support healthy innovation, or it can kill it by reinforcing the old paradigm."

Stephen Shank

Founder, Capella University

Stephen Shank founded Capella University, a pioneer in online learning. Capella University was born out of a belief that quality higher education should be accessible to working adults. Today, Capella offers 43 online degree programs and over 145 specializations.



8

OPENING IT UP

Open System, Personalized Knowledge Portfolio

Creating a system that optimizes access to relevant education and credit for what you know.

Problem

America's education system was designed in the Industrial Revolution for linear, finite learning delivered in person. Obtaining the college credentials required to secure a good job was too time consuming and expensive. But perversely, based on the rankings of an irrelevant news publication, *U.S. News*, the schools that *rejected* the most people were held in the highest regard and provided a surefire path to opportunity. But in a hyper-competitive Global Knowledge Economy, where old industries were being upended by automation and digital disruption, we needed to support a society of lifelong learners. In other words, our best schools needed to be the ones that *educated* the most people. But education model innovation was stifled by antiquated accreditation requirements, which greatly disadvantaged companies that did not measure learning based on "seat time" and other irrelevant indicators.

MODELS THAT WORK

- **Open Platforms**: Platforms based on transparency, common standards, and diffused innovation *(e.g. Apple iOS + Google Android Mobile Operating Systems, LinkedIn "YOUniversity" School Rankings)*
- **Competency-Based Education (CBE)**: Student progression and credential awards based on learning, not "seat time" *(ex. Western Governors University, Cappella University, Wisconsin Flex Option, Southern New Hampshire University, StraighterLine)*
- **Open Learning + Micro Credentials**: Effective, non-accredited learning platforms providing relevant skills to large audiences + non-degree "micro credentials" that demonstrate what you know *(e.g. Coursera, Udacity, General Assembly, Mozilla Open Badges, Accredible, Credly, Acclaim/Pearson)*
- **Knowledge Portfolios**: Digital portfolios that capture formal education (academic degrees), as well as your skills, experiences, certifications, micro credentials, and informal learning experiences *(e.g. LinkedIn, Degreed, Pathbrite, Accredible)*
- **Knowledge Communities**: Transparent affinity groups based on knowledge exchange where member influence and stature is based on what you know *(e.g. GitHub, Stack Overflow, Maven, Upwork)*

SOLUTION

1. **Open Competency + Skill Standards**: Require programs receiving federal funding to demonstrate programmatic alignment to pre-defined 21st century skills (Learning How to Learn, Entrepreneurship, Critical Thinking, Communication); Link student work products to specific skills so they can be easily added to a Personal Knowledge Portfolio as evidence of learning
2. **Move Beyond Accreditation**: Eliminate the link between federal student aid and accreditation; Enable market forces, including increased transparency around student outcomes, to signal educational value

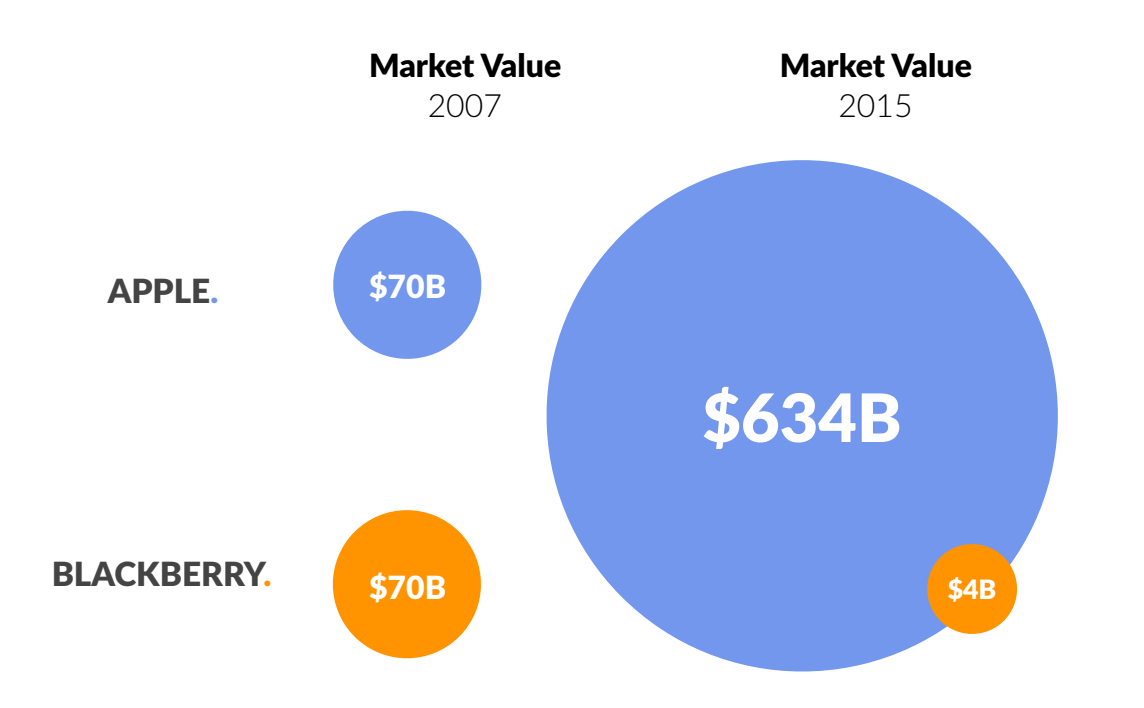
Less than ten years before we began our Twenty Mile March in 2015, **BlackBerry** was the coolest technology company in the World. In fact, people were so addicted to their BlackBerries that they were called "Crackberries."

In 2007, BlackBerry and **Apple** were both roughly $70 billion market value businesses. Then Apple launched the iPhone. By 2015, Apple's value had grown over 10x to $700+ billion[40], while BlackBerry had decreased more than 90 percent to $4 billion.

What happened?

BOOM VS. BUST: APPLE AND BLACKBERRY

Apple and BlackBerry Market Value ($ Billions), 2007-2015*



Source: Yahoo Finance, Apple, BlackBerry
**As of September 2015*

[40] Market value estimate, as of September 2015

A major part of the story is that Steve Jobs and the Apple TEAM created an insanely great product. The iPhone was a beautiful device with the first viable multi-touch screen interface.

But the critical innovation was Apple's unprecedented open mobile operating system, iOS, which enabled third-party developers to easily create apps for the device — effectively harnessing the wisdom of crowds to create a rich user experience.

Unlike BlackBerry, Apple had an army of outside developers who had already built consumer apps for its computers and iPods and were primed to do the same for the iPhone. By the time BlackBerry launched its first app store in 2009 — a full two years later — iPhone customers had already downloaded one billion apps.

Apple previously disrupted the music industry by “unbundling” albums, enabling people to pick and choose songs to create their music portfolio. In 2015, colleges made you buy the “whole album” to get a degree—essentially every course from the same institution whether it was exceptional or not.

Throughout history, “open systems” have constantly upended “closed systems” by creating superior efficiency, quality, and access. Free markets outperform rigged models like socialism. Open information leads to better decisions and unlocks the wisdom of crowds. Competition drives innovation and better prices. Monopolies create rents.

After the Federal Government made GPS data publicly available in the late 1980s, commercial services built on top of it created an estimated $70 billion in economic value within the United States. When the Egyptian regime shut down the Internet in January 2011, a problematic situation became explosive as outraged citizens poured into Tahrir Square in one of the largest single-day demonstrations of the Arab Spring.

As the pace of technology development continued to accelerate at warp speed, creating open systems was critical to harnessing and keeping pace with game-

changing innovations from across the Global Silicon Valley. Closed systems could be a death sentence.

In this spirit, **Tesla** announced in 2014 that it had removed the patents decorating the walls of its Palo Alto headquarters and that it would not initiate patent lawsuits against companies and entrepreneurs that wanted to use its technology.

TESLA OPENS IT UP

In 2014, Tesla Stopped Enforcing Its Patents to Encourage Global Innovation



Source: Forbes

At the time, CEO Elon Musk observed that it was to Tesla's and the World's benefit to catalyze a more rapid shift to electric cars. As for the competition? "You want to be innovating so fast that you invalidate your prior patents, in terms of what really matters. It's the velocity of innovation that matters."

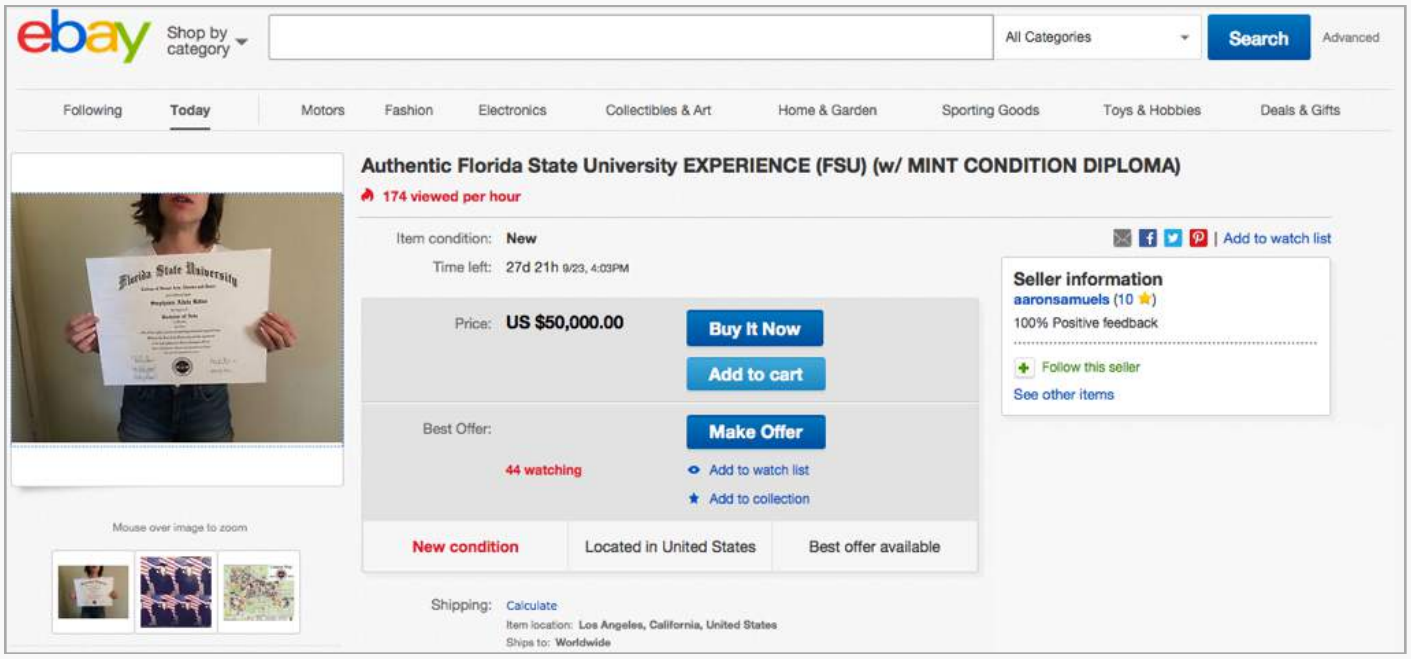
The education industry needs to transform itself from a mass production, closed system, into a mass customization, open system. Innovation will be accelerated by competition and transparency around the cost-to-value equation.

Problem

In 2015, recent Florida State University graduate Stephanie Ritter put her degree up for auction on **eBay** for $50,000. The posting explained that non-existent job offers, coupled with mountainous student loan debt, was enough to make her auction off her diploma.

DEGREE FOR SALE

"Why waste four years going to a state school for a piece of paper when you can just buy mine?"



Source: Daily News

While a bachelor's degree offered a $17,000 "wage premium" versus a high school diploma — an all-time high — just a third of Americans had one. Why? With only 19 percent of students entering college able to graduate in four years, and student debt ballooning to $1.2 trillion, two familiar culprits were at work: time and cost.

The paradox was that college education was the gateway to get into the game called "life." But graduates were becoming more and more frustrated with what a degree really got them. Effectively, they were trapped in a "closed" system where

acquiring knowledge was inefficient and expensive, and exclusivity was a proxy for quality.

U.S. NEWS… YOU LOSE

U.S. News had become the judge and jury for which schools and programs were considered to be the "best." Their methodology had perverse effects on how universities behaved and operated. Our country's top colleges were the institutions that ***rejected*** the most people.

But as we entered an age of workforce displacement and digital disruption, we needed tomorrow's best colleges to be the schools that ***graduated*** the most people. *In the new system, "U.S. News… You Lose."*

U.S. NEWS… YOU LOSE

Top Five Universities, Acceptance Rate & Local Youth Unemployment

	University	Acceptance Rate	State	State Unemployment Rate (Ages 20-24)
1	Princeton	7%	NJ	16%
2	Harvard	6%	MA	9%
3	Yale	7%	CT	13%
4	Columbia	7%	NY	15%
5	Stanford	6%	CA	16%

Source: Bureau of Labor Statistics

Reed College was a small liberal arts school nestled in a sleepy neighborhood five miles from downtown Portland, Oregon. It had a rich academic tradition — a 1961 *Scientific American* article declared, "This small college in Oregon has been far and away more productive of future scientists than any other institution in the United States."

Ironically, Reed claimed one of the all-time famous "non-graduates" among its alumni: Steve Jobs. He lasted six months before dropping out, deciding the cost was too high and the benefit too opaque.

But dropping out meant that Jobs could "drop in" on whatever classes he wanted, including the school's World-renowned calligraphy seminars. He learned about Serif and Sans Serif typefaces, about varying the amount of space between different letter combinations, about what makes great typography great. Ten years later, Jobs designed it all in the Macintosh computer. It was the first computer with beautiful typography.

After six months, I couldn't see the value in [college]. I had no idea what I wanted to do with my life and no idea how college was going to help me figure it out. And here I was spending all of the money my parents had saved their entire life. So I decided to drop out and trust that it would all work out OK.

STEVE JOBS

Former CEO, Apple (2005 Stanford University Commencement Address)

Reed College was itself a dropout of sorts. In 1995, it withdrew from sharing data with the *U.S. News* rankings after the *Wall Street Journal* reported widespread inaccuracies in the data reporting process. Through 1994, Reed consistently ranked among the "Best Liberal Arts Colleges" in the nation. In 1995, however, Reed found itself banished to the rankings wasteland — the "fourth tier" where schools were simply listed alphabetically — placing it somewhere after 120th in the country. It still ranked 77th in 2015 despite producing more students who move on to complete a doctoral degree than all but three schools in the United States.

Bad rankings drive bad decisions. Over 77 percent of students indicated that rankings were an important factor in their school selection process.[41] But inputs that drove popular rankings were disconnected from an institution's ability to develop critical skills and connect students with opportunities.

COLLEGE RANKINGS ARE DRIVEN BY FACTORS THAT DO NOT MATTER TO STUDENTS

Factor	Weighting	Questions & Concerns
High School Counselor + Peer Institution Assessment	23%	• How can high school counselors effectively assess nationwide colleges? • 93% of this factor is weighted toward Peer Institution Assessments; it simply rewards institutions that lobby others.
6-Year Graduation Rate	26%	• Is it a 4-year degree, or isn't it? • Measuring 6-year graduation rates rewards schools for systematically taking more time and money from students. • Average student debt is up nearly 3x since 1990
Average Spending per Student	10%	• Spending on "Research" is not applicable to most undergrads. • Spending on "Student Services" does NOT include Career Services.
Standardized Test Scores + Class Ranking of Incoming Students	11%	• Scores simply reflect incoming class's ability to take tests. • Tests like the SAT and ACT are a strong predictor of household income and a poor predictor of college or career success. • Tells prospective students little about outcomes.
Faculty Salary	7%	• Tells prospective students little about instructional quality and access to academic support resources.
Class Size	8%	• Tells prospective students little about instructional quality and access to academic support resources.
Alumni Donation Rate	5%	• Provides limited insights into student outcomes.
Freshmen Retention	5%	• Minimal weighting applied to vital metric of institutional effectiveness.
Professors with Highest Degree in Their Field + Full-Time Faculty	4%	• Tells prospective students little about instructional quality and access to academic support resources.
Acceptance Rate	1%	• Schools are rewarded for rejecting more students.
Full-Time Faculty	1%	• Tells prospective students little about instructional quality and access to academic support resources.

Source: Chegg, U.S. News & World Report, GSV Asset Management

[41] *Chegg*, Cheggheads Panel, 2015

The cascading effect was that many top employers adopted the mentality that where you go is more important than what you know. *In effect, the college admissions officer became the outsourced hiring manager*. After all, to get into the Ivy League, you had to be bright…right? Wall Street, top law firms, and consulting firms were all prime examples of this reality as they only recruited from the top-ranked schools.

Models that Work

DATA = TRANSPARENCY

Released with little fanfare in 2014, **LinkedIn's** "YOUniversity" rankings scored colleges based on their ability to launch graduates into desirable jobs. The data came from the 400 million professionals on LinkedIn's network. Rankings like these were impossible in its early days as the data was too limited. But with 13 years of operating history tracking millions of education and career paths, unprecedented transparency was suddenly at our fingertips.

LINKEDIN UNIVERSITY RANKINGS

Based on Career Outcomes

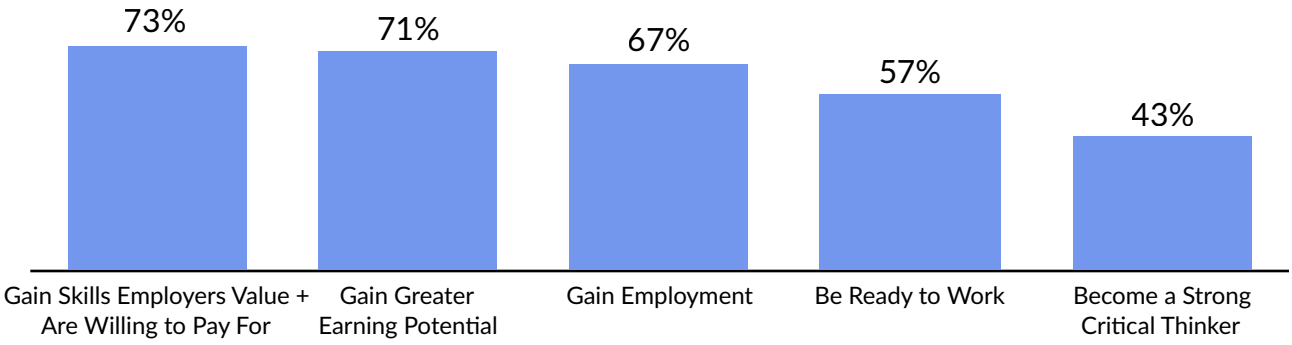
	FINANCE PROFESSIONALS	MARKETERS	SOFTWARE DEVELOPERS	MEDIA PROFESSIONALS
1	Penn	Penn	Carnegie Mellon	New York University
2	Yale	University of Michigan	Caltech	Hofstra University
3	Georgetown University	Harvard University	Cornell University	Duke University
4	Princeton University	New York University	MIT	Howard University
5	Columbia University in the City of New York	Cornell University	Princeton University	Northwestern

Source: LinkedIn

To be crystal clear, this approach had the potential to change *everything* about how we discovered what we needed to learn and where we needed to learn it. LinkedIn could quantitatively demonstrate which schools actually connected students with the jobs they wanted. Calculating an expected "Return on Eduction," or "ROE," was no longer guesswork.

Students Are Driven by "Return on Education" (ROE)

Top Reasons that Students Decide to Attend College



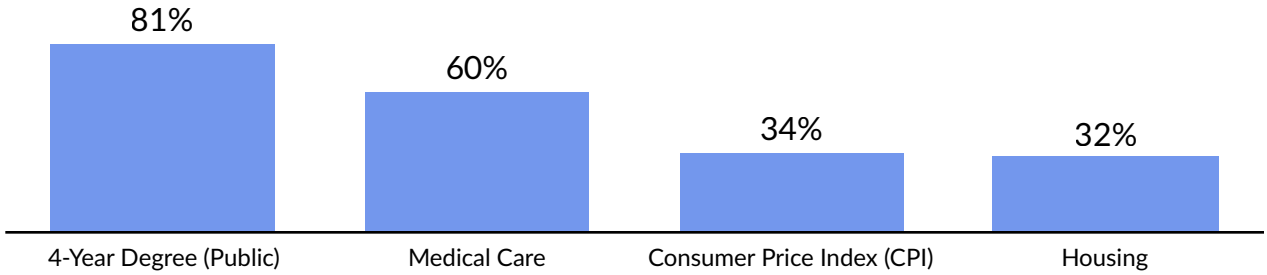
Source: Crux Research, Chegg

Here's how it worked. LinkedIn started by identifying "desirable" companies for each profession. They let the career choices of LinkedIn members determine how desirable it was to work at a company.

To illustrate this, imagine two companies, "A" and "B." If more finance professionals were choosing to leave company A to work at company B, the data indicated that getting a finance job at B was more desirable. Similarly, the ability of a company to retain its employees is a strong indicator of that employer's attractiveness. For each university and profession, LinkedIn then calculated the percentage of "relevant" graduates (people working in that profession) who had obtained "desirable" jobs. These percentages allowed LinkedIn to rank universities based on career outcomes across different professional areas.

College Price Inflation Dramatically Outpaces the Economy

Inflation Across Key Economic Indicators, 2000-2015



Source: Bureau of Labor Statistics

COMPETENCY-BASED LEARNING

The modern U.S. higher education system was fundamentally based on a "bundled" model that had evolved since the 17th century. Institutions offered comprehensive degree programs that valued academia over efficacy. Instead of focusing on outcomes, schools aimed to replicate the "Ivy League way," pouring money into research, facilities, and football teams. The net result was a fragmented system of bloated institutions that effectively served as gatekeepers to the most desirable careers.

This bundled model created a death spiral of expenses that increasingly accrued to the consumer. From 2000 to 2015, the cost of college increased nearly three times faster that the Consumer Price Index. At the same time, state funding for public universities — which enrolled 70 percent of college students — had dropped to roughly 1975 levels. In 1975, students working part-time could pay for one year of college by working 182 hours. By 2013, it took 991 hours.

Heretofore, the traditional school was set up for 18- to 22-year-olds — classes during the day, semester structure, dormitories, marching band — all basically irrelevant to people who recognized they needed more education to keep their job or advance in life. But for the innovators who saw an opportunity to reimagine

education, two major roadblocks stood in the way: the "Carnegie Unit" (the basis of the ubiquitous "Credit Hour"), and by extension, accreditation.

In the late 19th century, the boundaries between high school and higher education were opaque, and outputs from institution to institution were inconsistent. Many colleges demanded little more than elementary levels of literacy and math for admissions. Iowa State, for example, required only that applicants be 14-years-old, able to read and write in english, and able to pass a basic arithmetic test.[42]

Andrew Carnegie — then the World's richest man and an enthusiastic believer in education as a vehicle for upward mobility — believed that the system would produce better outcomes if operated with more consistency. It needed to produce learned talent like a factory churned out coils of steel.

In 1905, Carnegie assembled a team of academics and policymakers to bring order to the chaos, led by Harvard president Charles Eliot. After intensive field research, they determined that if colleges had a "Rosetta Stone" to assess a quality high school education, it would lead to a standards-based admissions process. This would in turn drive high school behavior as schools aimed to prepare their students for higher education.

So Carnegie's team devised a system based on "Carnegie Units" — units of time spent in key subjects based on the graduation standards of the country's best high schools. It was the best proxy available for measuring a student's knowledge and skills.

To drive adoption of his new standards, Carnegie dangled a giant carrot in front of higher education institutions. In exchange for adopting the Carnegie Unit as the basis for student admissions, colleges could could tap into a $10 million pension plan he set aside for professors at participating institutions. Schools overwhelmingly piled in.

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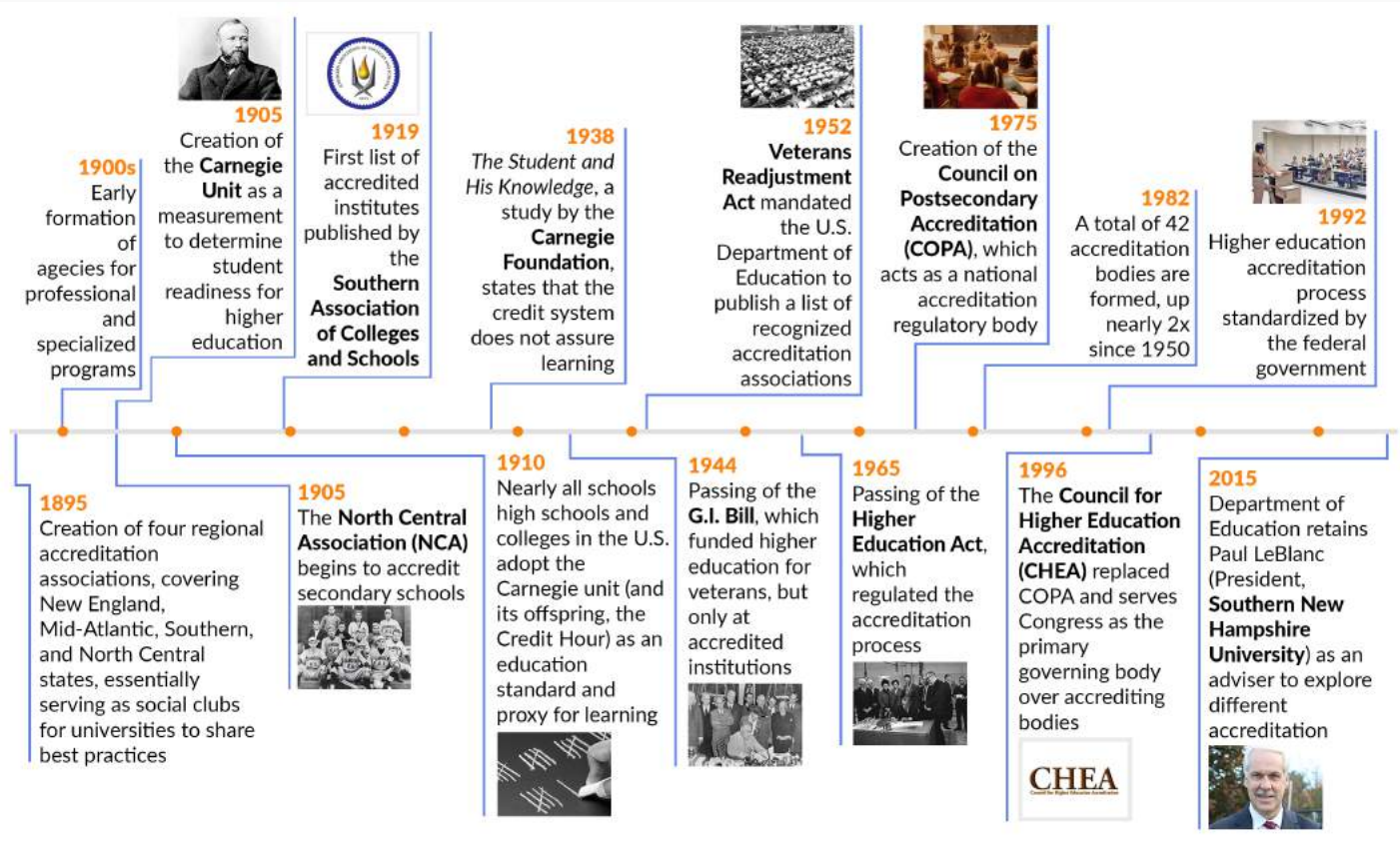
[42] *The Carnegie Foundation, "*The Carnegie Unit", (2015)

The Carnegie Unit quickly became an organizing principle for the entire U.S. education system. It drove official high school education standards. It spawned the "Credit Hour," which organized college degree completion around "seat time" and measured the appropriate workload for a professor.

Later, when government-backed accreditation agencies emerged to impose quality control on the burgeoning higher education system — and ultimately to determine which institutions were eligible to receive government funding — adherence to the credit hour framework was a basic requirement for a stamp of approval.

THE RISE OF A CLOSED EDUCATIONAL SYSTEM

Evolution of the Carnegie Unit and the Accreditation System for Higher Education



Source GSV Asset Management

The net result was a system that calcified for decades around a blunt measurement for learning — seat time. In 2015, innovative new education models

that strayed from the old way of doing things were effectively locked out of the party. No seat time meant no accreditation, which damaged the market value of a credential and advantaged the incumbents whose students could apply for State and Federal tuition support. Ironically, in 1938, perhaps concerned by what their namesake had spawned, the Carnegie Foundation conducted a study and found little correlation between seat time and learning.

Be careful when you blindly follow the masses… sometimes the 'M' is silent.

DEBBIE ELSEN

Competency-based education, or "CBE" models, were a viable alternative gaining traction that shifted the focus of accredited degrees from seat time to learning (*your ability to demonstrate the skills being taught in a course*). Pioneered by institutions like **Western Governors University** (WGU), which created the first accredited CBE program in 1999, CBE enabled people to earn credits by completing assessments that proved their mastery of key concepts — from writing in a business setting to using a spreadsheet to perform calculations. *Effectively, you paid to learn, not to sit.*

Cappella University, **Southern New Hampshire University**, and the **University of Wisconsin Flex Option**, which offered a blend of in-person and online programs, were all important innovators in this space. **StraighterLine** helped to further open up the competency model by creating a platform for students to take on-demand, accredited CBE courses that covered basic credit requirements for degree programs offered by thousands of schools. Joining StraighterLine for $99 per month, students could complete courses at their own pace (typically 30 days) and then transfer credits within a network of 1,800 U.S. colleges. By completing entry-level credits on StraighterLine's platform, *students could cut the final price for a diploma by 60 percent*.

GAME CHANGERS

straighterline

STRAIGHTER LINE

FOUNDED: 2010

WHAT IT IS

StraighterLine offers a low-cost subscription service for online courses that are guaranteed to transfer to a network of 90+ accredited colleges. Led by Founder + CEO **Burck Smith**, StraighterLine is creating unprecedented efficiencies for learners by reducing the time and cost to secure an accredited degree.

Headquarters: Baltimore, MD

Investors: FirstMark Capital, Rethink Education, Chrysalis Ventures, City Light Capital

Capital Raised: $10 million

WHY IT'S A GAME-CHANGER

StraighterLine has saved students over $80 million in college tuition costs by rethinking the pathway to an accredited degree.

Competency-Based, Self-Paced: For $99 per month, plus $49 per course, students can complete accredited, self-paced online courses. Course completion is determined by assessing student mastery of key concepts. StraighterLine students typically complete courses in 30 days.

Transferable Credits: StraighterLine course credits transfer to 90+ partner colleges and over 1,800 U.S. academic institutions through the ACE Credit service. By completing entry-level courses in a time-efficient, low-cost model, students can reduce the price tag of their degree by up to 60 percent.

Arizona State University's groundbreaking *Global Freshman Academy* was like a money-back guarantee in reverse. It enabled any student to complete entry-level courses online at no cost, making them "official" for $400 per credit, only when they passed. But we were most interested in education models that bypassed the old system altogether, enabling learners to seamlessly create a Personalized Knowledge Portfolio based on a variety of learning experiences.

OPEN LEARNING + MICRO-CREDENTIALS

We were encouraged by the green shoots of an open education platforms that were beginning to appear. **Khan Academy** captured the World's imagination in 2006 when its free lectures began appearing on **YouTube**. By 2015, over 15

million students per month were learning on the platform. **Coursera** brought scalable, career-aligned learning opportunities to the market with the launch of "Signature Track" credentials — on-demand, skill-centric course sequences developed in partnership with premier academic institutions and leading technology companies like **Instagram** and Google.

Coursera: Knowledge-as-a-Currency in Action

coursera

1	2	3	4
High-Value Educational Content	**Career Alignment**	**Evidence of Learning**	**Verified Credential**
Courses Created by the World's Colleges & Universities	Course Sequence + Final "Capstone Project" Developed in Consultation with Leading Employers	Final "Capstone" Project Provides Tangible Evidence of Learning in User's Portfolio	Verified, Branded Credential that Can Be Shared + Distributed through Professional Networks like LinkedIn and Upwork
INTERACTIVE DESIGN			
UC San Diego	Instagram	Original Research + User Experience Design Samples	
MOBILE COMPUTING			
University of Maryland	Google	Complex Mobile Cloud Computing Application	
BUSINESS FOUNDATIONS			
Wharton University of Pennsylvania	SHAZAM	Strategic Plan Addressing Real Business Opportunity	

Instagram, ironically, a poster child for digital disruption with the bankruptcy of **Kodak**, was now at the forefront of open education. Students were required to develop a tangible work product in a final product —like a functional mobile app — that could be shared as proof of their new skills. **Udacity's** *Nanodegree*, developed directly with technology companies, was another compelling example.

As a corollary, **Mozilla** joined with the **Kauffman Foundation** in 2011 to launch the *Open Badges* initiative, an open online standard to recognize learning in the many forms it can take. Partnering with a variety of academic institutions and employers, Mozilla's model for a digital "badge" was to provide key data about what knowledge or skills it represented, the issuer, and evidence of why it was issued.

GAME CHANGERS

mozilla OpenBadges

MOZILLA OPEN BADGES

LAUNCHED: 2011

WHAT IT IS

Mozilla *Open Badges* is an open online standard to verify and recognize learning in the many forms it can take. Launched in partnership with the MacArthur Foundation, the *Open Badges* initiative empowers people to create a transparent representation of the skills they have earned, using easily-shared "Badges" to further their education and employment objectives.

WHY IT'S A GAME-CHANGER

Open: *Open Badges* is not proprietary. It's an open technical standard any organization can use to create, issue, and verify digital badges. Users can easily import badges into professional network profiles like LinkedIn.

Stackable: Whether they're issued by one organization or many, badges build upon each other and can be stacked to capture broad skills and achievements.

Information Rich: Each badge has important data built in that links back to the issuer, criteria, and verifying evidence.

It was no coincidence that Mozilla was leading the digital badge movement. The organization was born from the wreckage of **Netscape**, whose multibillion-dollar

IPO touched off the 1990s dot-com boom before the company ultimately lost the "browser wars" to **Microsoft's** *Internet Explorer*.

A group of Netscape programmers didn't like the idea of Web access being dominated by a monopoly so they spun off the nonprofit Mozilla Foundation, which built a lighter, faster browser — *Firefox* — and gave it away. *Explorer's* market position has since badly eroded. Mozilla saw old World accreditation and the digital badge effort in similar terms.

HOW TO MAKE CREDENTIALS MATTER



Micro-Credential Thought Leaders (Left to Right): Connie Yowell (MacArthur Foundation), LaVerne Srinivasan (Carnegie Corporation), Brent Madden (Relay Graduate School of Education), and Jennifer Kabaker (Digital Promise)

KNOWLEDGE PORTFOLIO

The degree was an artifact of a system that was created in a vastly different era. It would be like a bank determining your net worth solely by the land you owned and ignoring all of your other assets —a hundred years ago it would have been a good proxy but not in 2015.

Similarly, the degree was historically the best practical representation of what you knew and how capable you were in an economy that was far less complex and

dynamic. The Megatrend of Knowledge-as-a-Currency was a direct response to the reality that a degree by itself was an inadequate reflection of how qualified you were for a career opportunity.

Creating a Personal Knowledge Portfolio meant capturing your formal education — namely, academic degrees — as well as your skills, experiences, certifications, and informal learning experiences. It included your ability to learn and adapt, and other qualities that demonstrated what you knew and who you were.

A knowledge portfolio that consisted of only one academic institution would be like having your entire financial portfolio parked in one mutual fund family. While, **Fidelity** is great and it has everything, everything it has isn't great. **Franklin Templeton** for international equities, **Janus** for growth companies, and **Pimco** for bonds might be a better path. It's likely that an optimized financial portfolio would include a variety of funds, individual stocks, bonds, art, collectibles, and real estate.

Similarly, the Personal Knowledge Portfolio with the greatest value and lowest volatility is likely to have formal education from a variety of academic institutions (like Mutual Funds), special classes for skills like communication (e.g. **Dale Carnegie**), coding (e.g. **General Assembly**), and financial skills (e.g. **Fullbridge**).

The open system works if people can trade what they know for opportunity, which is the foundation of Knowledge-as-a-Currency is about. It's about what you *know*, not where you go. It's about *knowledge*, not college.

LinkedIn was the gorilla in the room and was already demonstrating the effect of a simplified digital Knowledge Portfolio plugged into a deep and liquid talent network. Users with digital certificates in their profiles were *6x more likely to be discovered by potential employers*.

TOP 25 CREDENTIALS APPEARING ON LINKEDIN PROFILES

Coursera, at #2, Is the Only "Academic Institution" on the List

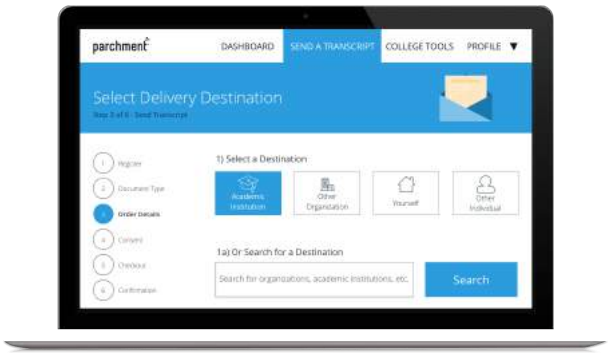


Source: LinkedIn, GSV Asset Management

But LinkedIn's access to verified user data was still limited. Much of what the network "knew" about its users came from self-reported information and algorithmic "inferences."

Led by **Blackboard** co-founder **Matt Pittinsky**, **Parchment** enabled people to curate and share validated academic credentials, moving secure digital records between educational institutions (as early as high school) and employers. Over three million people had used the Parchment's platform to exchange more than 13 million credentials.

GAME CHANGERS



PARCHMENT

FOUNDED: 2003

WHAT IT IS

Led by visionary CEO **Matt Pittinsky,** the Co-Founder of Blackboard, Parchment is the leader in education credentials technology, allowing learners, educators, and employers to collect, analyze, and share credentials in simple and secure ways. More than 3 million people and 8,300 schools and universities have used Parchment to exchange over 13 million transcripts and other credentials online.

Headquarters: Scottsdale, AZ

Investors: GSV Capital, Novak Biddle, The Raine Group, Salmon River Capital, Deborah Quazzo (GSV Advisors)

Capital Raised: $52 million

WHY IT'S A GAME-CHANGER

Digital Transcripts: Parchment has built a virtual pipeline for the exchange of validated academic transcripts and credentials, connecting learners, educational institutions, organizations, and employers.

Manage Credentials: Users can aggregate official transcripts and other certifications from thousands of credential providers in a single, secure, online profile.

Data & Analytics: Parchment analyzes transcript data to provide personalized recommendations and admissions forecasting to college applicants.

Degreed attacked the Personal Knowledge Portfolio from the opposite angle, enabling people to track, measure, and share everything they learned, from accredited courses to articles, conferences, and instructional videos on **YouTube**. Serving as a repository for skills gained by lifelong learners, Degreed also helped people create and manage personalized education plans, identifying timely opportunities and relevant providers to meet their goals.

GAME CHANGERS



DEGREED

FOUNDED: 2012

WHAT IT IS

Led by **David Blake** (Founder + CEO), a member of the founding team at Zinch (acquired by Chegg in 2011), Degreed enables people to track, measure, and share everything they learn — from accredited courses to knowledge gained by reading articles, attending conferences, or watching informative videos on YouTube.

Headquarters: San Francisco, CA

Investors: Peak Ventures, Deborah Quazzo (GSV Advisors)

Capital Raised: $10 million

WHY IT'S A GAME-CHANGER

Until recently, the degree has been the only meaningful "unit" of education relevant to employers. Degreed is "jailbreaking the degree" — providing a medium to measure all learning, whether it occurs in an academic, professional, or informal context.

Individuals: Degreed helps people document what they know, and then identify educational resources that will support their personal and professional goals, tracking progress along the way.

Businesses: Degreed helps organizations build talent by creating a culture of learning, connecting teams to the best training materials across vendors and allowing them to track and share their progress in a social, collaborative way.

KNOWLEDGE COMMUNITIES

When it comes to restaurant advice, the *New York Times* has high-paid critics, but I would never bet my dinner on what they write. But with thousands of foodies constantly reviewing restaurants, you can take *Zagat* ratings to the bank.

Similarly, the best models for an open learning future were being hatched by crowds in massive affinity groups that we called Knowledge Networks. Launched

in 2008, **GitHub** was a community of software engineers. It was conceived as a free platform to store and share code while collaborating on projects. But a funny thing happened on the way to over 11 million highly engaged users. It became a tech talent recruiting hotbed. How?

GitHub members could improve their stature and visibility in the community in a variety of ways. Checking high-quality code into the platform and sharing it in a public portfolio was a plus. Actively supporting community projects with effective technical recommendations, which were tracked by GitHub, was reflected in your user profile. Attracting" followers" meant you were the real deal.

WINNING MODELS

GitHub

GITHUB

FOUNDED: 2008

WHAT IT IS

Co-founded by **Chris Wanstrath** (CEO) and **PJ Hyatt** (COO), GitHub is the leading platform for software engineers to store, manage, and share their code with a community of over 11 million users.

Headquarters: San Francisco, CA

Investors: Sequoia, A16Z, Thrive Capital, IVP

Capital Raised: $350 million

WHY IT'S A WINNING MODEL

GitHub is a freemium platform that creates efficiency through transparent collaboration. Any user can upload code to a GitHub repository and share it. Users can build a following based on their talents — the quality of their code and the value of public comments they provide on community projects. For job-seeking software engineers, GitHub is emerging as a compelling alternative to a resume. Experienced coder? Valuable team member? Prove it.

Employers looking for the best tech talent took notice quickly. What better validator could there be about a potential software developer hire than an outstanding GitHub peer rating? And who needs a resume when you could just take a look at their portfolio of actual coding projects?

We saw a pattern emerging where the new accrediting agency would be peers in your professional affinity group. As talent platforms and knowledge communities continued to proliferate in conjunction with the rise of a "free agent" economy, the architecture of an open education system was springing up spontaneously.

SELECT MARKETPLACES FOR TALENT AND KNOWLEDGE

Platforms That Qualify and Rate the Talent + Knowledge of Their Participants

Company	Founded	Description	Talent Measure	Market Value*	Investors
Angie's List	1995	Marketplace for local service providers	Customer Ratings	$290 million *Public*	Battery Ventures, Cross Creek Advisors, Bridge Bank
care.com	2006	Marketplace for broad range of caregivers and service providers	Skills & Experience + Customer Ratings	$161 million *Public*	IVP, NEA, Trinity Ventures, Matrix Partners,
Freelancer	2009	Marketplace for broad freelance talent	Skills & Experience, Client Ratings + Work Samples	$619 million *Public*	Undisclosed
GitHub	2008	Code sharing and collaboration + expert technical community	Peer Review + Quality & Frequency of Answers	$2 billion *Private*	Sequoia, A16Z, Thrive Capital, IVP
Maven	2008	Network of expert freelance consultants with targeted expertise	Skills & Experience + Client Ratings	$3 million *Private*	GSV Capital
Stack Exchange	2008	Topical Question and Answer Communities	Peer Review + Quality & Frequency of Answers	Undisclosed *Private, $68 million raised*	A16Z, Index Ventures, Spark Capital, Bezos Expeditions, USV
Upwork	2003	Marketplace for expert freelance talent	Skills & Experience, Client Ratings + Work Samples	Undisclosed *Private, $74 million raised*	GSV Capital, Benchmark, NEA, T. Rowe Price, DAG Ventures

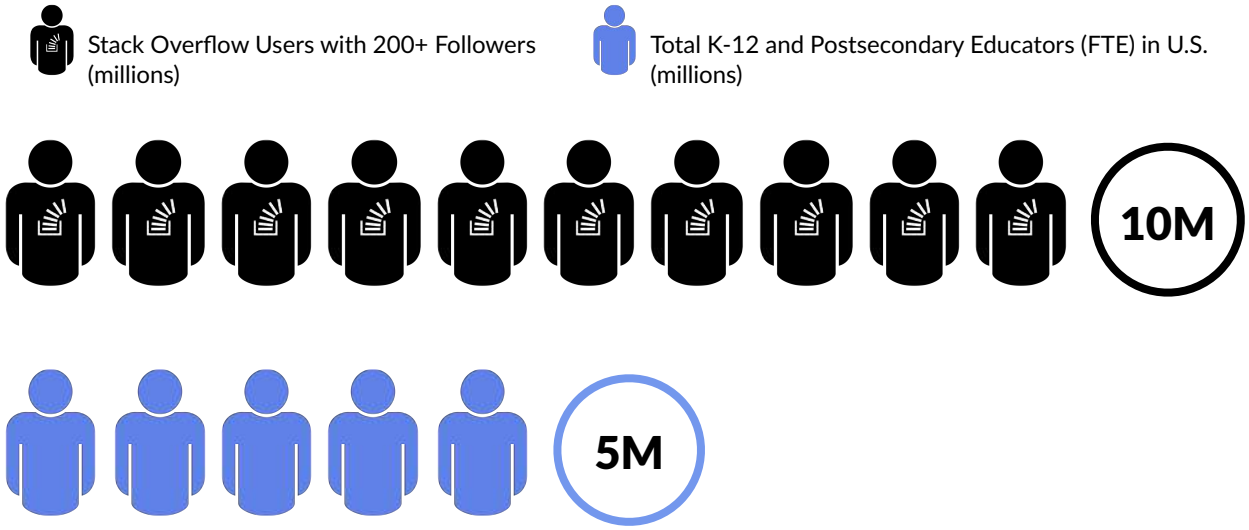
*Source: CrunchBase, Forbes, Yahoo Finance, GSV Asset Management *As of September 2015*

An interesting extension of this trend was the frictionless rise of highly effective teachers from communities of their peers. **Stack Exchange**, a 300 million member knowledge network in the same domain as GitHub, enabled a community of technical professionals to exchange ideas and insights in a public Q&A format. As users gained the respect of their peers by accruing “followers” and contributing

valuable responses to questions from the community, their comments were more readily broadcast to the community.

2X More Stack Exchange "Teachers" than K-12 + College

Stack Overflow Users with 200+ Followers vs. Total K-12 + College Educators



Source: NCES, Stack Exchange, GSV Asset Management

KEY TAKE-AWAYS

Stack Overflow was an expert community of software engineers where people exchanged ideas and insights in a Q&A format. The most effective "teachers" were determined by their peers through user ratings and account "followers." Over 10 million Stack Overflow users had 200+ followers. By comparison, there were five million K-12 and postsecondary educators *combined*, with 17 and 13 students per educator, respectively.

Stack Overflow simply assumed that people with large follower bases in a community of practitioners were probably worth highlighting. In 2015, over 10 million Stack Overflow users had 200 or more followers. By comparison, there were five million total K-12 and postsecondary "teachers" combined in the United States, serving 17 and 13 students per person.

Piazza applied this model to create a platform specifically for education, enabling students and educators to ask and answer questions in a wiki-style Q&A format. Used at leading universities like Stanford, Georgia Tech, MIT, and UC Berkeley, Piazza accelerated information exchange and helped students find support on tough questions when they needed it.

What We Did About It

Building on our analysis of "Models that Work," we implemented the following initiatives to create equal access for all Americans to participate in the future.

1. Transparency + Evidence for What You Know

IDEA: A key priority was to create a viable framework for Knowledge-as-a-Currency, or "KNAAC," the mechanism by which Knowledge Portfolios would become viable alternatives to traditional degrees. As a first step, we required any academic institution receiving federal funding to quantify the skills their programs offered around key foundational skill sets — a model implemented to great effect in Germany, where public education collaborated closely with industry leaders to create talent definitions. Higher education institutions, specifically, were required to give their students standards-based digital badges, using the technical framework developed under the *Mozilla Open Badges* initiative, to quantify what they were learning by completing key blocks of courses.

IMPACT: With this foundation in place, a transparent framework for a Personal Knowledge Portfolio came into focus, as students were able to seamlessly import evidence of the skills they mastered into widely available platforms like **LinkedIn**, **Degreed**, **Parchment**, or **Accredible**. Additionally, innovative "assessment" companies like **Smarterer** (**Pluralsight**) were able to draw on newly-available competency definitions to create tools for people to benchmark what they knew against what they needed to know to find a specific job.

2. Expand Definition of Education Value beyond Accreditation

IDEA: We eliminated the link between federal student aid and accreditation, rendering the patchwork quilt of accreditation agencies as they existed in 2015 irrelevant. We welcomed these groups to ply their trade on the free market — validating school effectiveness for fees — but they would no longer be "officially sanctioned" gatekeepers that determined which schools received federal dollars.

The reason for attaching federal aid to accreditation agencies at the time of the GI Bill in the 1940s was to protect against the squandering of government funds on institutions that provided an education in name only. What we found, however, was that many accredited institutions were completely ineffective, while highly-effective unaccredited models were unfairly disadvantaged by the system. Accreditation was simply was not a reliable proxy for educational quality.

In an age where **LinkedIn** could create transparency around student outcomes using the data from its network of nearly 400 million users, consumers had far superior information resources to determine the value-add of various education providers. Accordingly, we also discontinued the federal college "scorecard" that was released in 2015. Government guesswork around the career outcomes of graduates was misleading at best and had no business competing with LinkedIn.

IMPACT: The result was that students had much broader options to learn what they needed, when they needed it, from the best providers — whether it was a nano degree from **Udacity**, a *Signature Track* program for **Coursera**, or an immersive weekend coding course from **Hack Reactor**. Instead of relying on a college degree for what you knew, people could assemble a diverse Personal Knowledge Portfolio that increasingly aggregated a broader range of formal and informal experiences into a tapestry of your skills and abilities. This model was not only beneficial in that it helped people diversify their base of knowledge assets, (we knew intuitively from finance that it was a bad idea to put all your eggs in one basket) but it removed barriers to opportunity. No longer was it the case that the only pathway to the best career was to drop out of life and take on an unsustainable debt burden to get a four-year degree.

PERSONAL KNOWLEDGE PORTFOLIOS

Company	Founded	Model	Description	Capital Raised	Investors
about.me	2013	Freemium	About.me enables users to create personalized homepages, including media-rich resume-capturing professional experiences and curated work products.	$17M	Google Ventures, True Ventures, CrunchFund, Foundry Group, SoftTech VC
Accredible	2013	B2B + Freemium	Accredible helps people find learning opportunities and track their accomplishments with verified digital credentials, issued by any organization or education provider.	Seed	Angel
Degreed	2012	B2B	Degreed empowers people to track, organize, validate, and share everything they learn — whether it occurs in an academic, professional, or informal context.	$10M	Peak Ventures
Pathbrite	2012	B2B	Pathbrite is a digital portfolio that enables people to aggregate and showcase all digital evidence of what they have created, learned, or achieved.	$12M	Rethink Education, Cengage Learning
Portfolium	2013	B2B + Freemium	Portfolium is a career readiness network, enabling students from 2,000+ universities to showcase a portfolio of skills and achievements to employers.	$1M	Angel
Parchment	2003	B2B + Freemium	Parchment's platform enables users to securely aggregate, manage, and share official academic transcripts and credential across a broad network of academic institutions, organizations, and employers.	$52M	GSV Capital, Novak Biddle, The Raine Group, Salmon River Capital

DIGITAL "BADGING" PLATFORMS + PROVIDERS

Organization	Founded	Model	Description
 *Acclaim Pearson*	2014	B2B	Acclaim partners with academic institutions, organizations, and companies to create proprietary, verified digital badges. Pearson acquired Acclaim in 2014, making a bet that the testing industry would continue to evolve toward the digital certification of discrete skill sets.
 *Accredible*	2013	B2B + Freemium	Accredible offers an end-to-end certificate management platform, enabling organizations and academic institutions to create and award badges, tracking engagement rates (e.g. imports to LinkedIn, employer views of user badges, etc.) and setting dynamic pricing for premium credentials.
 *Basno*	2011	B2B	Basno enables organizations to easily create and design brand-aligned credentials that certify skills and accomplishments. Enterprise distribution and tracking tools facilitate easy-to-launch campaigns that call on large audiences to "claim" badges.
 *Credly*	2012	B2B	Credly offers a platform to create, verify, and share digital badges, building on the open source standards developed as part of the Mozilla *Open Badges* initiative. Thousands of organizations use Credly, including the New York City Department of Education, Adobe, Harvard University, and Instructure.
 *Digital Promise*	2011	NA: Creating Open Standards	Digital Promise, a leading nonprofit research organization at the intersection of education and technology innovation, is building a Badge Ecosystem focused on rigorous micro-credentials for teacher professional development.
 *Mozilla Open Badges*	2011	NA: Creating Open Standards	Mozilla *Open Badges* is an open online technical standard for the creation and verification of digital badges. An early champion of micro-credentials, Mozilla is building the foundation for innovative organizations to create and adopt innovative badging solutions.



BRILLIANT

FOUNDED: 2012

WHAT IT IS

Brilliant is creating a global network where exceptional students with shared interests and abilities can learn together by solving challenging math and science problems.

Headquarters: Palo Alto, CA

Investors: Kapor Capital, Deborah Quazzo (GSV Advisors)

Capital Raised: Seed

WHY IT'S A GAME-CHANGER

Brilliant is harnessing the same fundamentals that have fueled the rise of powerful knowledge communities like GitHub and Stack Overflow. By fostering collaborative problem solving among users with aligned interests and aptitudes, Brilliant is facilitating deep learning around critical math and science skills. With a network of over one million motivated, talented students, Brilliant is using its scale to create equitable access to academic, internship, and mentoring opportunities.

FOREFATHERS

PIONEERS WHO HAVE CONTRIBUTED TO EDUCATION INNOVATION



"We invent our future."

Lynda Weinman

Co-Founder & Executive Chair, Lynda.com

Lynda Weinman is the co-founder and Executive Chair of Lynda.com, the rapidly-growing online learning company with over 1,500 video courses and 60,000 video tutorials. Lynda.com provides lifelong learning, teaching people of all walks of life about business, software, technology, and creative skills in order to help them achieve their personal and professional goals.

Salman Khan

Founder & CEO, Khan Academy

Salman Khan, the founder of Khan Academy, is making online instruction a more widely used tool in classrooms around the World. Khan Academy began as a series of YouTube videos from a small office in his home and has now produced over 4,800 video lessons teaching a wide spectrum of academic subjects, mainly focusing on mathematics and sciences. As of March 2015, the Khan Academy videos have been viewed more than 527 million times.



"Let's use video to reinvent education."



"We've got to fight for what's right. Every child deserves an option to go to a quality school."

Jeanne Allen

Founder, The Center for Education Reform

Jeanne Allen is one of the nation's most accomplished and devoted advocates for school choice. In 1993, she founded the Center for Education Reform. CER has been a leading advocate for the growth of charter schools and school choice.



9

MARCH MADNESS

Use the World's Best Ideas

We adopted the best ideas from other countries and industries to improve the American education system.

Problem

In 2015, the United States spent more on education per student than almost every country in the World, but our performance was mediocre in head-to-head comparisons. Compelling education and businesses models combining scale and impact abounded in America and around the globe, but too little of this innovation was finding its way into our education system. We needed to more aggressively apply the World's best ideas to achieve our goal of giving everybody an equal opportunity to participate in the future.

MODELS THAT WORK

- **Rigor + Rewards**: Cultivating superior teaching talent through highly selective and rigorous training programs, competitive compensation, and prestige around the profession *(e.g. Finland, South Korea, Singapore)*
- **Apprenticeships**: Career-aligned learning based on public-private partnerships and common skills definitions *(e.g. German national apprenticeship model in partnership with leading employers)*
- **Scale Impact EDU Models**: Education business and delivery models built on the "Digital Tracks" of ubiquitous smartphones, cheap computing + unlimited storage *(e.g. New Oriental Education + Tencent)*

SOLUTION

1. **Uniform Standards + Market Compensation**: Implement uniform, rigorous teacher certification standards + elevate compensation and tie it to student outcomes
2. **Work-Linked Learning**: Standard framework for apprenticeships developed in partnership with the public sector, blending on-site learning with classroom-based instruction
3. **Incentivize Personal EDU Investment**: Provide tax credits for investments in non-government subsidized personal and family education

By the Numbers: The World's Best Ideas	
Fundamentals	2015
U.S. PISA Rank	36
U.S. Spending Per Student Rank	5
U.S. World Happiness Index Ranking	15
Finland PISA Rank	12
Finland Spending Per Student Rank	17
Finland World Happiness Index Ranking	6
Singapore PISA Rank	2
Singapore Spending Per Student Rank	15
Singapore World Happiness Index Ranking	24
South Korea PISA Rank	5
South Korea Spending Per Student Rank	22
South Korea World Happiness Index Ranking	47
Hertz Founding Year	1918
Hertz Market Value*	$7 Billion
Uber Founding Year	2009
Uber Market Value*	$51 Billion
Hyatt Founding Year	1957
Hyatt Market Value*	$7 Billion
Airbnb Founding Year	2008
Airbnb Market Value*	$25 Billion
Iron Mountain Founding Year	1951
Iron Mountain Market Value*	$6 Billion
Dropbox Founding Year	2007
Dropbox Market Value*	$10 Billion

*Source: OECD, Wall Street Journal, World Happiness Report (2015); *As of September 2015*

John Sperling, the legendary founder of **Apollo Group**, quietly passed away in 2015 at the age of 93… it was the only thing John did quietly in his entire life. John was a true pioneer in every sense of the word. He went from beatnik to CEO of the World's largest for-profit education company. A dollar invested in Apollo's 1994 IPO was worth $83 by 2004 — it was the top-performing U.S. stock in that period.

John was unconventional to the core, especially evident in his deep affinity for his cats. In fact, John loved one cat so much that he had her cloned for $10 million, naming his new feline companion "Copycat."

APOLLO FOUNDER JOHN SPERLING

From Beatnik to CEO of the World's Largest For-Profit University



Source: LA Times

"Copycat" is rarely a term of endearment. But most great innovators have also been great imitators. Pablo Picasso once said, "Good artists copy, great artists steal." It's a lesson one of Silicon Valley's great artists took to heart as he built a $700 billion business. Steve Jobs created a culture at **Apple** that was built on "shamelessly stealing" great ideas, and then making them better than anyone could imagine.

Great Artists Steal: Apple

Personal Computer		Mobile Phone	
 Xerox PARC (1981)	 Macintosh (1984)	 Napster (1999)	 iTunes (2001)
Music Player		**MP3 Player**	
 NOMAD II (2000)	 iPod (2001)	 LG Prada Touch (2006)	 iPhone (2007)

In 2015, we lived in the age of the smartphone, when an “app economy” enabled businesses to go from idea to Billion Dollar Baby overnight. In this paradigm, newcomers didn't copy… they *cloned*.

Nearly perfect replicas of successful, mobile-centric, consumer businesses, for example, were proliferating in a land grab focused on greenfield emerging economies like China, Indonesia, Brazil, and India. Newcomers offered little differentiation other than localized language and marketing.

Unlike brick-and-mortar knock-offs, or even PC-centric web businesses — which had been dependent on household computer and Internet penetration — a new generation of clones and eager backers were reaping the rewards of the “rapid follower” strategy—as opposed to the classic first-mover advantage. This dynamic was laid bare in the sudden rise of multi-billion-dollar taxi and ride-sharing apps around the World.

CLONE WARS

Global Rise of Taxi + Ride Sharing Apps

RIDE SHARING PREDECESSORS

2006 — Blablacar (FRANCE)



KEY INVESTORS: Accel, Index, Insight Venture Partners

$336M FUNDING | $1.5B VALUATION

2007 — Zimride (U.S.)



Sold to Enterprise Holdings in 2013

zimride

2009 — Uber (U.S.)



$8.2B FUNDING | $51B VALUATION

KEY INVESTORS: Benchmark, BlackRock, Fidelity, Google Ventures, KPCB, Summit Partners, TPG, Wellington

Ola (INDIA)



$902M FUNDING | $5B VALUATION

KEY INVESTORS: Sequoia, SoftBank, Tiger Global

2010 — Hailo (U.K.)



$101M FUNDING | UNDISCLOSED VALUATION

KEY INVESTORS: Accel, Phenomen, USV

GrabTaxi (MALAYSIA)



$680M FUNDING | $1.5B VALUATION

KEY INVESTORS: SoftBank, Tiger Global

2011 — TaxiForSure (INDIA)



$44M FUNDING | UNDISCLOSED VALUATION

KEY INVESTORS: Accel, Bessemer *(acquired by Ola)*

EasyTaxi (BRAZIL)



$77M FUNDING | UNDISCLOSED VALUATION

KEY INVESTORS: Phenomen, Rocket Internet

2012 — SideCar (U.S.)



$35M FUNDING | UNDISCLOSED VALUATION

KEY INVESTORS: Lightspeed, USV

Lyft (U.S.)



Originally launched as Zimride in 2007

$1B FUNDING | $2.5B VALUATION

KEY INVESTORS: a16z, Alibaba, Coature, Ratuken, Founders Fund, GSV

2013 — Didi Kuaidi (CHINA)



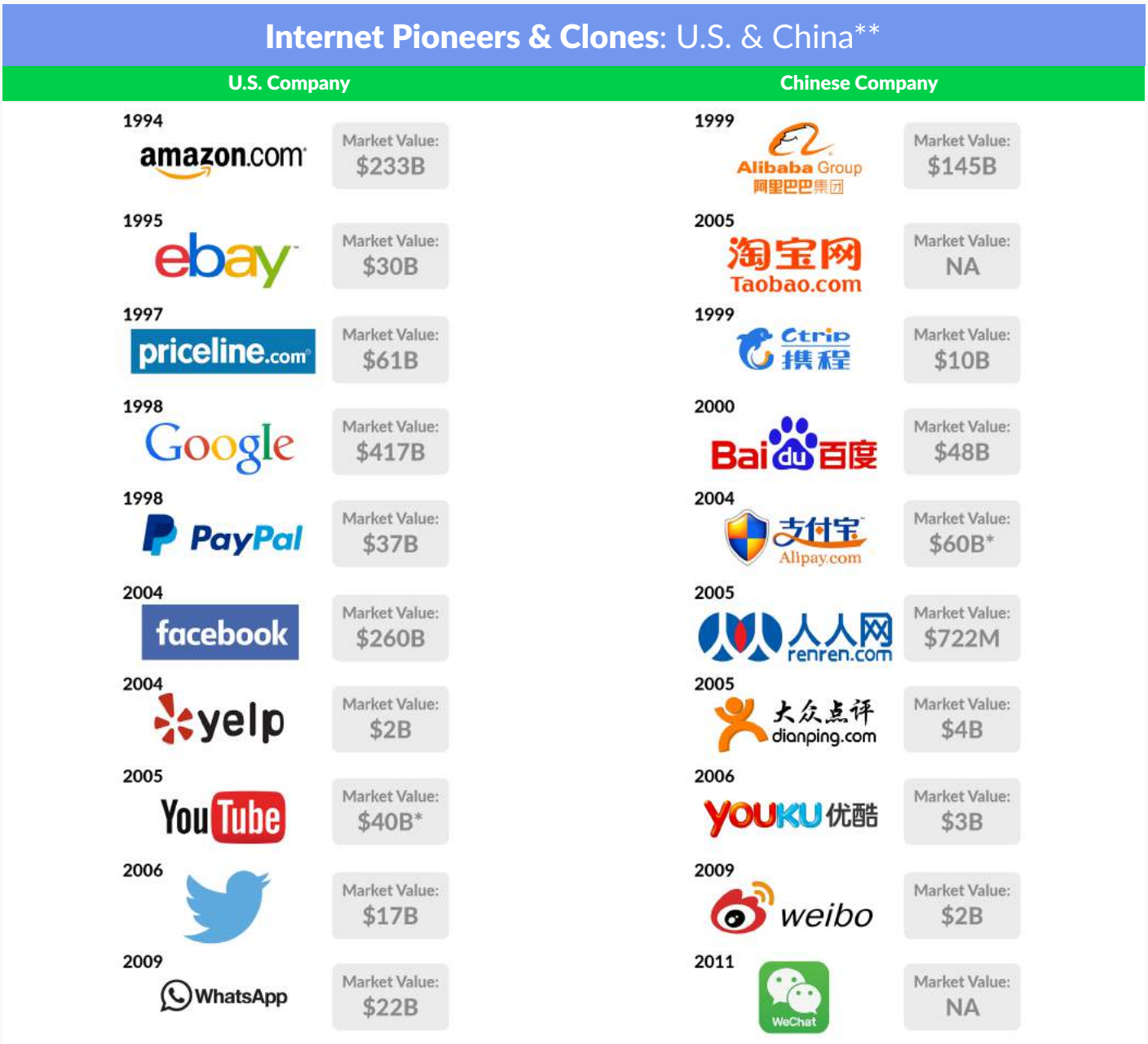
Merger of Didi Dache and Kuaidi Dache in 2015 (both found in 2012)

$4B FUNDING | $16B VALUATION

KEY INVESTORS: CITIC Capital, DST Capital, GSR Ventures, Temasek, Tencent

Source: Forbes, TechCrunch, Wall Street Journal, GSV Asset Management
**As of September 2015*

For some countries, cloning good ideas was a matter of national priority, and had been for some time. By 2015, for example, Chinese entrepreneurs had carbon copied almost every blue-chip e-commerce and social media company that had emerged in the 15 years following the arrival of the consumer Internet — a milestone marked by the release of the first widespread web browser in 1994, *Mosaic Netscape 0.9*.



*Source: Capital IQ, Forbes, TechCrunch, Wall Street Journal, GSV Asset Management; *GSV Estimate; **As of September, 2015*

As we looked at our 2020 Vision, proven ideas were all around us — from effective business models to the national policies of countries that consistently ranked as leaders in academic performance, economic growth, and innovation. It was imperative that we borrow and steal any proven idea that could help us advance materially closer to our goal of giving everyone an equal opportunity to participate in the future.

Problem

Everybody knew about America's mediocre performance on the aptitude tests delivered as part of the Program for International Student Assessment, or PISA, exams. These tests provided a direct international comparison across mathematics, science, and reading skills. The United States ranked no better than the middle of the pack across the board.

MONEY DOESN'T BUY HAPPINESS

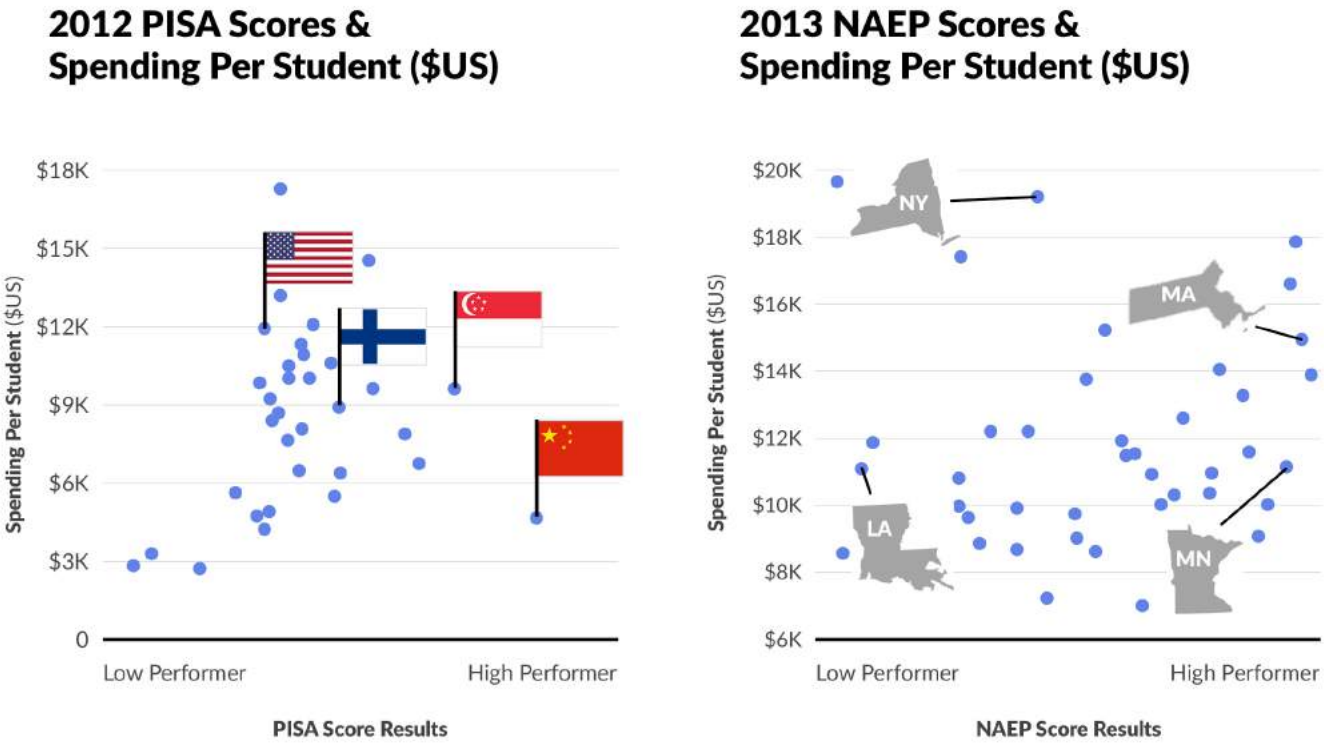
While the PISA results sparked outcries from pundits, politicians, and parents alike, the numbers offered an important lesson. Despite a pedestrian showing, the United States ranked near the top of the pack in spending per student. We were paying twice as much as Slovakia for the same results.

The trend was the same at home. State performance on the National Assessment of Educational Progress (NAEP) revealed no connection between per student spending and academic performance.

Minnesota ranked fourth by NAEP scores but 22nd by dollars spent. New York was the second highest spender at nearly $20,000 per student. But the Big Apple ranked 30th for NAEP performance.

As we turned our attention to solutions, it was clear that spending did not drive outcomes. Truly, money doesn't buy happiness.

Dollars & Sense: Money Doesn't Buy Happiness



WHAT: In 2012, more than 500,000 students, aged 15 and 16, took part in a two-hour aptitude exam administered by the Program for International Student Assessment (PISA). The results provide a direct international comparison across mathematics, science, and reading skills. Similarly, the United States administers a National Assessment for Educational Progress (NAEP), which measures aptitudes in mathematics, reading, writing, and science for grades four and eight.

RESULTS: On the PISA exams, the U.S. ranked 36th, on par with Hungary, Russia, and the Slovak Republic, despite one of the highest rates of spending per student. The headline might have been: "U.S. Schools vs. the World: Expensive & Mediocre." NAEP results showed a similar disconnect between State performance and spending. In both cases, more money did not equate to better results.

Source: OECD, NCES

Models That Work

To fulfill our mission of creating equal access to participate in the future, we committed to applying the best strategies from across the World. We examined education systems, powerful new business models, and everything in between.

LESSONS FROM THE LEADERS

The quality of an education system cannot exceed the quality of its teachers. For all the debate surrounding teacher performance, evaluations, and accountability, the fundamental issue we confronted was a poor track record of recruiting top talent into the profession from the outset.

Countries with the best education systems recruited exclusively from the top third of the talent pool. But in the United States, only 23 percent of teachers — and only 14 percent of those in high poverty schools — came from the top third of college graduates.

Finland, Singapore, and South Korea offered a three-part blueprint to cultivate and retain top talent in the teaching profession: 1) Selectivity + Teacher Training, 2) Competitive Compensation, and 3) Prestige.

STATE OF PLAY: TEACHING TALENT FUNDAMENTALS

Teacher Recruitment + Compensation Strategies of International Academic Leaders (Measured by PISA Assessment) vs. United States



Source: GSV Asset Management, McKinsey, OECD



State of Play: SINGAPORE

Economic Fundamentals

POPULATION	5.4M	GDP PER CAPITA	$55,000
POPULATION UNDER 25	1.7M	GDP PER CAPITA GROWTH (2015-20)	5.1%
UNEMPLOYMENT	1.7%	YOUTH UNEMPLOYMENT	7%

Technology Fundamentals

BROADBAND SPEED RANK	10		
SMARTPHONE PENETRATION	72%	BROADBAND PENETRATION	73%

Education Fundamentals

PISA RANK	2
GDP EDU ALLOCATION	3%
HOUSEHOLD EDU SPENDING	3%
PRE-SCHOOL ENROLL. (AGE 4)	88%
COLLEGE EDUCATION	37%
SHARE OF STEM DEGREES	42%

Source: Brookings Institution, The Economist, World Bank

Only 30 miles across at its widest point, Singapore makes up half the area of New York City and has half the population. Small geographic stature aside, when Singapore secured independence in 1965 under the leadership of Prime Minister Lee Kuan Yew, you would have been crazy to bet that the country would become an economic powerhouse. Most of Singapore's population was illiterate, and 70 percent of GDP came from port and warehousing activities.

But under Yew's visionary leadership, Singapore transformed itself into an international commercial hub, rooted in a knowledge economy that was the envy of the World. When he passed away in 2015, the World paused to reflect on what a remarkable transformation this had been.

KEY IDEA TO BORROW: Singapore willed itself into the modern era with a relentless commitment to developing its physical capital and human capital. By investing heavily in its port in the 1960s, Singapore capitalized on its strategic location at the entrance to the Strait of Malacca, and ultimately emerged as one of the World's busiest shipping centers. By investing heavily in its people, Singapore created a talented and adaptable workforce that was ready to address the new challenges of the 21st Century.

WHY IT'S A GAME-CHANGER: Singapore recruited the best talent into the teaching profession — targeting only the top third of each academic cohort — and continuously adjusted compensation to maintain competitive alignment with key growth industries.

To the young and to the not so old, I say, look at that horizon, follow that rainbow, go ride it.

LEE KUAN YEW

Founding Prime Minister, Republic of Singapore

At the same time, the country invested heavily to constantly reinvent its curriculum, evolving from skills-based learning in its early days to a "Thinking Schools, Learning Nation" curriculum in 2015. The new model emphasized critical thinking and curiosity.

Just as it made strategic investments in its ports, Singapore constantly funneled public dollars into Internet infrastructure to ensure that it alway remained among the 10 fastest nations for broadband and mobile connection speeds — especially in schools. The mutually reinforcing impacts of a high-quality education system that adapted to global demands, with the infrastructure to create a "connected" nation, positioned Singapore for continued growth, whatever the future might bring.



State of Play: SOUTH KOREA

Economic Fundamentals

POPULATION	50M	GDP PER CAPITA	$24,300
POPULATION UNDER 25	14M	GDP PER CAPITA GROWTH (2015-20)	3.1%
UNEMPLOYMENT	3%	YOUTH UNEMPLOYMENT	9%

Technology Fundamentals

BROADBAND SPEED RANK	1		
SMARTPHONE PENETRATION	73%	BROADBAND PENETRATION	85%

Education Fundamentals

PISA RANK	5
GDP EDU ALLOCATION	7.6%
PRE-SCHOOL ENROLL. (AGE 4)	82%
COLLEGE EDUCATION	42%
SHARE OF STEM DEGREES	33%

Source: Brookings Institution, The Economist, World Bank

Korean families routinely invested up to 25 percent of their income on private tutoring services and "cram schools"— over $18 billion in 2015 — to help their children gain admittance to a prestigious university, the pathway to a good job.

The national college entrance exam was so important that on test day, the stock market opened late, airplanes were banned from landing or taking off, and rush hour was rescheduled — all to make sure students arrived to the test on time and were not distracted.

KEY IDEA TO BORROW: South Korea developed a national culture that placed an increased emphasis on academic success, family investment, and competition.

There is certainly a point where too much focus on scores becomes counter-productive — in many ways South Korea had reached a point where spending on academic services and expensive tutors was yielding diminishing returns. But the United States had a long way to go before reaching that point, and we would have welcomed this "high class" problem.

WHY IT'S A GAME-CHANGER: While South Korean family spending on education was reaching unsustainable levels — and the pressure on students was extraordinarily high — the United States had a long way to go before these issues became relevant. South Korea was an important reminder that the force of national will can drive dramatic changes, if channeled toward a productive end.



State of Play: FINLAND

Economic Fundamentals

POPULATION	5.5M	GDP PER CAPITA	$47,000
POPULATION UNDER 25	1.5M	GDP PER CAPITA GROWTH (2015-20)	1%
UNEMPLOYMENT	8%	YOUTH UNEMPLOYMENT	20%

Technology Fundamentals

BROADBAND SPEED RANK	11		
SMARTPHONE PENETRATION	45%	BROADBAND PENETRATION	92%

Education Fundamentals

PISA RANK	12
GDP EDU ALLOCATION	6.5%
PRE-SCHOOL ENROLL. (AGE 4)	53%
COLLEGE EDUCATION	40%
SHARE OF STEM DEGREES	32%

Source: Brookings Institution, The Economist, World Bank

KEY IDEA TO BORROW: Finland already had one of the best school systems in the World, perennially placing atop the global rankings and serving as a mecca for education reformers around the World. But innovators don't wait for change; they create it. In 2015, it set out to scrap traditional K-12 subjects from its schools, instead teaching 21st Century "concepts." For example, Finland combined History and Biology to study the *Human Genome Project*.

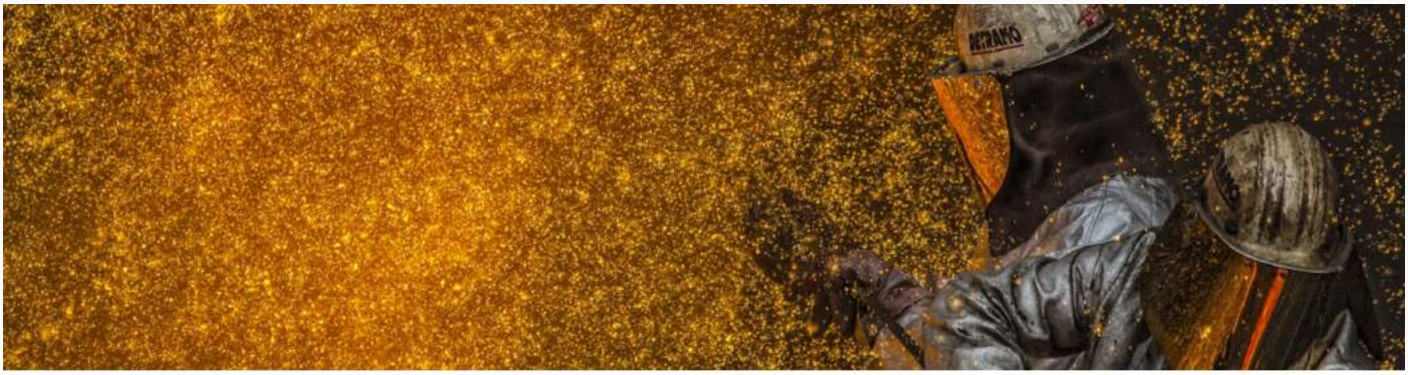
WHY IT'S A GAME-CHANGER: Driven by accelerating innovation in all quarters, old barriers between ideas and industries were quickly crumbling. Accordingly, the Global Knowledge Economy favored thinkers who could make connections, not find divisions. While strict subjects were well suited for an 18th Century industrial system that needed consistent skills, Finland's choice to teach concepts was effectively a choice to teach the future. Many teachers in Finland who taught single subjects opposed the new system. It demanded collaboration across subjects, forcing teachers with different areas of expertise to create a new curriculum together. Finland dubbed this approach "Co-Teaching," offering bonuses to early adopters.

INTEGRATED TALENT PIPELINE

Germany's unique vocational education system provided key lessons for both expanding access to opportunity and creating a 21st century workforce. While U.S. students were entering high school, 45 percent of German students enrolled in a vocational education program that blended classroom learning with a hands-on apprenticeship. Administered through a public-private partnership, employers offered immersive occupational training to 800,000 students, paying an hourly wage just below that of an entry-level worker. Classroom learning provided a broader academic context, and upon graduation, students were awarded a nationally-endorsed credential mapping to a definition of skills endorsed by all major employers. Here was a powerful application of Knowledge-as-a-Currency.

In Germany, youth unemployment was less than half that of the United States. It ranked third among OECD countries by share of STEM graduates, compared to 33rd for the U.S., and produced 53 patents per 1,000 researchers, compared to

America's 39. Employers benefited from a highly-trained, predictable talent pipeline, and the close public-private partnership enabled education standards to evolve more quickly based on constantly evolving talent demand forecasts from corporations.



German Vocational Education

WHAT:
As American students entered high school, 45 percent of German students enrolled in a vocational education program that blended classroom learning with a hands-on apprenticeship. Administered through a public-private partnership, employers offered immersive occupational training to 800,000 students, paying an hourly wage just below that of an entry-level worker.

WHY IT'S A GAME-CHANGER:
Germany had a predictable, long-term talent pipeline that connected young people with stable, high-paying jobs in industries that were growing.

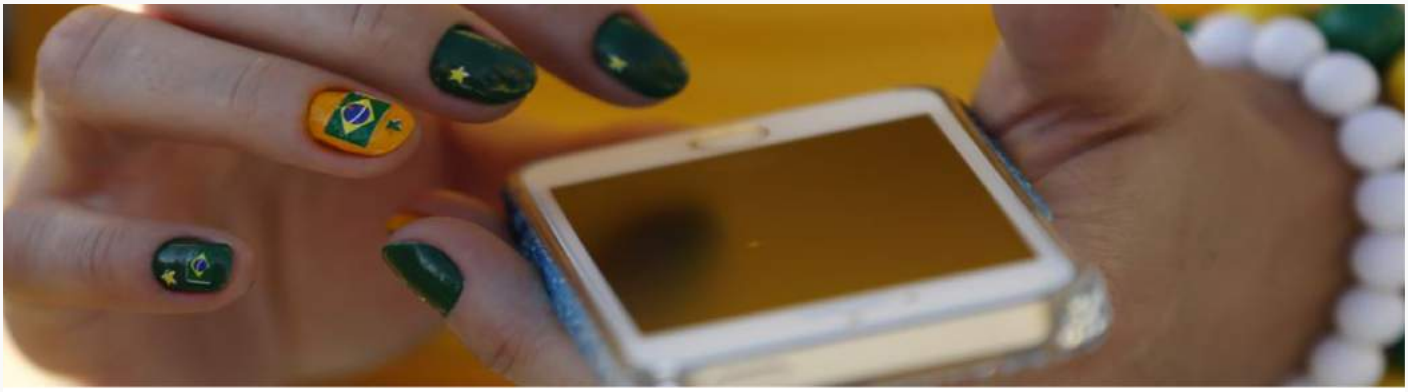
Knowledge-as-a-Currency: Students were awarded a nationally-endorsed credential mapping to a universally recognized skillset. Shared definitions of skills provided employers with visibility into their talent pipeline and provided students with visibility into job opportunities.

Powerful Talent Base: Germany ranked 3rd among OECD countries by share of STEM graduates, compared to 33rd for the U.S., and produced 53 patents per 1,000 researchers compared to our 39.

Ability to Evolve: The close public-private partnership enabled education standards to evolve more quickly based on constantly evolving talent demand forecasts from corporations.

BUILDING WITH BRICS

In the United States, worries about private, for-profit universities continued to abound. A congressional inquiry in 2012 acknowledged that the sector, which had tripled enrollment during the previous decade, gave students who were underserved or overlooked by non-profit institutions their best chance of attaining a degree. But it also concluded that soaring fees and drop-out rates meant that a majority were left with nothing more than extra debt.



State of Play: BRAZIL

Economic Fundamentals

POPULATION	196M	GDP PER CAPITA	$11,300
POPULATION UNDER 25	82M	GDP PER CAPITA GROWTH (2015-20)	1.6%
UNEMPLOYMENT	6.5%	YOUTH UNEMPLOYMENT	23%

Technology Fundamentals

BROADBAND SPEED RANK	90		
SMARTPHONE PENETRATION	26%	BROADBAND PENETRATION	52%

Education Fundamentals

PISA RANK	58
GDP EDU ALLOCATION	5.9%
HOUSEHOLD EDU SPENDING	4.5%
PRE-SCHOOL ENROLL. (AGE 4)	47%
COLLEGE EDUCATION	13%
SHARE OF STEM DEGREES	14%

Source: Brookings Institution, The Economist, World Bank

By 2015, the Market was weighing in. Following a first quarter earnings announcement that indicated declining revenues and enrollments, Apollo Education lost 30 percent of its market value in an afternoon. Just five years earlier, Apollo counted nearly 500,000 students in its ranks. In 2015, enrollment stood at 213,000. A major competitor, **Corinthian Colleges**, had shuttered altogether in the past 12 months.

In Brazil, for-profit institutions were surging, claiming over three-quarters of the country's higher-education market. Fees were low and quality was rising quickly. And since a degree boosted wages by a bigger multiple in Brazil than in any other

country tracked by the OECD, graduates could expect to make back their tuition fees in just a few years.

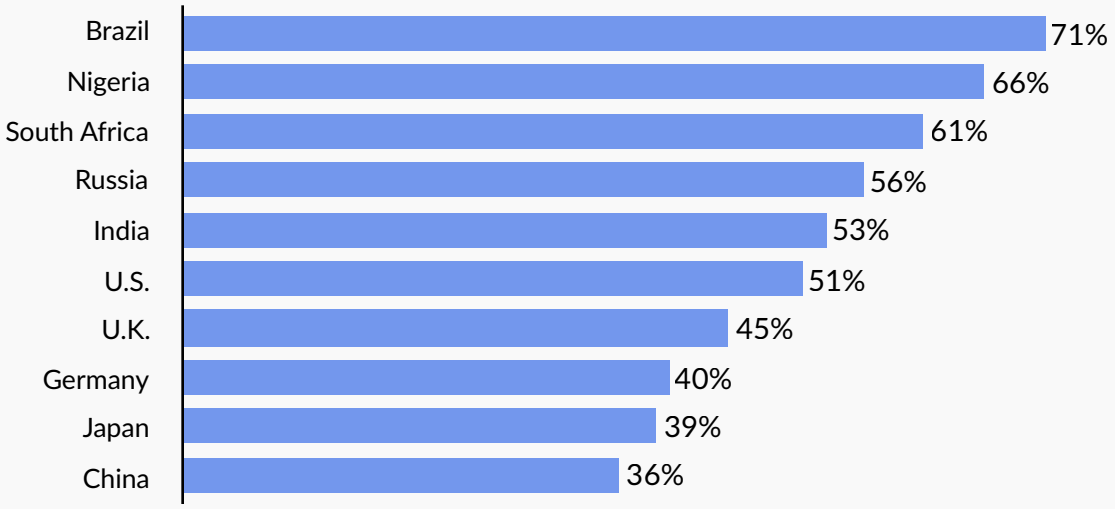
KEY IDEA TO BORROW: Brazil created transparency, standards, and incentives around higher education ROE, which enabled the best education providers to thrive, regardless of their corporate structure.

In 2004, **Unopar** became the first institution in Brazil to gain government accreditation for the distance-training of teachers. It soon realized that other degrees could be offered with the same combination of high-quality online materials and weekly attendance at local seminars.

By the time it was acquired by **Kroton** in 2011, Unopar was Brazil's biggest provider of distance higher-education, with 150,000 students registered at nearly 500 centers across the country. The most remote, with 300 students, was in the Amazonian state of Oriximiná, accessible only by light plane or a 12-hour boat ride.[43]

BRAZILIANS SPEND THE MOST WAKING HOURS ON THE INTERNET

People Who Are Online at Least Once an Hour

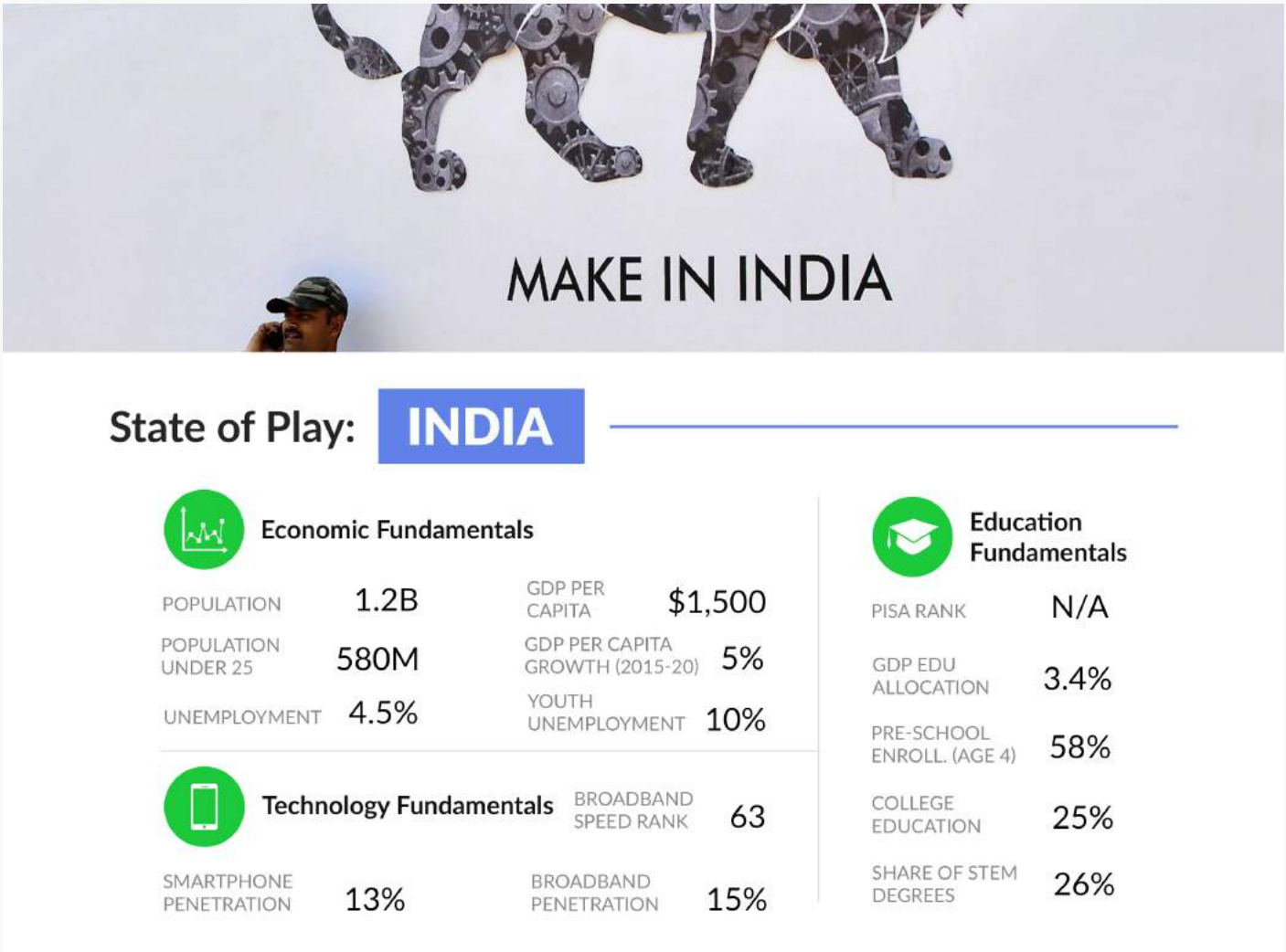


Source: ATKearny, Quartz

[43] The Economist, "A Winning Recipe" (2014)

WHY IT'S A GAME-CHANGER: The catalyst for Unopar's growth — and for-profit education more broadly — was the potent combination of high demand, logical incentives, and ROE. Students studying for a degree were required to complete a standard exam offered by the federal education ministry, which published the average results for any course offered.

Naturally, strong results featured prominently in university marketing materials. Crucially, students were only eligible for subsidized government loans for courses that had high success rates. Universities, in turn, were incentivized to develop courses that would produce positive outcomes, as well as to limit their admissions to students who were likely to struggle.



Source: Brookings Institution, The Economist, World Bank

In 1951, India's first prime minister, Jawaharal Nehru, set up the first of India's 16 elite Indian Institutes of Technology (IIT) in the West Bengal industrial city of Kharagpur. In the years that followed, millions of students competed for coveted seats at the IITs.

Given India's population of 1.2 billion, this competition produced an unprecedented knowledge meritocracy. While India's social experiment in massive democracy often produced mixed policy results, the IITs were constant islands of *excellence*.

The government did not interfere with the famously challenging curriculum and rigorous admissions standards. You couldn't bribe your way into an IIT, and the only divisive policy issue was the practice of reserving seats in each incoming class for students from low-income and underrepresented social strata.

The net result was that the Indian Institutes of Technology routinely churned out elites from all walks of life. IIT graduates were the best-of-the-best and were highly recruited from Bangalore to the Bay Area. Ironically, IITs had become the Rodney Dangerfield of global higher education.

Despite an impeccable education track record, IITs got no respect in global rankings because they lacked the premiere research centers of top western universities… and the Nobel Prizes that came along with them.

But India placed near the top against one metric with real-World implications. IITs were fourth in a World ranking of universities by production of Venture Capital-backed founders. By total capital raised, IITs were tied for second. As India's local innovation economy continued to emerge, these numbers were poised to accelerate.

TOP 10 GLOBAL UNIVERSITIES: VC-BACKED FOUNDERS PRODUCED (2010-2015)

The Indian Institute of Technology (IIT) produced the fourth-most VC-backed founders in the World, ahead of three Ivy League schools, including Harvard.

Rank		Founders	Companies	$$ Raised
1	Stanford	378	309	$3.5B
2	UC Berkeley	336	284	$2.4B
3	MIT	300	250	$2.4B
4	Indian Institute of Technology	264	205	$3.2B
5	Harvard	253	229	$3.2B
6	University of Pennsylvania	244	221	$2.2B
7	Cornell	212	190	$2.0B
8	University of Michigan	176	158	$1.2B
9	Tel Aviv University	169	141	$1.3B
10	University of Texas	150	137	$1.3B

Source: GSV Asset Management, Pitchbook, Quartz

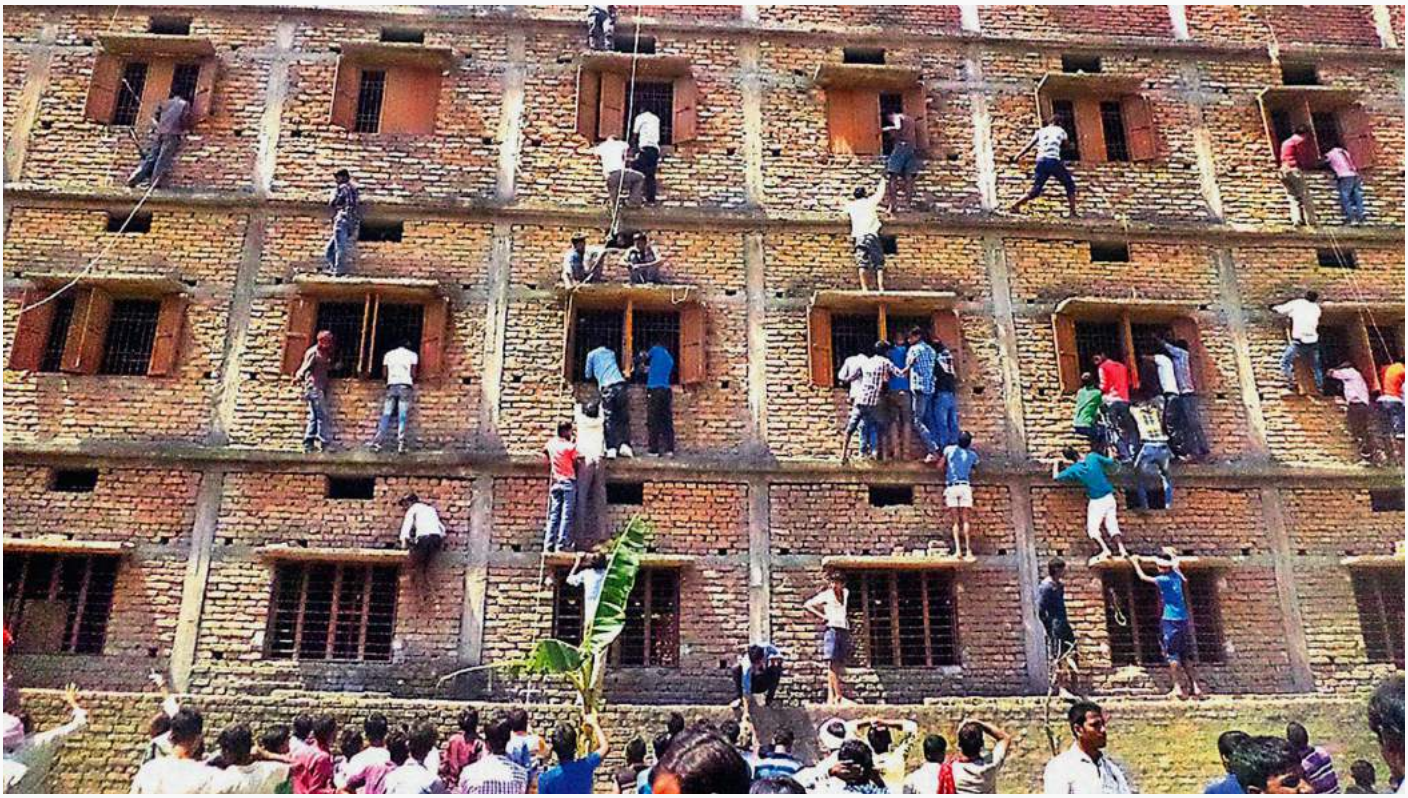
KEY IDEA TO BORROW: India's elite education system routinely produced high-caliber talent and successful entrepreneurs. The IIT recipe for success was selectivity, academic rigor, and a diverse candidate pool.

IIT graduates navigated impossible admissions odds to secure their seats and outperformed millions on one of the World's toughest admissions exams. Recognizing the life-changing implications of an IIT degree, parents literally scaled building walls to give their children an edge on test day.

So challenging was the IIT curriculum that alumnus, Vinod Khosla, the legendary founder of **Sun Microsystems** and later **Khosla Ventures**, once remarked, "When I finished IIT Dehli and went to Carnegie Mellon for my Masters, I thought I was cruising all the way."

HELICOPTER PARENTS?

Indian parents scale walls on national university entrance exam test day to give their kids "support." Acceptance rates at the elite Indian Institutes of Technology are less than 1 percent.



Source: AP

WHY IT'S A GAME-CHANGER: The fact that IIT graduates had diverse backgrounds meant that they had experienced a broader set of challenges, which is consistently the spark for meaningful innovation. Great entrepreneurs solve big problems, usually drawing on first-hand experience.

Beyond Vinod Khosla, IIT alumni included a deep network of transformational business leaders who created billions of dollars in global market value. In fact, Indians have founded 14 percent of all Silicon Valley companies despite making up

less than 1 percent of the U.S. population. They have started more technology and engineering firms than the next nine immigrant groups combined.

PIONEERS + MAVERICKS: INDIAN INSTITUTESS OF TECHNOLOGY (IIT) MAFIA

Indians Have Founded 14% of All Silicon Valley Companies



Source: New York Times, GSV Asset Management



THE TIMES OF INDIA

The *Times Group* is India's largest media conglomerate with the largest English-language newspaper in the World, the second most widely read English-language business newspaper after the *Wall Street Journal* — along with eleven other newspapers, a burgeoning Internet business, eighteen magazines, two satellite news channels, an English-language movie channel, a Bollywood news and lifestyle channel, and a radio network. Led by visionary brothers **Samir Jain** (Vice Chairman) and **Vineet Jain** (Managing Director), the *Times Group* has propelled Indian media into the 21st century.

What's fascinating is that the *Times Group* has evolved into one of the most powerful global examples of our "News to Knowledge" thesis — where increasingly, blogs, news publications, magazines, podcasts, books, documentaries, courses, majors, and degrees are linear stations on the learning continuum that can be mashed up to provide knowledge. From its 2014 announcemnt of plans to create **Bennett University**, an unique institution preparing learners to succeed in a Global Knowledge Economy, to **TimesPro**, which serves lifelong learners across India, the Times Group set a marker for innovation in media and education.

MIND, BODY, SOUL

The *Times Group* created Bennett University to address a fundamental flaw in India's human capital pipeline. While the country has a rich education tradition, headlined by the hyper-competitive Indian Institutes of Technology (IIT) system, too many of its graduates are unprepared to launch their careers. They lack the industry exposure to effectively apply their knowledge and are short on the soft skills that are critical to succeed in hyper-connected global corporations.

For Bennett University, the challenge and the opportunity run deeper. Developing leaders for the 21st century is about developing the Mind, Body, and Soul. To this end, Bennett University is creating a rigorous curriculum that is rooted in entrepreneurship (it recently partnered with Babson University on this front), as well as industry-informed, project-based learning. The physical backdrop will be a state-of-the-art campus spread over 68 acres that will be an innovation hub for the region. And the soul? Central to each student's experience will be developing a sense of self to guide their search for a fulfilling career, which, as any true happiness guru will tell you, is the root of all happiness.

LIFELONG LEARNING

The Times Group is also investing strategically in education models that will serve a nation of lifelong learners. **TimesPro**, for example, deploys highly effective education and training modules across various large scale industries. It focuses on enabling Indian youth to gain the necessary skills and knowledge to find jobs in high demand industries of the future.

SCALING INNOVATION

Brand Capital, the Venture Capital arm of the *Times Group*, invests in game-changing consumer businesses with financial and media capital, leveraging its massive audience and operational expertise to create scale. Its portfolio includes powerful education models such as **Amity University**, **Educomp**, **Ideal Education**, **Manav Rachna**, and **Yeh China**.



State of Play: CHINA

Economic Fundamentals

POPULATION	1.36B	GDP PER CAPITA	$6,700
POPULATION UNDER 25	431M	GDP PER CAPITA GROWTH (2015-20)	6%
UNEMPLOYMENT	4%	YOUTH UNEMPLOYMENT	9.6%

Technology Fundamentals

BROADBAND SPEED RANK	61		
SMARTPHONE PENETRATION	47%	BROADBAND PENETRATION	46%

Education Fundamentals

PISA RANK	1
GDP EDU ALLOCATION	4.3%
PRE-SCHOOL ENROLL. (AGE 4)	65%
COLLEGE EDUCATION	4%
SHARE OF STEM DEGREES	41%

Source: Brookings Institution, The Economist, World Bank

China, never shy to adopt valuable "ideas" and make them "China's ideas." was a living case study for the power of thinking BIG. A key component of the 2020 Vision was bringing the best education resources to scale using the "digital tracks" that had been laid over the past two decades. By partnering to develop an integrated education offering, **Tencent** and **New Oriental Education** demonstrated why this strategy was so powerful.

KEY IDEA TO BORROW: Tencent served over 600 million active users with its popular WeChat product, a deeply engaging free messaging app that integrated a broad feature set, including mobile payments. For New Oriental, China's largest provider of private education services, WeChat was a direct pipeline to "students."

Through this partnership, New Oriental enabled Tencent users to learn on demand in a medium where they already operated.

WHY IT'S A GAME-CHANGER: Users could simply text (or photograph) academic questions to New Oriental, which would automatically produce links to relevant study resources using algorithms to query its vast digital content library. Users requiring further assistance could connect to a network of live tutors directly through their messaging app. They could also opt to have game-like, personalized learning activities pushed to their device on a recurring basis.

In the United States, messaging apps and social media were often regarded as being part of the problem, not part of a solution that could multiply the impact of valuable learning resources. While the people who most needed support were **Snapchat** users sending 700 million "snaps" per day, the app was mostly regarded with disdain. It was time to throw out old conventions as innovative Chinese companies like **17Zuoye** (digital learning + tutoring), **TAL Education** (digital learning + tutoring), **NetDragon** (education gaming), **TutorGroup** (online language learning), **Tarena International** (professional IT education services), and **China Distance Education** (digital professional education) were rapidly achieving scale impact through digital channels.

BILLION DOLLAR BABIES

Digital infrastructure developed over the previous twenty years had reduced the gestation period from idea to "Billion Dollar Baby" in what seemed like the blink of an eye. Ubiquitous computing and connectivity facilitated by over two billion smart phones provided instant global distribution through the omnipotent *iOS* and *Android* app stores.

The emerging Global Silicon Valley added fuel to the fire with a growing citizenry in a country called *ImagiNation*. New ways to do almost anything seemed possible. And at lightening speeds.

Instant news? Try **Twitter**. Instant (and disappearing) message? Try **Snapchat**. Instant date? **Tinder**.

Hailing a yellow cab in New York City was not new, or fun, but pushing a big "U" on your phone and having an instant limo driver was cool beyond belief.

Uber might have been the fastest growing company in the history of the World and the fastest new verb. The $51 billion market value Uber had earned in five years screamed "bubble" to some — but in our way of thinking, it screamed the question of where else value could be created that quickly. Essentially, Uber was built on three new technology fundamentals: ubiquitous mobile devices, hyper connectivity, and cheap computing with unlimited storage.

I not only use all the brains that I have but all that I can borrow.

WOODROW WILSON

As is too often the case, the "early bird gets the turd." **Carey International** was **Uber** before Travis Kalanick was born. Listed on NASDAQ in what seemed like a century ago, (full disclosure: I was a research analyst covering it) Carey had created a black car network spanning 1,000 cities around the globe.

Effectively it was a brand, an "800" number, and a scheduling service. Sound familiar?

Uber didn't own any of the cars in its network. The drivers were independent. Carey should have been Uber, but they lacked the imagination to see the impact that smartphones could have on their business. Carey launched its first app in 2014 — five years after Uber had taken the World by storm.

THE POWER OF "IMAGI-NATION": UBER VS. CAREY INTERNATIONAL



Carey International (1921)

BUSINESS MODEL:
Black Car Network

MARKET VALUE:
Taken private for $400M in 2000

Carey International was Uber at the dawn of the internet age. Creating effective networks of local drivers and dispatching services, Carey listed on NASDAQ in 1997, at one point serving 480 cities in 75 countries. But Carey did not capitalize on the digital tracks being laid around them. Battling to stay relevant in the age of ride-sharing, Carey launched its first mobile app in 2014.



Uber (2009)

BUSINESS MODEL:
Marketplace, Peer-to-peer

MARKET VALUE:
$41B

Capitalizing on new technology fundamentals, including ubiquitous smartphones, Uber has rapidly scaled a global business serving millions of riders in over 50 countries. By applying the scale and efficiency of Peer-to-Peer marketplaces, Uber is not simply disrupting the Taxi industry — it is challenging basic assumptions about the economics of transportation, car ownership, and logistics.

Uber was a flashpoint because of its soaring enterprise value, but the "Billion Dollar Baby" story was getting played out again and again. **Iron Mountain** was a great company that's helped customers store physical assets like records files, and in 64 years had built a business worth $6 billion. **Dropbox** was an amazing company that helped its customers store digital assets (and share them), and at 8-years-old, was worth $10 billion. **Hyatt** had been synonymous with quality lodging

for nearly 60 years and was worth $7 billion. **Airbnb** was synonymous with cool, affordable lodging, and at 7-years-old, was worth $25 billion.

Game-changers: **Billion Dollar Babies**

Iron Mountain
Founded: 1951
Market Cap: $6 billion

400M+ Dropbox users uploading **1B+** files per day

Dropbox
Founded: 2007
Market Cap: $10 billion

Kodak
Founded: 1888
Market Cap: Bankrupt

700M Snaps sent by mobile users per day

Founded: 2011
Market Cap: $15 billion

HYATT
Founded: 1957
Market Cap: $7 billion

25M Airbnb guests served across **34K** cities/**190** countries

airbnb
Founded: 2008
Market Cap: $25 billion

POWERFUL NEW BUSINESS MODELS

In searching for the potential Billion Dollar Babies in education, we looked at the category leaders across powerful new business models alongside the EdTech enterprises that were riding tailwinds from that theme. We weren't looking for the "Facebook" of education.

We were looking for models that had similarities. New Model mega-leader **Facebook** was the aspiration of every entrepreneur worth her salt, with a $250+ billion market value[44] and a user base that would make it the largest country in the World. Interestingly, **Coursera** attracted 10 million people to its platform faster than Facebook did.

LinkedIn was a powerhouse network with nearly 400 million members because it truly enabled people to create a "Professional Graph." **Chegg** was the clear leader in helping young people create their "student graph" and had the majority of high school seniors and U.S. college students on its network.

Peer-to-peer models were compelling if both the "supply" and "demand" sides of the marketplace derived meaningful benefits. Nobody exemplified this principle better than **Lyft**. Network Effects were the key. Drivers benefited from higher utilization and a growing pool of riders. Riders benefited from a rising number of drivers, which resulted in plummeting wait times.

Course Hero applied these same fundamentals to a peer-to-peer marketplace focused on learning. Aggregating user-created study resources and tutoring services, benefits accrued to subscribers as increased content contributions enhanced the value of Course Hero's digital library. Content contributors, in turn, earned more as the subscriber base grew.

Oracle was THE enterprise software of the old generation and for all intents and purposes had claimed 100% marketshare in Databases. Similarly, **Clever** had the opportunity to be the enterprise solution for a new generation of technology. In 2015, it already served 30,000 schools and over 12 million students.

Workday had a robust, visible, and valuable business model, delivering Software-as-a-Service solutions for its human resource clients. **2U** had a robust, visible, and increasingly valuable business delivering Software-as-a-Service academic solutions to leading academic institutions, such as the University of Southern California, Syracuse, and Yale.

[44] Market value estimate, as of September 2015

Powerful New Business Models

Platforms	facebook **Founded:** 2004 **Scale:** 1.4 billion users; 200+ countries + territories **Market Cap:** $265 billion		coursera **Founded:** 2012 **Scale:** 15+ million students; 35 countries **Raised:** $135 million to date
Social Graphs	LinkedIn **Founded:** 2003 **Scale:** Professional graph with 300+ million users **Market Cap:** $25 billion		Chegg **Founded:** 2005 **Scale:** Student graph with 15+ million users **Market Cap:** $765 million
Peer to Peer	lyft **Founded:** 2012 **Scale:** 10 million rides per month **Market Cap:** $2.5 billion		Course Hero **Founded:** 2006 **Scale:** 5+ million users **Raised:** $17 million
Enterprise	ORACLE **Founded:** 1997 **Scale:** 23,000+ certified partners **Market Cap:** $172 billion		Clever **Founded:** 2012 **Scale:** Network of 30,000+ schools, 12+ million students **Raised:** $43 million
SAAS	workday. **Founded:** 2005 **Scale:** 600+ enterprise customers **Market Cap:** $16 billion		2U **Founded:** 2008 **Scale:** 1,000+ live classes per week **Raised:** $1.5 billion
Games	MINECRAFT **Founded:** 2009 **Scale:** 100+ million players **Market Cap:** Acquired in 2014 by Microsoft for $2.5 billion		TYNKER **Founded:** 2009 **Scale:** 100+ million players **Valued:** Acquired in 2014 by Microsoft for $2.5 billion
Marketplaces	ebay **Founded:** 1995 **Scale:** Consumer marketplace with 149+ million buyers **Market Cap:** $35 billion		curious.com **Founded:** 2012 **Scale:** 3.5+ million lessons viewed **Raised:** $23 million
Big Data	Palantir **Founded:** 2004 **Scale:** Sub-second querying of trillions of records at petabyte scale **Market Cap:** $20 billion		KNEWTON **Founded:** 2008 **Scale:** 15+ billion recommendations served for 9+ million learners **Raised:** $105 million

Minecraft, bought by **Microsoft** for $2.5 billion, had a network of 100 million players and helped people learn by playing games. **Dreambox**, founded by former Microsoft executives, delivered over five million lessons per week and helped kids develop math skills by playing adaptive games.

What has been will be again. What has been done will be done again. There is nothing new under the Sun.

ECCLESIASTES 1:9

eBay was the original online consumer marketplace and developed passionate, devoted customers and vendors on its platform. **Curious** was a rapidly growing, online marketplace for video courses that developed a passionate and devoted following of learners and teachers.

Big Data was a Big Deal and nobody was bigger than **Palantir**. **Knewton** used Big Data to personalize the World's digital education and was poised to become Big Deal in its own right.

What We Did About It

Building on our analysis of "Models that Work," we implemented the following initiatives to create equal access for all Americans to participate in the future.

1. Uniform Standards + Market Compensation for Teachers

IDEA: Our first priority was to shore up our long term teacher talent pipeline, so we implemented uniform standards for teacher recruitment and training based on best practices proven out in countries like Finland, Singapore, and South Korea. We replaced fragmented, inconsistent certification curriculum with a rigorous, competency-based pathway to teacher certification.

Candidates progressed through training based on their mastery of key skills as measured by formative assessments, not seat time. Academic learning was coupled with in-classroom apprenticeships, consistent with the most advanced educator training programs in the world. To raise the prestige of the teaching profession and attract top talent, we awarded a federal certification to those who completed approved teacher training programs, acknowledging the rigor of their preparation.

We also uniformly raised the starting salaries of teachers, pegging compensation to a 10 percent premium to the national median income. With the increased competition came increased selectivity standards. We limited recruitment for teacher certification programs to the top third of each applicant's cohort.

As with school principals, we implemented a merit based system for teacher incentives and compensation increases, targeting upside as high as 30 percent of base salary per year. Traditional K-12 compensation models were still mostly based on an educator's years of experience and the number of academic credits they earned beyond a bachelor's degree. Neither of these factors were tied to giving all students the opportunity to participate in the future. We directed federal funding to support state budgets for educator salary increases using a formulaic allocation.

IMPACT: The quality of an education system cannot exceed the quality of its teachers. For all the debate surrounding teacher performance, evaluations, and accountability, the fundamental issue we confronted was a poor track record of recruiting top talent into the profession. Countries with the best education systems recruited exclusively from the top third of the talent pool. But in the United States, only 23 percent of teachers — and only 14 percent of those in high poverty schools — came from the top third of college graduates. Our new model infused the teaching profession with top talent, consistent with global leaders.

2. Work-Linked Learning

IDEA: Drawing on models that had proven effective in Germany, we opened up the K-12 system to include pathways for students to pursue work-linked learning opportunities as early as high school. Partnering with leading corporations, we developed a standard framework for apprenticeships that blended onsite learning with classroom-based academic instruction. Where schools lacked the capacity to develop these programs, we provided financing through a public-private fund with half of the capital provided by companies that wished to participate in any given program.

IMPACT: Germany had a predictable, long-term talent pipeline that connected young people with stable, high-paying jobs in industries that were growing. Germany ranked 3rd among OECD countries by share of STEM graduates, compared to 33rd for the United States, and produced 53 patents per 1,000 researchers compared to our 39. The close public-private partnership enabled education standards to evolve more quickly based on constantly evolving talent demand forecasts from corporations.

3. Incentivize Personal Education Investments

IDEA: Beyond system-wide improvements, we also aimed to stimulate family and personal investment in education enrichment. To this end, we created an approved list of education programs and offered offsetting tax credits for any related personal expenditure or expenditure on children. As with other pillars of the 2020 Vision, we coupled this with a broad media campaign through multiple channels to encourage individuals and families to take advantage of this incentive.

IMPACT: In the United States, two percent of household income was spent on education. In Asia it was 15 percent. While we spent 33 percent of our income on housing, it was only 10 percent in Asia. So in other words, families in Asia spent over 7x as much on education while we spent over 3x as much on housing. The result of incentives was that our spending habits began to look more like the countries that were investing the most in education.

FOREFATHERS

PIONEERS IN EDUCATION INNOVATION



"It should be fun to learn, right?"

Tom Kalinske

Co-founder & Executive Chairman, Global Education Learning; Vice Chairman, LeapFrog; Former Board Member, Blackboard

Tom Kalinske left his position as CEO of SEGA to serve as the president of Knowledge Universe, with the goal of using gaming technology to improve education. Knowledge Universe was an early investor in LeapFrog, which Kalinske helped transform into the leading educational toy company. Kalinske co-founded and serves as the Executive Chairman of Global Education Learning, a start-up dedicated to providing the best education products and services to young children in China. He was also a notably influential Board member of Blackboard.

Oprah Winfrey

Entrepreneur and Media Mogul

Through her private charity, The Oprah Winfrey Foundation, Oprah has awarded hundreds of grants to organizations that support the education and empowerment of women, children, and families around the World. Through "The Oprah Winfrey Scholars Program," she has donated millions towards providing a better education for students who have merit but no means. She has also contributed over $40 million to the establishment of The Oprah Winfrey Leadership Academy for Girls, bringing a World-class teaching facility to South Africa, empowering young women with the skills to be leaders.



"Education is the road to freedom."

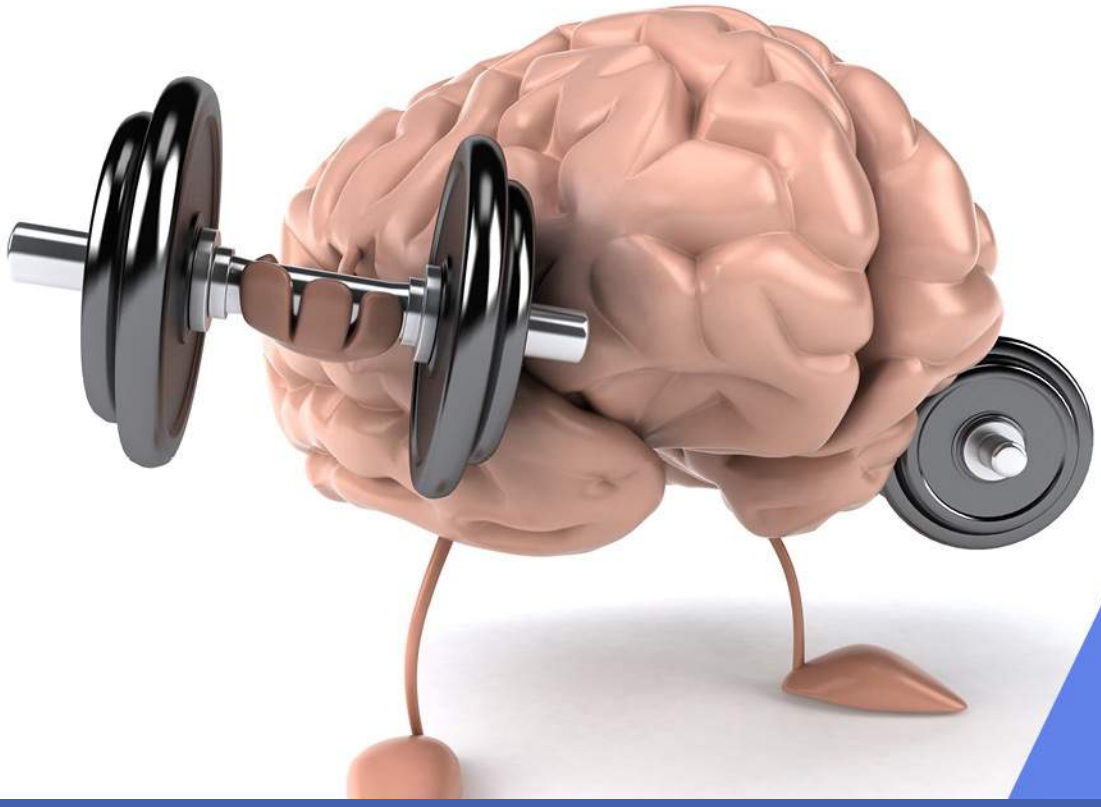


"Innovation rarely takes place when it's squashed and stomped on. You have to have the freedom to innovate, the freedom to dream."

Donald Hense

Founder + Chairman, Friendship Public Charter School

Donald Hense led pioneer efforts in the development and growth of charter schools, founding Friendship Public Charter School, which has since grown into the largest chartered public school in the nation, serving over 4,000 students. At Friendship, he led innovations to better the way that large, urban high schools are designed to prepare students for college. Furthermore, unless many other charter schools, Friendship retains students that are struggling and accepts them into upper grades with the belief that every child can succeed.



10

SPRINT TO THE FINISH

Integrate Cognitive Science to Optimize Learning

We used brain research to improve learning outcomes.

Problem

It seems like an obvious point that somehow was essentially ignored, but the brain is at the core of learning. Remarkably, and frankly illogically, neuroscience and education design were approached in silos. We could identify galaxies light years away and study particles smaller than an atom. But we still hadn't unlocked the mystery of the three pounds of matter that sits between our ears. Education was the cornerstone of our 2020 vision, but when it came to the mind, we were blind.

MODELS THAT WORK

- **Big Science**: Collaborative research initiatives like the *Human Genome Project* that break down discipline silos and support data sharing to drive innovation *(e.g. Neuroscience Imaging Center at UCSF, The Allen Institute)*
- **Intelligent Design**: Education model and product designs that are rooted in brain science *(e.g Think Through Math, Cerego, Acrobatiq, Akili)*
- **Gaming**: Engaging video games that integrate efficacious educational content + neuroscience research *(e.g. ST Math, Tynker, DreamBox Learning, Lexica, Dragon Box Algebra)*

SOLUTION

1. **Mao the Mind**: Accelerate the federal Brain Research through Advancing Innovative Neurotechnologies (BRAIN) initiative to align with the *Human Genome Project*; Narrow focus to mapping the circuitry of the brain, and then applying this knowledge to improve the design of education models/products and curing cognitive disorders
2. **Accelerate Mind, Body, Soul**: Aggressively incubate learning technologies at the intersection of *Mind* (neuroscience), *Body* (impact of fitness + wellness on cognition and learning), and *Soul* (triggers + conditions for happiness and enthusiasm) through a DARPA-like R&D vehicle

By the Numbers: **Learning and the Brain**

Fundamentals	2015
Total Cost of Human Genome Project	$3.8 Billion
Human Genome Project Time to Complete	13 years
Estimated Return of Human Genome Project	$800 Billion+
Initial Funding for Federal BRAIN Research Initiative	$300 Million
People with Cognitive Disabilities	15 Million
Young People (Ages 6-21) with Learning Disabilities	2.4 Million
Total Cost to U.S. Per Year	$50 Bilion
Cost to Sequence a Human Genome (2001)	$95 Million
Cost to Sequence a Human Genome (2015)	$5,000
Human Genome Length (Base Pairs)	3 Billion
Total Brain Neurons	86 Billion
Total Synanpses (Connect Neurons)	100 Trillion
Total Virtual Neurons in IBM's SyNAPSE Supercomputer	530 Billion
Total Virtual Synapses in IBM's SyNAPSE Supercomputer	100 Trillion
% of U.S. Teens (12-17) that Play Video Games (mobile, console, etc.)	97%
Projected Hours of U.S. Secondary School Classroom Time	10,000
Projected Hours U.S. Students Spend on Video Games outside of Class while in Secondary School	10,000

Source: IBM, National Human Genome Research Institute, National Institutes of Health, U.S. Department of Education

Weapons of Mass Instruction: New Models



Company	Founded	Type	Impact
Acrobatiq	2013	Adaptive Learning	Adopted by major public university systems including Arizona State University
Akili	2011	Game-Based ,Validated Cognitive Therapeutics (ADHD, Autism, Depression, Brain Trauma)	Developing ground-breaking video game-based therapeutics as an alternative to traditional pharmaceuticals
Cerego	2000	Adaptive Learning + Memory Management	Research-based adaptive learning + memory optimization platform; Partnered with Arizona State University, McGraw-Hill, EdX
DreamBox Learning	2006	Adaptive + Game-Based Math Learning	5M lessons completed per week
DragonBox Algebra *WeWantToKnow*	2012	Game-Based Math Learning	83% of users master the basics of algebra in one hour or less
ST Math *MIND Research Inst.*	1997	Game-Based Math Learning	800K+ students, 30K+ teachers
Lexica *Amplify*	2013	Game-Based ELA Learning	20K+ school licenses; Game embeds 16 validated skill-building activities
Think Through Math (TTM)	2006	Adaptive + Game-Based Math Learning	2.6M+ students per year
Tynker	2012	Interactive Coding Skills Development	23 M+ users across 20K schools worldwide

The *Human Genome Project* (HGP) is perhaps the greatest accomplishment in exploration history with the most profound implications. Unlike the outward voyages of discovery by adventurers like Lewis and Clark, Columbus, or the Apollo astronauts, the HGP's mission was inward, with the audacious goal to map the entire genetic blueprint of human beings.

Interest in gene exploration went back 150 years to Gregor Mendel, who is the father of modern genomics. But it wasn't until the mid 1980s that technology and Moore's Law made it possible to use software to sequence the over 3 billion genetic bases that make up the human body.

Unprecedented in terms of international collaboration and public-private partnerships, the *Human Genome Project* was launched in 1990 with the goal of mapping the entire human genome in what seemed like an unrealistic 15 years.

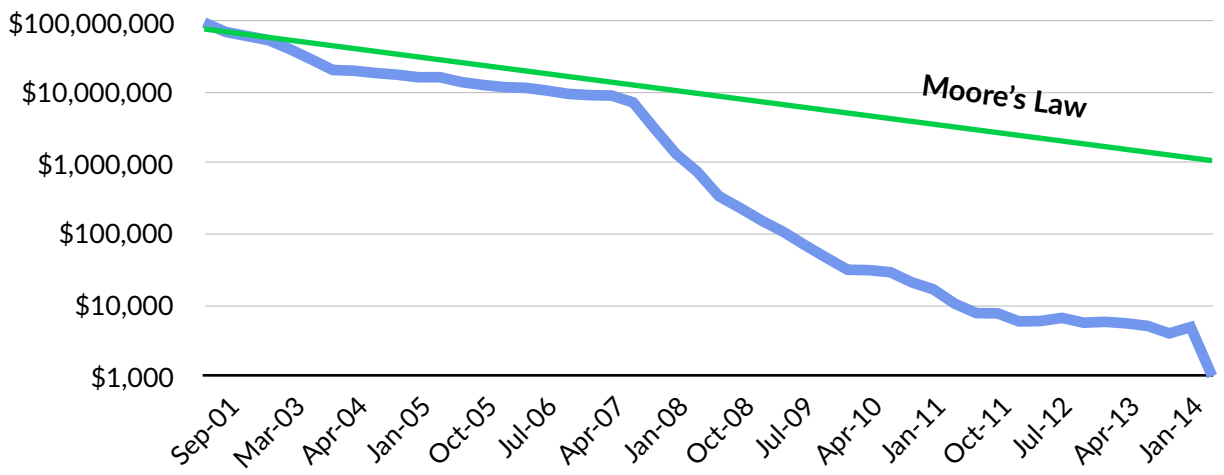
In April 2003, it was announced that the entire human genome had been mapped at a cost of $3.8 billion. Beyond scientific gains, the ROI was staggering. The *Human Genome Project* generated an economic impact of $796 billion from 1990 to 2010 alone.[45]

Moore's Law and the Megatrend of "Software Eating the World" are having a revolutionary impact on the cost for an individual to receive their own genetic map. In 2008, it cost $1 million dollars for a person to create a personalized gene map. By 2011, it was $100,000. In 2014, it cost $1,000 — less than a chest X-Ray — and it was $100 by 2016.

[45] *National Human Genome Research Institute*, "Calculating the Economic Impact of the Human Genome Project" (2014)

Rapid Decline of Cost to Sequence a Human Genome

Cost to Sequence a Human Genome, 2001 vs. 2014 (Log Scale)



Source: National Human Genome Research Institute

KEY TAKE-AWAYS

The rapidly declining cost to sequence a human genome has outpaced Moore's Law for the last decade. Between 2005 and 2015, the cost dropped from nearly $20 million to $1,000. Unthinkable at the launch of the Human Genome Project, Silicon Valley-based 23andMe already enabled people to order a mini-map of their genome for $99.

The fact that everybody could and should have their own genetic profile has profound implications to the future of medicine and human life. This isn't science fiction. In 2015, **23andMe**, a Silicon Valley-based personal genetics company, enabled people to order a mini-map of their genetic make-up for $99.

Instead of the normal reactive treatments patients received under "modern medicine," genetic mapping provided predictive prescriptions that could mean taking a new or modified drug, changing one's diet or fitness routine, or any other combination of treatments that were best suited for your very specific needs and genetic makeup.

The traditional and inexact approach of treating patients by their age, sex, ethnicity, and illness was being replaced by individualized and laser-targeted medicine. The era of individualized medicine was upon us.

The *Human Genome Project* laid the foundation for a healthier society, longer lifespans, and significant drops in the cost of healthcare. To be emphatically clear, this was *transformative* in terms of impacting an entire society by materially improving everyone's quality of live. Similarly, breakthroughs in brain research offered the potential to radically improve one's ability to learn. In the Global Knowledge Economy, there wasn't a more vital capability.



HUMAN GENOME PROJECT

LAUNCHED: 1990

WHAT IT IS

The Human Genome Project (HGP) of the 1990s was an international effort to create a map of the three billion DNA base pairs that constitute the human genome. The $3.8 billion effort was sponsored by the U.S. Department of Energy (DOE) and the National Institutes of Health (NIH), and it pooled the combined wisdom of biology, chemistry, physics, engineering, mathematics, and computer science.

WHY IT'S A WINNING MODEL

The HGP produced a detailed understanding of how human beings are "built" — knowledge that was applied to improve our quality of life. Beyond scientific gains, the ROI for the HGP was staggering. A $3.8 billion investment in the initiative generated *$796 billion* in economic returns from 1990 to 2010 alone.

Life-Changing Findings: Findings from the HGP enabled faster, more accurate, and less invasive tests for medical disorders. The HGP also unlocked the ability to create personalized treatments for a variety of ailments.

Collaboration = Acceleration: The HGP tapped the strengths of the public and private sectors. Over 1,000 researchers across six nations collaborated to define the three billion letters of our genetic code.

Problem

We could identify galaxies light years away and study particles smaller than an atom. But we still hadn't unlocked the mystery of the three pounds of matter that sits between our ears. Education was the cornerstone of our 2020 vision, but when it came to the mind, we were blind.

KNOWING WHAT WE DIDN'T KNOW

It seems like an obvious point that somehow was essentially ignored, but the brain is at the core of learning. Remarkably, and frankly illogically, neuroscience and education design were approached in silos.

The limited conclusive brain research that we had revealed a counterintuitive learning machine, sensitive to mood, timing, location, and environment. The brain registered information in seemingly irregular patterns and often operated best in settings where conventional wisdom suggested it would not.

Despite a variety of research findings to this effect, too few of our education methods were mapped to the way the mind is wired. The brain has evolved for millennia to educate and be educated, often instinctively and effortlessly. But we rarely followed these cues.

When the "modern" U.S. education system took shape in the early 20th century, human brains were thought to be storage facilities. The leading research argued that each brain cell was a "container" that could only hold so many facts. In this line of thinking, the size of the brain defined capacity for knowledge.

But examining the larger brains of other animals raised some uncomfortable questions for advocates of this theory.

Yet our schools were still designed to fill the "containers" in our brain. Learning was detached from real life experience, and subjects were separated like oil and water. Students were taught to master key facts and isolated concepts. But the brain does not like to learn this way.

In baseball, batting coaches seldom trained hitters by having them swing at the same pitch repeatedly. Rather than devoting a large block of time to the curveball, it was better to take swings at curveballs, fastballs, and sinkers in a single session.

Why? The brain prefers to mix things up. It evolved in a dangerous World where we hunted mammoths and foraged for food. Adaptability, not specialization, was the difference between eating dinner and *becoming* dinner.



Source: USA Today

A 2014 study by leading cognitive scientists echoed this concept. It found that mixing a variety of math concepts into middle school homework assignments every night — as opposed to the traditional method of focusing on individual concepts over time — improved student performance by almost 50 percent.[46]

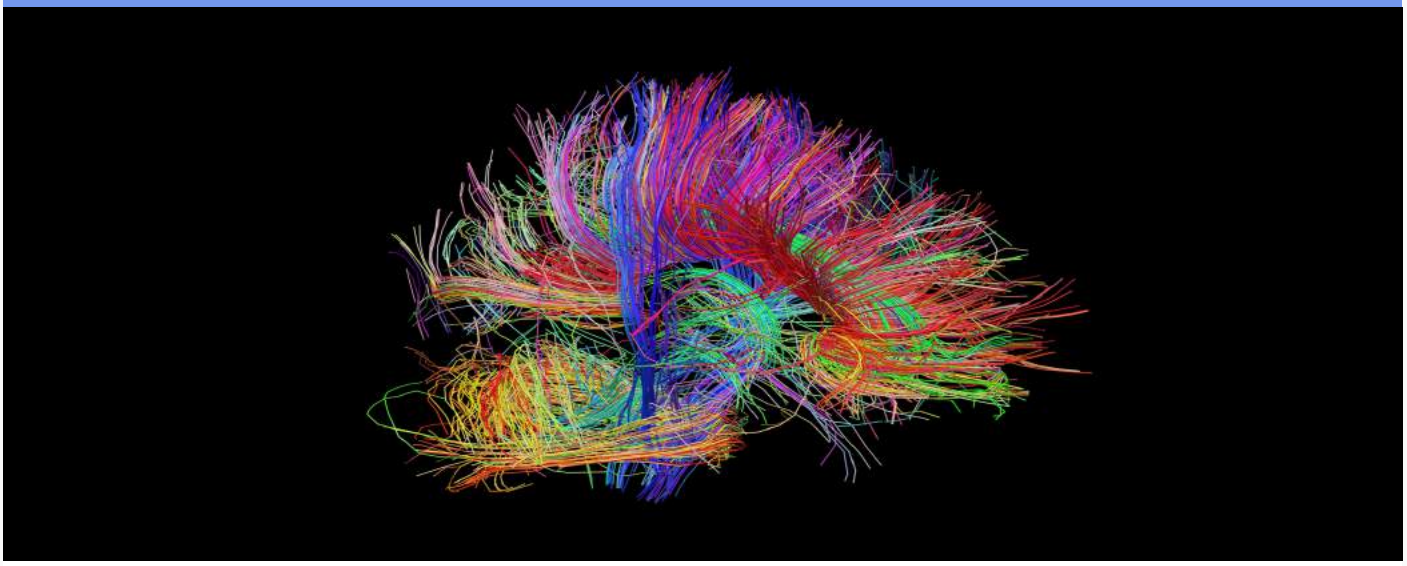
[46] New York Times (*Study for the Test by Taking It*, 2014)

Models That Work

MAPPING THE BRAIN, EXPANDING FRONTIERS

The advent of new technologies that allowed scientists to track the functioning of neurons in the brain sparked new research projects around the World. We were entering uncharted territory.

New Frontiers: **Mapping Brain Circuitry**



WHAT IT IS: New non-invasive imaging techniques using fleets of molecule-sized sensors held the potential to produce detailed diagrams of neural networks — the mind's circuitry — enabling unprecedented research into how the brain's regions are connected.

WHY IT MATTERS: Mapping the brain's neural networks enabled researchers to track how disparate brain activity translated into patterns of cognition, emotion, and perception. These patterns were the key to understanding the root causes of brain disorders and how to cure them. It was also an opportunity to demystify how we learn — and ultimately apply these lessons to the design of education models and products.

In 2015, a group of nanotechnologists and neuroscientists began experimenting with a game-changing new approach that used fleets of molecule-size machines to

act as sensors to measure and store brain activity at the cellular level. Their aim was to create a complete "map" of the brain's neural networks — the circuitry connecting regions of the mind — to better distill how brain activity translated into patterns of cognition, emotion, and perception.



THE ALLEN INSTITUTE

FOUNDED: 2003

WHAT IT IS

Established by Microsoft co-Founder, **Paul Allen**, the Allen Institute for Brain Science aimed to answer the most pressing questions in neuroscience, including deciphering how information is coded and processed in the brain. Committing to a collaborative, data-driven approach, the Allen Institute set out to discover fundamental brain properties through the integration of experiments, modeling, and theory.

WHY IT'S A WINNING MODEL

Using a "Big Science" model, the Allen Institute enabled the global scientific community to more efficiently make discoveries that had real-World impact in two key ways:

Interdisciplinary: Allen Institute teams were unorthodox by the standards of the scientific community, a patchwork of neuroscientists, engineers, mathematicians, physicists, and computational scientists — each bringing a new perspective to the challenges faced by modern brain science.

Data Sharing: Research initiatives aimed to generate rich data sets that could lead to actionable insights about the brain. The Allen Institute shared its data as soon as it was useful to the broader scientific community. They did not wait to publish proprietary studies in academic journals.

These patterns were not only critical to developing cures for debilitating brain disorders — they were they key to demystifying how we learned and ways to optimize the process. Much of the emerging research momentum was driven by innovative new labs committed to accelerating global knowledge through "Big Science." None offered a more compelling model than the Allen Institute for Brain Science, established in 2003 by **Microsoft** co-founder Paul Allen.

Channeling lessons from the *Human Genome Project*, the National Institutes of Health (NIH) launched the *Brain Research through Advancing Innovative Neurotechnologies* (BRAIN) initiative in 2013 to map the functioning of the human mind.

Enlisting the support of the Allen Institute and other leading research groups, the BRAIN initiative secured $300M in initial funding, including $46 million from the National Institutes of Health (NIH) and $30 million in R&D investments from **GE**, **Google**, **GlaxoSmithKline**, and **Inscopix**.



While it is well-intentioned, the BRAIN initiative was spread too thin. In reality, it funds a wide range of research as dictated by an alphabet soup of government agencies, including the Food and Drug Administration, the National Science

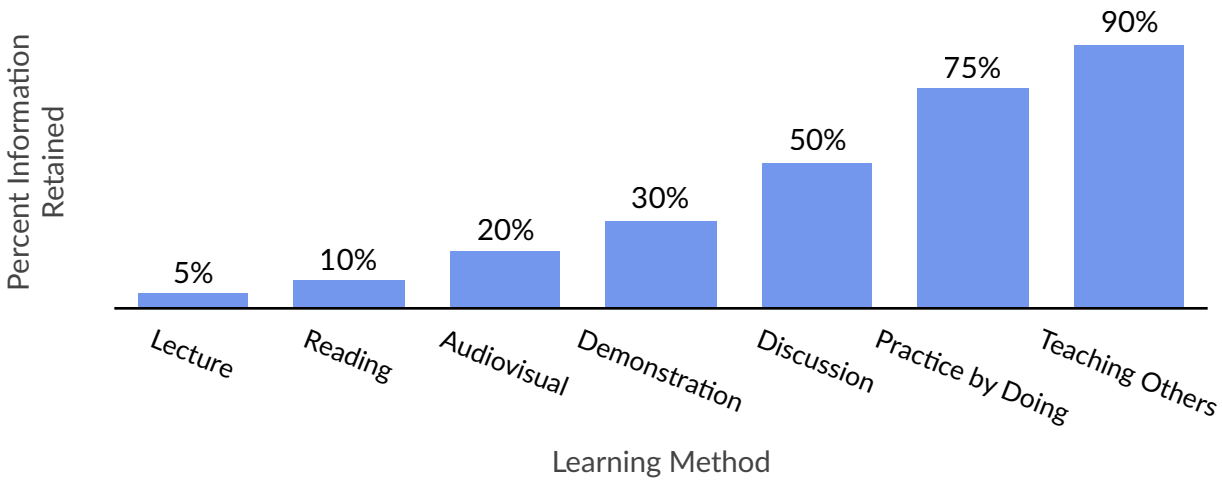
Foundation, and many more. Stated goals ranged from “Creating transparency around the regulation of neurological medical devices” to “Improving treatments for veterans suffering from neuro-psychiatric illnesses.”

NEW LEARNING FUNDAMENTALS

By 2015, research conclusively demonstrated that “Active Learning” — education that engages students in action, inquiry, imagination, collaboration, and personal reflection — was far more impactful than passively processing information as a bystander. While it could be achieved through a variety of models, Active Learning shifted accountability for learning from teachers to students, encouraging them to both “think” and “do.”

New Fundamentals: Active Learning

Concept Retention Increases as Learning Becomes More Active

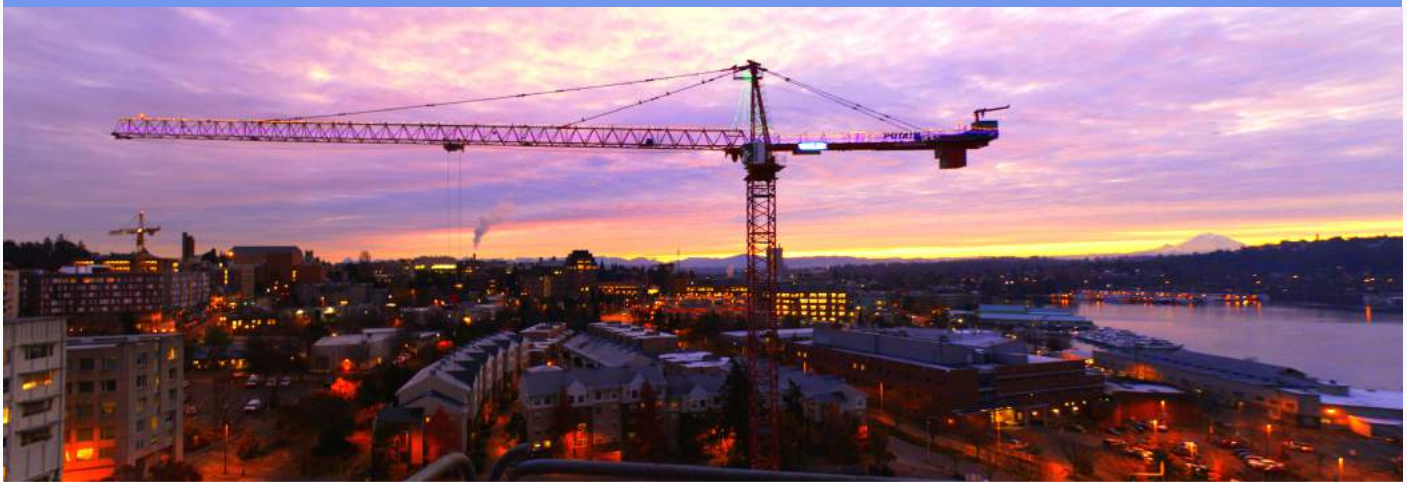


Source: The National Academy of Sciences

KEY TAKE-AWAYS

People learn more effectively when they are engaged in the process. The National Academy of Sciences, for example, has found that students retain far more new information when engaged in “active” models like teaching their peers (90% retention) versus “passive” models like sitting in lectures (5% retention).

New Fundamentals: **Building the Brain**



WHY IT MATTERS: Brain research increasingly demonstrated a shared set of fundamentals for effective learning, regardless of your age or background. Education models and products that were aligned with these fundamentals were poised to deliver a more effective learning outcomes — a higher Return on Education (ROE).

- **Retrieval**: Constantly retrieving recently gained knowledge from memory — a process many students would identify as "quizzing" — is critical to identifying areas of mastery and weakness.
- **Mixed Skills**: If you are trying to learn mathematical formulas, it's better to study more than one type at a time, alternating between different problems that call for different solutions.
- **Elaboration**: The mind more effectively masters new concepts when you add your own context to what you have just learned — a key reason why peer-to-peer teaching was demonstrated to be such an effective way to learn.
- **Visuals**: Brain and learning expert, Dr. Richard Mayer of the University of California, Santa Barbara, found that there is an 89% improvement in learning when images are added to plain text materials.

Tapping into extensive cognitive research by the U.S. Air Force, **Think Through Math**, developed a learning system that combined adaptive instruction with a learning sequence designed to motivate students and produce resilience in the face of adversity. When students launched a new lesson, they were presented with a personalized cognitive primer to activate past knowledge. The system provided transparency so students could see where they stood relative to learning goals and take ownership of their academic narrative.

GAME CHANGERS



THINK THROUGH MATH (TTM)

FOUNDED: 2006

WHAT IT IS

CEO **Kevin McAiley** is driven by a singular purpose: to motivate students to succeed in Math. To accomplish this daunting task — nearly half of American students entering college lack foundational math skills — TTM has created the "full court press" learning system rooted in cognitive science. It combines live teacher support, an adaptive instructional system, and engaging design.

Headquarters: Pittsburgh, PA

Investors: New Markets Venture Partners, SJF Ventures, Deborah Quazzo (GSV Advisors)

Capital Raised: $10+ million

WHY IT'S A GAME-CHANGER

Think Through Math's tutorial model is based upon the largest body of cognitive tutoring research in the World, led by the U.S. Air Force Research Laboratory, with funding from the Air Force and the National Science Foundation.

Motivation + Engagement: Intrinsic and extrinsic motivators through avatars and games combined with system-generated feedback and live support from certified U.S. math teachers.

Adaptive Instruction: Rigorous, standards-rich instruction tailored to each student's level of understanding with adaptive algorithms.

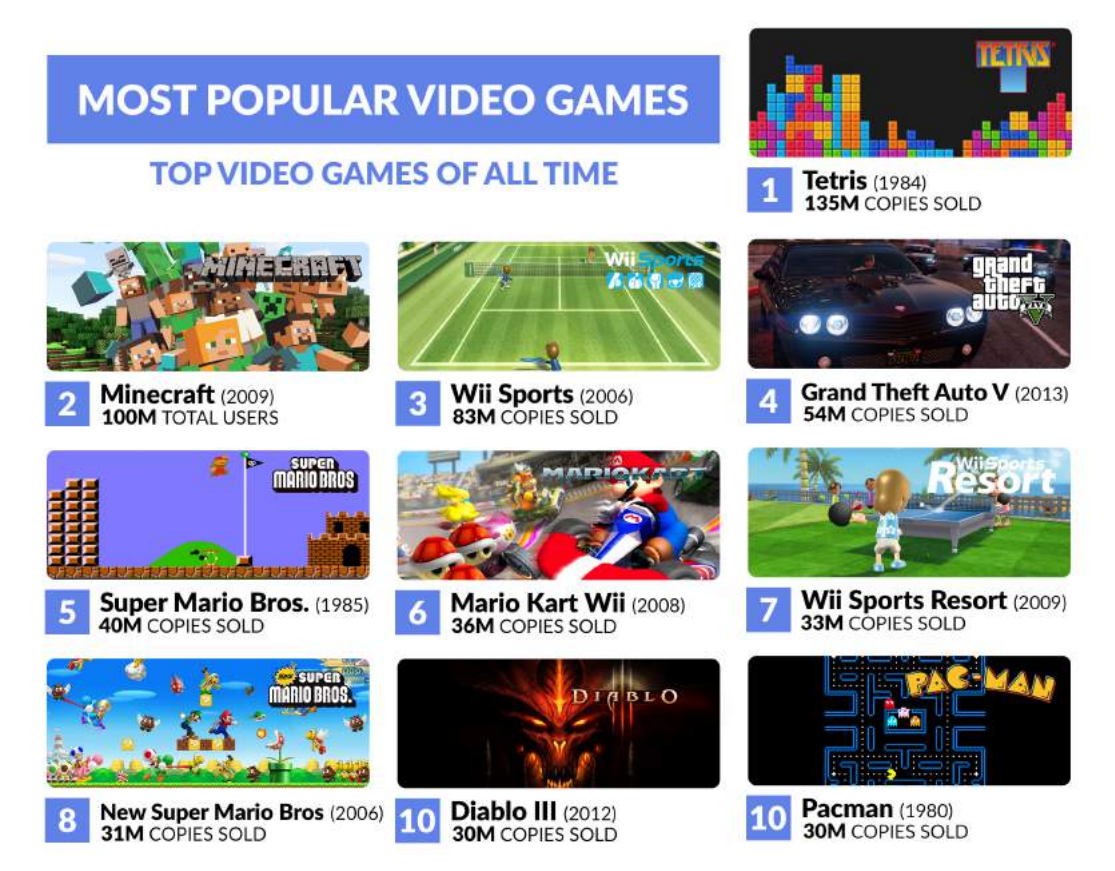
Actionable Data: Real-time insights on student performance to improve teacher effectiveness.

Acrobatiq, launched in 2013, was born out of Carnegie Mellon University's *Open Learning Initiative* (OLI), a pioneering digital learning innovation project that blended cognitive science, human-computer interaction research, and software engineering. Its offered a library of rigorously tested adaptive courseware across a variety of subjects, as well as adaptive course authoring tools to power original content.

A decade of cognitive research demonstrated that students using Acrobatiq's learning engine mastered concepts faster and performed better than their peers. As the domains of neuroscience and cognitive science continued to converge around decoding the brain, we expected broader waves of education technology companies to validate their product design and impact based on rigorous research.

BRAIN GAMES

Active Learning was ultimately a proxy for a broader set of learning fundamentals that were coming into focus, driven by the application of neuroscience to education. The consistent refrain was that students learned more effectively when they were entertained, empowered, and challenged. Through this lens, video game technology, long seen to be at odds with education, emerged as a powerful vehicle to teach and learn.

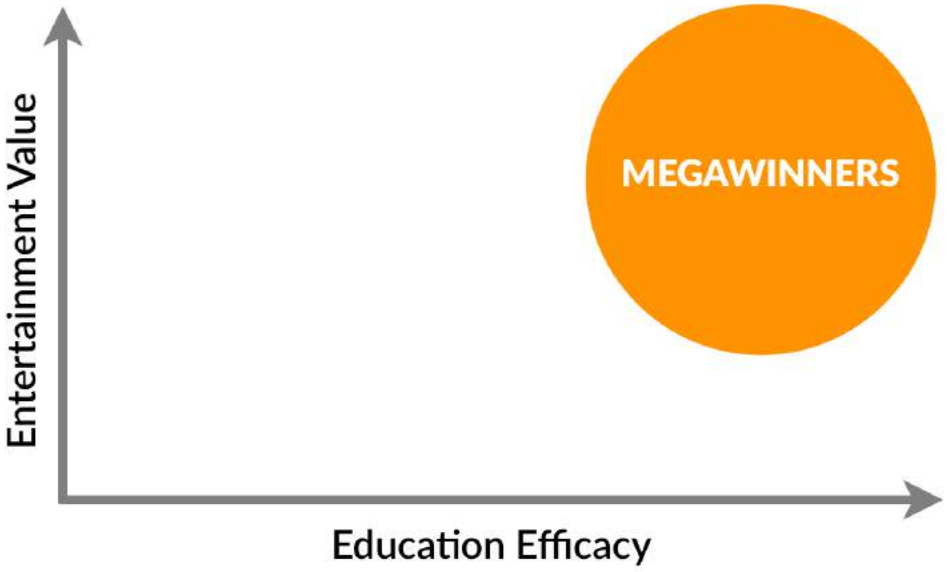


Source: IGN, Minecraft

The main problem when it came to mixing games with education was that games, while fun, typically had low efficacy. Education content was efficacious but brutally boring. Obvious fact, but kids love to play games. Between starting and finishing secondary school alone, students were projected to play an average of 10,000 hours of video games — *about the same amount of time they spent in the class room*.[47] By 2015, innovators were beginning to capitalize on this highly engaging medium to produce games that helped people master key skills.

Efficacy + Entertainment = Megawinners

Games That Entertain Users While Driving Learning and Cognitive Gains



KEY TAKE-AWAYS

Games that entertain users while driving measurable learning and cognitive gains will be megawinners. While companies like Scientific Learning created ground-breaking software that had a measurable impact, the experience was miserable. In 2015, the convergence of brain science with sophisticated video game design was changing the paradigm.

Fundamentally, games are an effective teaching tool because they are action-oriented. The default state is *doing*. But peel away the design wrapper and games

[47] U.S. Department of Education

are nothing more than complex problems waiting to be solved by players. Importantly, games encourage students to process and master new information in context, unlike memorization, drilling, and quizzing. The game does one thing, the player responds. In order to beat the game, the player needs to master the system.

GAMES ARE POWERFUL TEACHING TOOLS

Games Are Directly Aligned with the Fundamentals of Effective Teaching and Learning



1. DEEP LEARNING

Games are ideal environments for engaging students in complexity, giving them the power to figure out concepts at their pace through a medium that they enjoy.



2. PERSISTANCE

Games are an ideal way to learn from mistakes because they offer multiple opportunities to persist through challenges in an environment that is designed to reward multiple attempts and novel solutions.



3. IMMEDIATE FEEDBACK

With games, learning is continuous. When students are in the moment playing, there is no better time to give them insights into their learning.



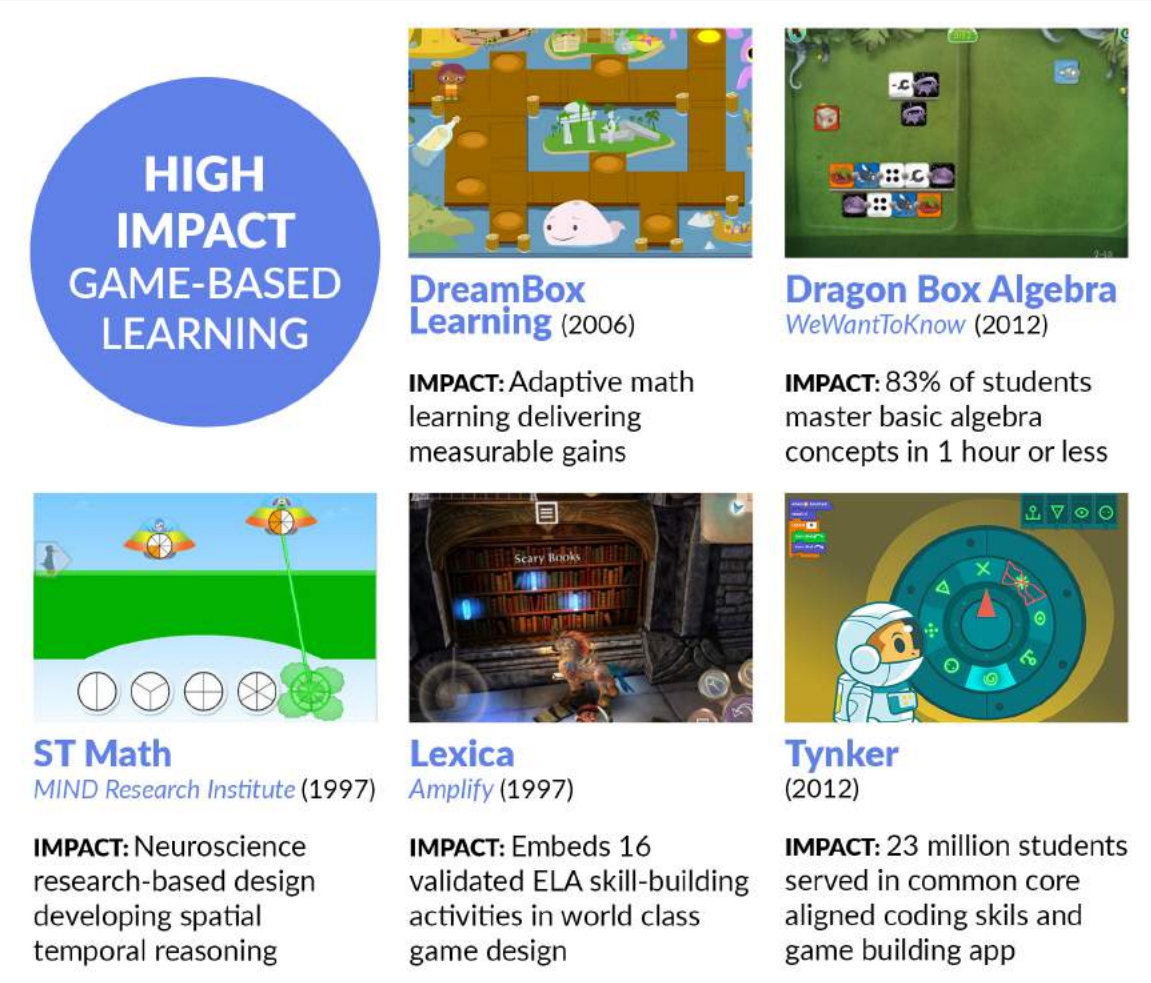
4. FORMATIVE ASSESSMENT

Reporting engines attached to games provide precise insights into what concepts students are mastering, and where they are struggling. Formative Assessments, which measure what students are learning in real-time, provide leading indicators that help teachers intervene early.

Source: GlassLab, GSV Asset Management

In 2015 compelling gaming platforms were gaining broad traction by combining engaging, age-appropriate design with research based learning models. **ST Math**, created by the **MIND Research Institute**, was a highly effective math skills building game guided by the neuroscience of "Spatial Temporal" reasoning. It was used by over 800,000 students. **Amplify's Lexica**, developed under the leadership of **Justin Leites**, combined World-class design with a language arts (ELA) learning engine that integrated 16 ELA skill building activities. **Galxyz**, created by **Chegg** co-founder, **Osman Rashid**, enabled students to master elementary science concepts through an intergalactic adventure game that fused cutting edge digital

media with a learning design based on the widely adopted Next Generation Science Standards (NGSS).



While game styles and goals varied, research demonstrated that if you wanted sustained engagement from students — or anyone else for that matter — the experience should support the player's experience of autonomy, competence, and connectedness. In other words, great games didn't hook people with "rewards" — they worked because they empowered people to own the experience and connect with their peers. **Minecraft**, the World's most popular game with 100 million users, was built squarely on this principle. It offered important lessons for education.



MINECRAFT

FOUNDED: 2009

WHAT IT IS

Minecraft was created in 2009 by **Markus Persson**, a Swedish game programmer who goes by the gamer name “Notch”. Acquired by **Microsoft** for $2.5 billion in 2014, Minecraft is the World's most popular video game with 100 million users — although it’s really more of a virtual universe. The "point" of Minecraft is to build things. Effectively an endless digital lego set, people create and share elaborate structures — from pirate ships to floating bridges.

WHY IT’S A WINNING MODEL

The popularity of "Minecraft" rests on its open-ended possibilities. It's a blank canvas for your own creation story. The key takeaways for education, and education games specifically, is that learning environments that give students autonomy while enabling them to connect and collaborate on their own terms are the most engaging.

Research overwhelmingly confirms that the most popular video games are based on this principle, which sums up Minecraft's DNA. Groups like *MinecraftEdu* are building-curriculum based on the game. Why? Because Minecraft is what you make of it.

Companies like **Tynker** and **CodeSpark**, using aspects of the Minecraft model, developed key technical and critical thinking skills with platforms that enabled young people to ***create*** their own games. By teaching the fundamentals of coding using an intuitive visual interface, Tynker laid the foundation for the mastery of

programming languages like *Javascript* and *Python* later in life. But it also fostered more fundamental skills, like how to craft a narrative, logically sequence events, and model real scenarios.

Forward March: Tynker

ROE

Tynker empowers kids to master computational and programming skills by building games and apps in a fun, intuitive environment. Tynker's web-based platform enables learning by creating, and is accessible by iPad and Android tablets.

FOUNDED: 2012

ADOPTION: 23+ million students across 20,000 schools worldwide

INVESTORS: GSV, 500 Startups, NEA, New Schools Venture Fund, Deborah Quazzo (GSV Advisors)

CAPITAL RAISED: $3.3M

MEGATRENDS
BIG DATA, CLOUD, MOBILE, PERSONALIZATION, KNAAC

GSV 4Ps ANALYSIS

People

Founder and CEO **Krishna Vedati** is formerly SVP of AT&T's Interactive Consumer Division

Product

Intuitive, engaging "creative computing" platform to learn and develop programming skills

Predictability

Powerful Freemium model driven by highly engaging product with measurable results

Potential

Positioned to be leading platform teaching key 21st century skills to young learners

In a similar vein, **TinyTap** created a platform that enabled millions of students, parents, and teachers to easily create and share games through a digital marketplace. Intuitive enough to engage young kids, TinyTap empowered parents and teachers to easily create personalized learning apps, monetizing their creations through TinyTap's marketplace, as well as on iTunes and Google Play.

Created in 2011 with funding from the **Bill & Melinda Gates Foundation** and the MacArthur Foundation, **GlassLab** emerged as an engine for innovation in education gaming. By assembling a diverse team with backgrounds in commercial

game development, as well as learning and assessment, GlassLab created an ecosystem to catalyze, create, and measure the impact of education games.

GAME CHANGERS



GLASSLAB

FOUNDED: 2011

WHAT IT IS

Led by Executive Director **Jessica Lindl**, GlassLab empowers learners to master 21st century skills through high-impact digital games. Glass Lab brings together leaders in commercial games and experts in learning and assessment.

Headquarters: Redwood City, CA

Investors: Non-profit backed by the Bill & Melinda Gates Foundation and the MacArthur Foundation

Capital Raised: NA

WHY IT'S A GAME-CHANGER

A groundbreaking collaboration between leaders in commercial games and experts in learning and assessment, the Lab is a catalyst for innovation on three levels.

Proprietary Games: Next generation learning games to support the acquisition of 21st century skills.

Research: Study the impact games have on improving student outcomes and publish the results to advance game design.

Game Services: Provide game developers the tools they need to build better learning games and reach more learners.

Importantly, GlassLab implemented three core strategies to bring high-quality education games to scale. First, it developed proprietary games that cultivated key 21st century skills like critical thinking and quantitative reasoning. *Ratio Rancher*, for example, a game that presented students with challenging math concepts covered by the Common Core standards, produced significant learning gains after just three 45-minute sessions of gameplay.

Beyond product development, GlassLab frequently produced and published research measuring the efficacy of their games, highlighting models that work and

important lessons learned. But their commitment to collaboration went beyond sharing research. GlassLab provided hands-on support services and development resources to third party developers with the aim to promote better learning games that would reach a wider audience.

NEXT GENERATION GAMES FROM GLASSLAB

GlassLab Games Target the Acquisition of Critical 21st Century Skills



RATIO RANCHER

Ratio Rancher presents students with challenging math concepts covered by the Common Core standards for ratios and proportional reasoning. Students playing Ratio Rancher have experienced significant learning gains after just three 45-minute sessions of gameplay.



SIMCITYEDU

GlassLab's SimCityEDU measurably improves student performance on complex systems thinking and problem solving tasks, the foundation of college and career readiness. Student skill gains have placed the game among the top five researched teaching tools targeting 21st century skills.



MARS GENERATION ONE

Developed in partnership with NASA, students who play Mars Generation One for three hours of instruction often demonstrate as much as one year of learning gains in the challenging skill of argumentation. Three out of four students who play the game master the core aspects of argumentation.

Source: GlassLab, GSV Asset Management

VIRTUAL IS REALITY

In 2015, a broader technology trend was challenging conventional notions about the limits of the digital World. Virtual Reality (VR) had been pursued and promised since the 1950s, but the convergence of low-cost mobile hardware and powerful new software platforms was bringing it to life. In less than five years we were seeing ripple effects across digital media.

Oculus VR founder Palmer Luckey, a college dropout, created a Virtual Reality (VR) "prototype" in 2011 with a smartphone, two eyeglass lenses, duct tape, and a bucket. One year later, Luckey tried to raise $250,000 on **Kickstarter** and got $2.4 million. In 2014, **Facebook** bought his company for $2 billion and VR had arrived.

At the time, Mark Zuckerberg observed, “Every 10 to 15 years a new major computing platform arrives — we think that virtual and augmented reality are important parts of this upcoming next platform.”

A BRIEF HISTORY OF VIRTUAL REALITY



1957: The Sensorama, invented in 1957 and patented in 1962, showed a 3-D film with stereo sound, vibrations, wind, and smells.



1968: Researcher Ivan Sutherland unveiled the first “head-mounted display” at MIT, which quickly earned the nickname Sword of Damocles: a terrifying room-size V.R. machine, with a helmet so heavy that it needed to be supported by a mechanical arm suspended from the ceiling.



1984: Former Atari researcher Jaron Lanier, who popularized the term “Virtual Reality,” launched VPL Research in 1984, creating a VR headset with fiber-optic gloves. VPL Research filed for bankruptcy in 1990.



1990s: Recreational virtual reality flamed out in the 1990s with a string of overhyped launches from leading video game companies, including the Virtual Boy from Nintendo in 1995. Functionality was limited, and consoles made people sick after short periods of use.



2012: Oculus VR founder Palmer Luckey created a VR “prototype” in 2011 with a smartphone, two eyeglass lenses, duct tape, and a bucket. One year later, Luckey tried to raise $250,000 on Kickstarter and got $2.4 million. Facebook bought Oculus for $2 billion in 2014.

Source: New York Times,Time, GSV Asset Management

But VR wasn’t just a computing platform, or even a vehicle for mind-blowing entertainment (although this was a piece of the puzzle). VR was fundamentally a new medium for acquiring knowledge. Language, arguably the most crucial technological advancement in our history, transformed expanded learning from

simple mimicry and emulation into the realm of complex ideas. Expression through language accelerated innovation. At the same time, it enabled us to develop abstract ideas that evolved into a shared culture.

Writing, and later the printing press, multiplied the power of language by creating access to the best ideas for a much broader audience. An outsourced device for "remembering," the written word also expanded our inventory of ideas, which were no longer dependent on the storage capacity of the human brain. Film, and later video and video games, were important extensions of this concept. But all were still approximations of reality.

Where there is no vision the people perish.

PROVERBS 29:18

Virtual Reality represented a leap forward because it had the potential to shatter physical boundaries that separated the World of ideas and experience. It was going to a powerful platform to learn anything… *everything*. Ironically, while skeptics pondered how the new technology could be applied to education, we had a long tradition of learning by doing.

Since the Wright Brothers took their first flight in 1903, for example, the aviation industry has had a basic need to simulate flight experience before putting pilots in the air. With the advancement of computer, graphics, and gaming technology, aviation simulation has come a long way since 1910, when the best training method involved sitting in a half-barrel to simulate flight pitch.

The most effective way to learn is often through hands-on experience and immersion. For one, cognitive research demonstrated conclusively that the more actively involved a person was in their educational environment (i.e. not sitting back and watching passively), the more information they retained. Intuitively, the closer you got to the "real thing," the better you learned.

FLIGHT "SIMULATOR," 1910



It is easier to learn Mandarin if you live in Beijing. Or framed differently, how would you like to be a surgeon's first patient after they learned their craft exclusively by watching YouTube videos — or even the best instructional videos ever made?

Learning by doing is a great idea, but the "real thing" is expensive and often impractical. Immersive education at scale was a fantasy. But Virtual Reality technology was approaching "magical" quality at mass market prices.

The ascendence of Oculus, punctuated by the **Facebook** purchase, was an important milestone because it was the first consumer VR platform to pass the credibility test. CEO Palmer Luckey wasn't the first dreamer to be enamored with a parallel digital universe.

But he picked the right point on the Moore's Law curve to jump in. With computer power doubling and costs halving every 18 months, it was a fair bet that we would be seeing beyond our wildest dreams in short order. That meant immersive learning for everyone, all the time, was a real possibility.

WINNING MODELS



OCULUS VR

FOUNDED: 2012

WHAT IT IS

Acquired by Facebook for $2 billion in 2014, Oculus VR is a pioneer of high-quality, mass market virtual reality. Its flagship product, Oculus Rift, is a head-mounted display powered by an operating system that is open to third-party application developers, like iOS and Android. Oculus was initially funded on the crowdfunding site Kickstarter

Headquarters: San Francisco, CA

Investors: A16Z, Founders Fund, Spark Capital, Matrix Partners, Formation 8

Capital Raised: Acquired by Facebook for $2 billion in 2014

WHY IT'S A WINNING MODEL

Oculus founder Palmer Luckey harnessed mass enthusiasm for virtual reality with a wildly popular Kickstarter campaign. Capitalizing on a wave of cheap, high-quality components created for mobile electronics, coupled with an innovative software platform, Bankrolled by Facebook, Oculus brought virtual reality to the mainstream.

Consumer products like Oculus meant that VR could make its way into learning at scale. From virtual field trips to hands on simulations, physical and cost boundaries that traditionally prevented hands-on learning experiences were evaporating.

Magic Leap emerged was a counterpoint to Oculus in 2014, catapulting into the public consciousness with a $542 million Series B capital raise led by **Google**. Unlike traditional virtual reality, which creates an immersive digital environment, Magic Leap produced an Augmented Reality (AR), effectively, enabling people to produce digital images indistinguishable from physical objects, superimposing them seamlessly into the World. It made Google Glass seem like granny glasses.



MAGIC LEAP

FOUNDED: 2010

WHAT IT IS

Magic Leap is an Augmented Reality (AR) technology platform that enables users to seamlessly blend computer-generated graphics with the real World through an experience called Cinematic Reality.

Headquarters: Dania, FL

Investors: Google, A16Z, KPCB, Qualcomm Ventures, Legendary Entertainment

Capital Raised: $592 million

WHY IT'S A WINNING MODEL

Unlike traditional VR, which creates an immersive digital environment, Magic Leap's wearable technology complements natural eyesight. Effectively, Magic Leap enables people to generate digital images indistinguishable from physical objects, superimposing them seamlessly into the World around them. The net result is a digital experience that can be unobtrusively integrated into the classroom, augmenting learning activities and animating key ideas.

Google made a an aggressive early push into education in 2015, debuting a $5 cardboard VR device (aptly named "Google Cardboard"), offered to schools in conjunction with a preloaded library of virtual "field trips" — 360-degree virtual experiences of everything from the Tower of Pisa to the face of the Moon.

GAME CHANGERS



GOOGLE EXPEDITIONS

LAUNCHED: 2015

WHAT IT IS

Google's $5 VR viewer, "Google Cardboard," enables users to simply snap their smartphones into the device for a virtual reality experience. Shortly after its launch in 2015, Google announced a bundled offering for schools dubbed "Expeditions," that included VR viewers preloaded smartphones, and a library of VR-enabled "field trips" to famous landmarks.

WHY IT'S A GAME-CHANGER

While Google Cardboard + Landmarks will not compete for the top billing in quality VR experience, it enabled Google to get to market quickly and demonstrate a powerful application for education. Teachers using Expedition can manage the entire student experience from a tablet, selecting a trip from Google's VR library, (powered by Google Maps) and then setting off. Students are treated to a 360-degree tour, whether it is the Great Wall of China or the bottom of the ocean.

As the technology matured, a first wave of learning applications that were "born" in VR hit the shore. **zSpace**, for example, created a suite of STEM learning activities that animated key science concepts through interactive lessons. **Learn Immersive** created a language learning app that simulated the immersive experience of being in a foreign country. By creating a more active learning experience that surrounded users with relevant local sites and sounds, Learn Immersive accelerated vocabulary and syntax comprehension.

GAME CHANGERS



Learn Immersive
Learn through experience

LEARN IMMERSIVE

FOUNDED: 2014

WHAT IT IS

Founded by **Tony Diepenbrock** and **Chuck Moyes**, Learn Immersive is a virtual reality-based language learning platform. It empowers teachers to create interactive games in virtual environments for students to learn on their own, as well as to socialize with other students and native speakers.

Headquarters: San Francisco, CA

Investors: Angels

Capital Raised: NA

WHY IT'S A GAME-CHANGER

Learn Immersive effectively creates a "magical World" for learning, using the power of virtual reality to create a highly engaging student experience. At the same time, Learning Immersive's Blueprint authoring tool enables teachers to create custom activities and learning exercises within the virtual reality environment, aligning the experience to their own curriculum. Initially focusing on language learning activities to simulate an "immersive" experience, the Learning Immersive platform has broad applications in education.

TRAINING THE BRAIN

In 1996, a team of neuroscientists out of Rutgers and UCSF led by Dr. Michael Merzenich and Dr. Paula Tallal founded **Scientific Learning**, developing a ground-breaking reading software that leveraged research on the interplay of auditory processing and language to produce remarkable gains for young students, particularly those with learning disabilities.

Central to Scientific Learning's success was a principle of Dr. Merzenich's life work. When he began his medical research career, conventional wisdom held that

the functioning of our brains — including neurological maladies — is set early in life. The capacity to train and improve the diverse mental abilities that make up our intelligence was not considered possible.

Merzenich and other researchers demonstrated that the brain is in fact “plastic" — it can physically remodel itself. The implication was that brain plasticity could be manipulated in ways that treat and prevent afflictions that were once deemed permanent. Scientific Learning was an initial application of this finding.

The empires of the future are the empires of the mind.

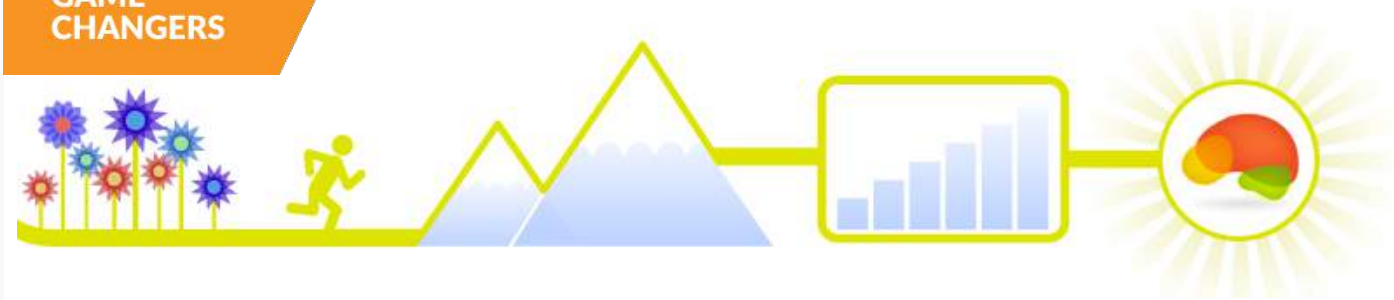
WINSTON CHURCHILL

The problem was that Scientific Learning required users to complete grueling two -hour sessions, six days per week. I had my daughters do the program and they almost killed me. Just like forcing people to eat spinach because it's healthy, adoption of brain exercises would continue to stall until we found ways to make it "taste great”. Nobody (except parents) complains about playing hours of *World of Warcraft*. We needed to bridge the gap.

Dr. Merzenich launched **Posit Science** in 2003 to apply methodologies honed at Scientific Learning to a much broader audience. Instead of using software to treat maladies, he wanted to help people “train” their brains through routine, entertaining games, and exercises.

Posit Science’s flagship platform, *BrainHQ*, was a brain training system built and tested by an international team of more than 100 top neuroscientists and brain experts. Over 70 published papers showed real benefits from using BrainHQ’s game-based exercises to work out your attention, memory, brain speed, people skills, navigation, and core cognitive abilities.

GAME CHANGERS



POSIT SCIENCE

FOUNDED: 2002

WHAT IT IS

Founded by **Dr. Michael Merzenich**, Posit Science created a series of brain training exercises, BrainHQ, that used neuroscience research to produce improvements in key cognitive abilities.

Headquarters: San Francisco, CA

Investors: DFJ, VSP Capital, Abedare Ventures

Capital Raised: $6.4 million

WHY IT'S A GAME-CHANGER

Over 70 published papers showed real benefits from using BrainHQ's game-based exercises to improve attention, memory, brain speed, people skills, navigation, as well as other key cognitive abilities. Like going to the gym, BrainHQ enabled users to create a personalized brain "workout" regimen, setting a daily schedule and performance goals based on training exercises that addressed an individual's unique needs.

Importantly, each exercise automatically adapted to a user's skill level so training was always at the appropriate "threshold" — the right level for the brain to make real improvements. Or as Merzenich puts it, "This is medicine — It is driving changes in the brain."

By 2015, the convergence of neuroplasticity research with powerful new digital technologies — from gaming to virtual reality — was a frontier for transformative innovation. Dr. Adam Gazzaley, the visionary Founding Director of the *Neuroscience Imaging Center* at the University of California, San Francisco (UCSF), was at the vanguard.

In 2013, Dr. Gazzaley demonstrated that swerving around cars while simultaneously picking out road signs in a video game could improve the short-term memory and long-term focus of older adults. Some people as old as 80, the research noted, began to show neurological patterns of people in their 20s.

DR. ADAM GAZZALEY

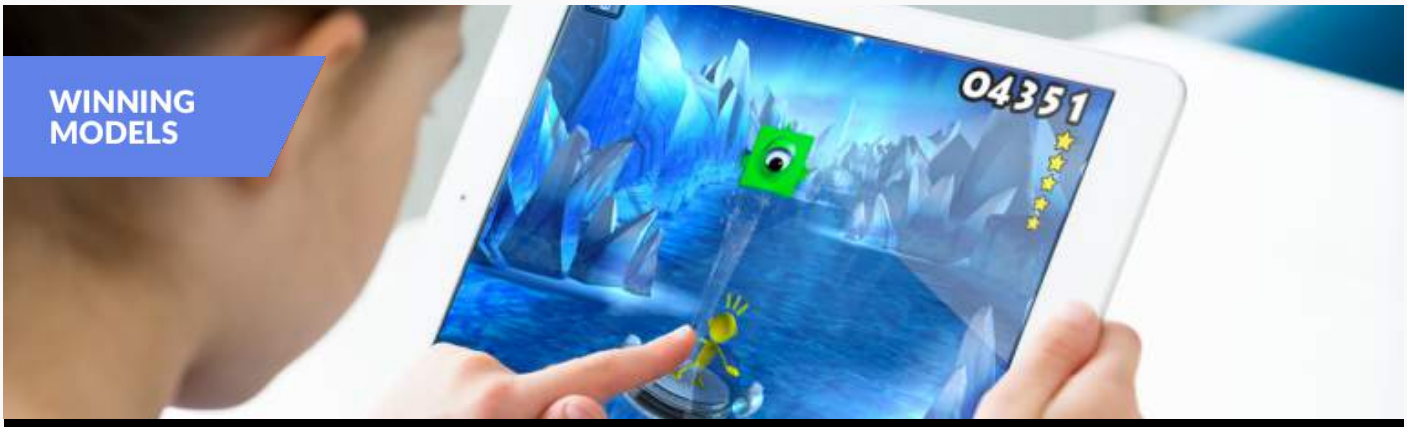
Founding Director, Neuroscience Imaging Center at UCSF



The game, *NeuroRacer*, was an unprecedented collaboration between the best in digital media and the best neuroscience. Working with top designers from **LucasArts** — creators of the *Star Wars* video game franchise — the vision was to create a highly engaging video game that fundamentally improved the functioning of the mind.

In line with our thesis that "mEDia" would be a key change-agent in education, Dr. Gazzaley and his team were truly using gaming to train the brain. His findings were featured on the cover of *Nature* on September 5, 2013, with the title, "Game Changer." In 2013, Gazzaley co-founded **Akili**, a company with a mission to create

validated cognitive therapeutics, assessments, and diagnostics delivered through high quality video games.



AKILI

FOUNDED: 2011

WHAT IT IS

Akili is a pioneer of Electronic Medicine, developing cognitive therapeutics, assessments, and diagnostics that look and feel like high-quality video games. Co-Founded by **Dr. Adam Gazzaley**, **Dr. Eddie Martucci**, and **Dr. Daphne Bavelier**, Akili is led by a cross-functional team of biomedical scientists, as well as experts in medical device commercialization and interactive design.

Headquarters: Boston, MA

Investors: Undisclosed

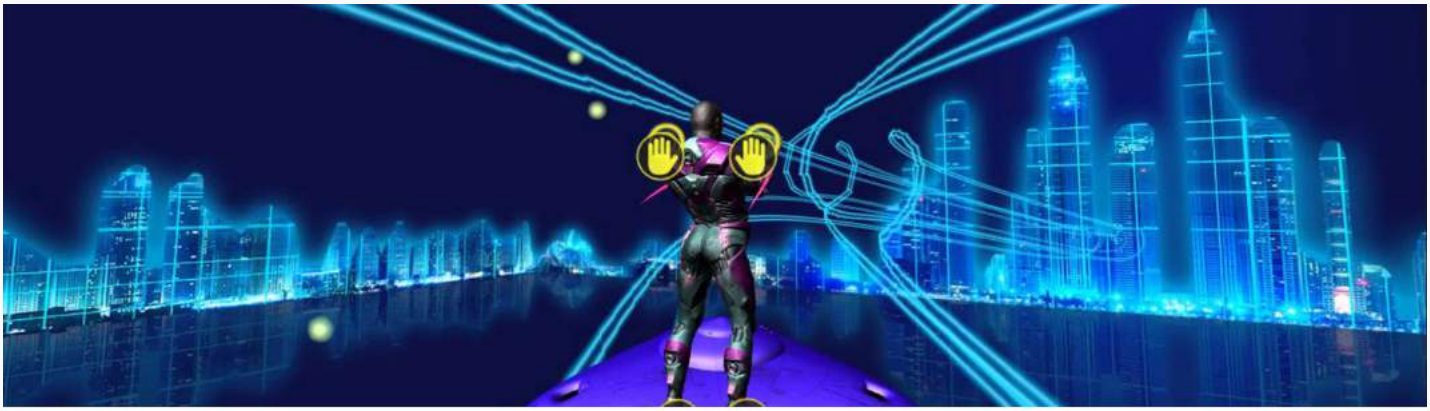
Capital Raised: Undisclosed

WHY IT'S A WINNING MODEL

Akili was founded on the premise that advances in neuroscience research and consumer-facing technology are enabling a new way to effectively measure neural function and treat cognitive disorders. By breaking down barriers that have traditionally divided technology innovation and academic research, Akili challenged the World to rethink the meaning of "medicine" by treating ADHD, autism, depression, and traumatic brain injury with a video game.

Applying the same cross-functional approach to education innovation, combining the neuroscience of effective learning with engaging video game-based curriculum, had transformative implications.

By 2015, Gazzaley and his TEAM were creating *Body Brain Trainer* (BBT), a full-body motion capture game that improved brain function by simultaneously challenging core aspects of cognitive control while prompting increasingly strenuous physical activity. It was "Mind, Body, Soul" in action.



Body Brain Trainer

Body Brain Triainer (BBT) is a full-body motion capture game created by a team led by **Dr. Adam Gazzaley** at the UCSF Neuroscience Imaging Center. It builds on Dr. Gazzaley's groundbreaking research on the ability to improve cognitive function through advanced "neurogames."

WHAT: Research shows that physical exercise can significantly improve brain function. By coupling body and brain training, BBT has a much greater impact on enhancing cognitive abilities than physical exercise or cognitive training alone.



Dr. Gazzaley getting a mind and body workout in the Neuroscience Lab.

HOW IT WORKS: The game simultaneously challenges each of the core aspects of cognitive control – attention, working memory, and multi-tasking – while prompting increasingly strenous physical activity. Participants respond using full-body movement, and adaptive algorithms ensure that players are working at their target heart rate and cognitive challenge levels.

WHAT'S NEXT: Using games like BBT, educators will be able to optimize student development through combined physical and cognitive education. It throws a whole new light on PE class. Similary, clinicians and researchers will be able to use games like BBT to simuntaneously assess your cognitive/physical well being.



The next step was to apply this powerful technology to lifelong learning, rethinking old approaches to education. How could we optimize the mind's ability to process information to level the playing field? How could these principles be applied to design educational resources that were more engaging and impactful?

Further afield, some entrepreneurs explored approaches to cognitive enhancement without any effort on behalf of the end user at all. **Thync**, for example, created a wearable product that delivered signals to the brain to promote mental states like relaxation, calm, energy, or focus.

WINNING MODELS





THYNC

FOUNDED: 2011

WHAT IT IS

Led by co-founders **Isy Goldwasser** (CEO) and **Jamie Tyler** (Chief Science Officer) Thync has created a new category of wearable products functioning at the intersection of neuroscience and consumer technology.

Headquarters: Silicon Valley

Investors: Khosla Ventures

Capital Raised: $13 million

WHY IT'S A WINNING MODEL

Thync technology was designed to enhance the daily lives of users by optimizing their mental states. Using a process called neurosignaling," Thync's device delivered signals to the brain to effect mental states like relaxation, calm, energy, or focus.

But more importantly, Thync was a preview of things to come. The better we understood the brain, the more readily we could optimize it for learning. If technologies like Thync could trigger a "state of mind" that optimized the ability to process and retain information, the implications for leveling the playing field were profound.

Similarly, in 2015, the *MIT Technology Review* named Jonathan Viventi one of its "35 Innovators Under 35" for the research he led on implanted brain chips that could treat epilepsy. Viventi was able to configure chips to effectively predict when a seizure was likely to occur based on brain signals, and then deliver electric pulses that stop them from happening. But as Viventi observed for anyone willing to listen, epilepsy was just the tip of the iceberg. This same science could be applied to improve cognitive function and memory. Any discussion about leveling the playing field in education would eventually lead to technologies that could best optimize the functioning of the mind.

BRAIN DISORDERS: GLIMMER OF HOPE

Tragically, for the millions of Americans suffering from a variety of brain disorders in 2015, participating in the future was a long-shot. Our treatments were simply inadequate. But this wasn't a small population at risk, and the cost of inaction was staggering. Brain research was a critical priority of our 2020 Vision because it was the only path to creating real opportunity for this population.

BRAIN DISORDERS IMPACT MILLIONS, COST BILLIONS

Eight major brain disorders affected 22 million Americans, costing over $350 billion per year.

Disorder	Affected	Annual Cost	Unemployment
Alzheimer's	5 million	$200 billion	NA
Autism	3 million	$66 billion	68%+
Bipolar Disorder	6 million	$7 billion	60%+
Epilepsy	3 million	$16 billion	30%+
Learning Disability	5 million	$50 billion	46%+*
Post-Traumatic Stress Disorder (PTSD)	500K Veterans	$4 billion	29%+
Schizophrenia	3 million	$23 billion	80%+

Source: Centers for Disease Control, National Center for Learning Disabilities, National Institutes of Health
**46 percent of working age adults with learning disabilities do not participate in the labor force*

Over 100 million Americans could expect to suffer from a brain disorder at some point in their lives. Three million lived with autism, costing the United States over $66 billion per year — double the *entire* research budget of the National Institutes of Health. More than five million Americans had Alzheimer's, and three million lived with Epilepsy.

Five million Americans had specific learning disabilities, including 2.4 million public school students. Despite this, U.S. adults still had a shockingly limited understanding of what learning disabilities were. Nearly a third believed that they could be caused by poor diet, and over half believed that various "treatments" like corrective eyewear could cure them. Effectively, we still believed in "Witchcraft" and "Old Wives' Tales".

Fundamental Misunderstanding of Learning Disabilities

Percentage of U.S. Adults Attributing Learning Disabilities to Inaccurate Causes



Source: National Center for Learning Disabilities

KEY TAKE-AWAYS

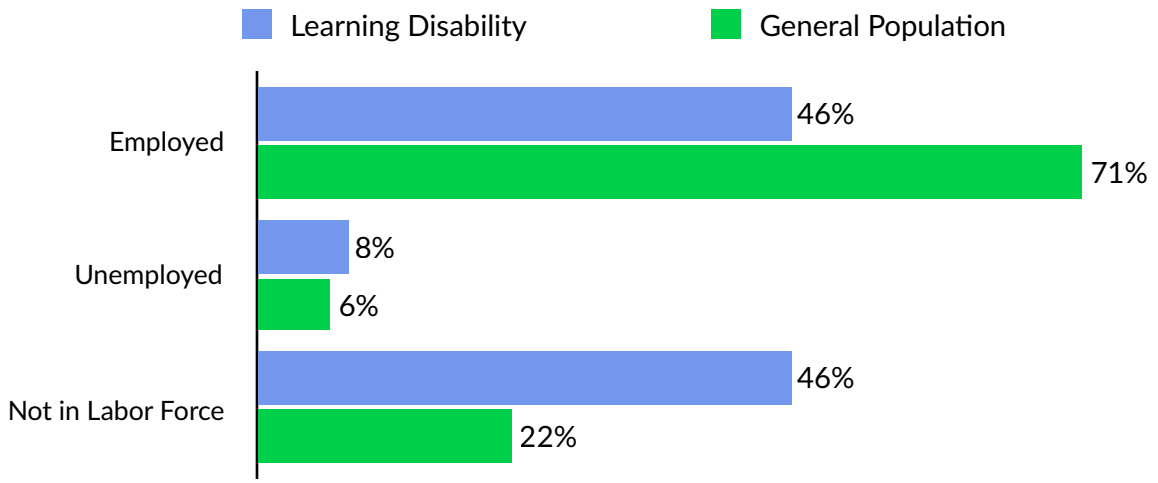
In 2015, Americans still fundamentally misunderstood the learning disabilities that afflicted five million people in the United States, including more than 2 million public school students. Over one third of U.S. adults attributed learning disabilities to causes that were inaccurate, including 31 percent who thought they could be caused by a poor diet.

Students with learning disabilities faced an uphill climb to access opportunity. Only 68 percent managed to secure a high school diploma, and they attended four-year colleges at half the rate of the general population. The college graduation rate for students with learning disabilities was 41 percent, compared to 52 percent for their peers.

The employment picture was equally bleak. Among working age adults with learning disabilities, 46 percent were employed, compared to 71 percent of the general population. Nearly eight percent were unemployed, and the remaining 46 percent were out of the workforce altogether.

Learning Disabilities Lock People Out of the Future

Employment Status of Working Age Adults with Learning Disabilities, 2014-2015



Source: National Center for Learning Disabilities

KEY TAKE-AWAYS

Education and career opportunities were limited for people with learning disabilities. Only 68 percent secured a high school diploma, and 46 percent remained locked out of the labor force indefinitely. Over the last 10 years, the employment rate for people with learning disabilities has declined an additional 10 percent.

What We Did About It

Building on our analysis of "Models that Work," we implemented the following initiatives to create equal access for all Americans to participate in the future.

1. Mapping the Mind

IDEA: We accelerated the federal *Brain Research through Advancing Innovative Neurotechnologies* (BRAIN) initiative by increasing its funding from $100 million to $500 million per year, aiming to create a dynamic understanding of brain function in a decade — doing for neuroscience what the *Human Genome Project* did for genomics. Importantly, we narrowed the program's focus to two key objectives; mapping the circuitry of the brain, and then applying this knowledge to improving the design of education models/product and curing cognitive disorders.

To accelerate the process, we created the "Open Mind" data portal, an open-source, standards-based repository to share research findings with a virtual academic community. Any research group receiving federal funding was required to log findings with the portal as soon as possible. We shifted the focus from publishing work to accelerating outcomes. Any data submitted to the Open Mind portal that advanced the efforts of other teams yielded incentive funding for the contributors.

IMPACT: Funding the project at $500 million per year with the goal to map the human mind in a decade implied a price tag of $5 billion dollars. T*he ROI for the Human Genome Project* was staggering. A $3.8 billion investment in the initiative generated $796 billion in economic returns from 1990 to 2010 alone. The economic impact of optimizing the way we learn to level the playing field and create a more productive workforce would dwarf that.

Additionally, persistent learning disabilities that went untreated cost the United States an estimated $50 billion per year alone. Add in Alzheimers, Autism, Epilepsy, Post Traumatic Stress Disorder among Veterans, Schizophrenia, and

Bipolar Disorder — all of which effectively remained untreated — and the recurring cost was well over $400 billion per year.

2. Accelerate Ideas that Address the Integration of Mind, Body, Soul

IDEA: While we were focused on building a strong base of brain science, we also aimed to catalyze the application of research findings to benefit end users — particularly with solutions that created impact with a holistic "Mind, Body, Soul" approach. As we knew from the ground-breaking neuroscience research of Dr. Adam Gazzaley at UCSF, the most transformative "learning" resources — those that optimized the actual functioning of the brain — would combine physical and cognitive exercises in formats that inspired and engaged.

We did not want to wait until the completion of the BRAIN initiative to support product innovation on this front. So we allocated funding in the model of the Defense Advanced Research Projects Agency (DARPA) to accelerate innovative technology applications of research.

IMPACT: The result was that innovators like Dr. Gazzaley were able to bring life-changing innovation to market faster. Whether it was **Akili**, a company based on his TEAM's research that created video game-based therapeutics for cognitive disorders, or other emerging ideas, applying the research of the BRAIN initiative was not about incremental change. It was about bringing the magic of the Human Genome Project to bear on learning and the life of the mind. This opportunity was nothing short of transformational.

FOREFATHERS

PIONEERS IN EDUCATION INNOVATION



"Teachers are students' best friends."

Judi + Terry Paul

Founders, Renaissance Learning

Terry and Judi Paul founded what became Renaissance Learning in the basement of their home in 1984, as a way to encourage their four children to read more books. As true educational pioneers, Terry and Judi believed in intervention and individualized instruction long before such terms became part of the educational lexicon. Today, Renaissance Learning offers a wide range of training options for all products, and has trained over 1 million educators.

Joel Klein

Former Chancellor of NYC Department of Education; CEO, Amplify

Joel Klein is the former Chancellor of the New York City Department of Education, the largest public school system in the United States. During his tenure, Klein made systemwide transformations that resulted in significant increases in student performance, including a 40 percent increase in high school graduation rates. Klein currently serves as CEO of Amplify, a company creating digital products for teachers, students, and parents.



"You can mandate adequacy; you can't mandate greatness. It has to be unleashed."



"All adventures, especially into new territory, are scary."

Sally Ride

First American Woman in Space, CO-Founder, Sally Ride Science

Sally Ride made history as the first American woman in space, and as a champion for science education. She founded Sally Ride Science in 2001 to inspire young people to pursue their interest in science, guiding the creation of innovative programs, classroom materials, and professional classroom development programs for teachers and students. She was an award-winning author of science books for children, and initiated and directed Nasa-funded education projects designed to fuel middle school students' fascination with science.

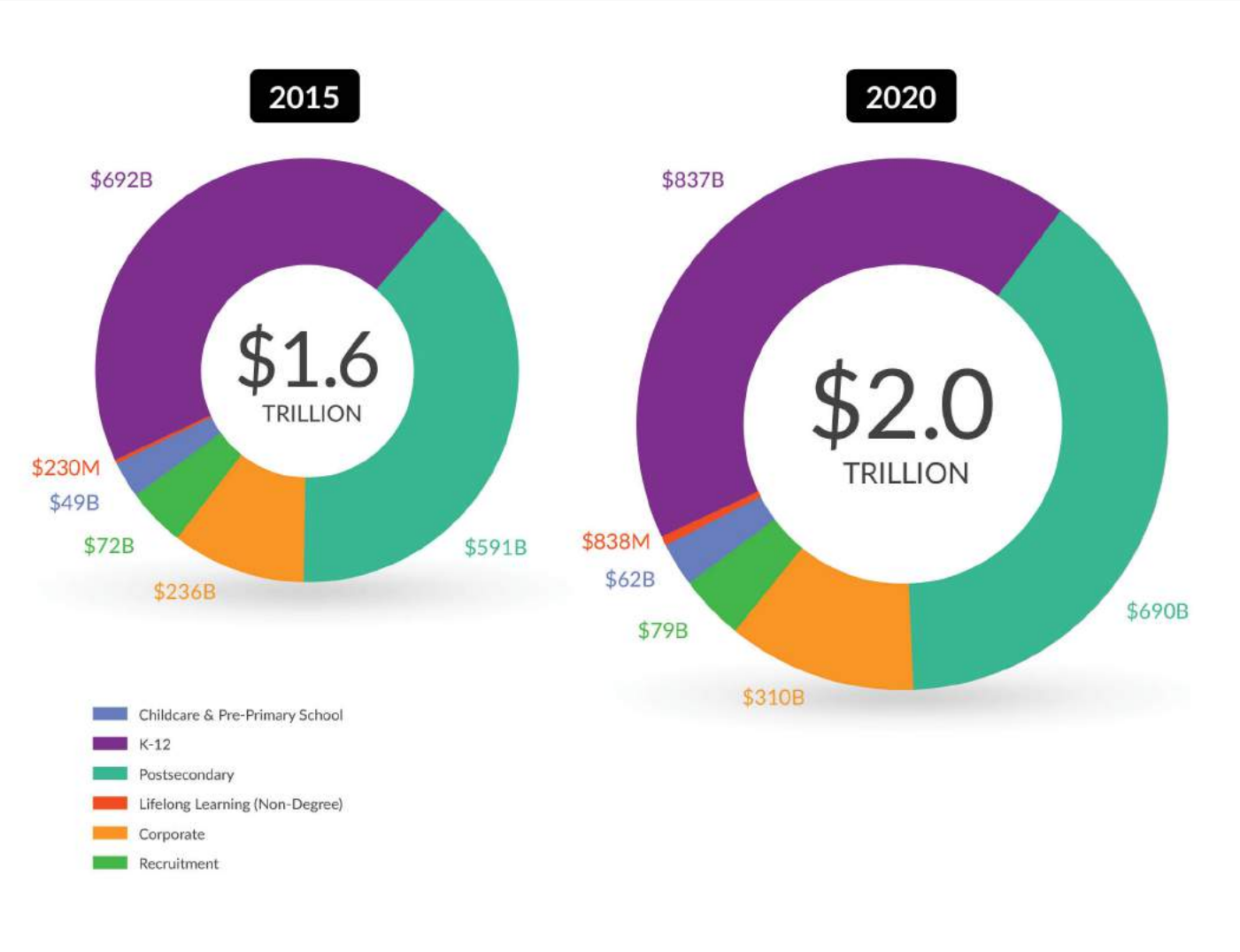
GSV'S SMART DATA



If we have data, let's look at data.
If all we have are opinions,
let's go with mine.

JIM BARKSDALE

U.S. Education Market Breakdown



U.S. Market Size	2015 (000s)	2020	CAGR
TOTAL	**$1,567,963,900**	**$1,899,938,500**	**4%**
CHILDCARE & PRE-K	**$48,506,500**	**$61,608,000**	**5%**
Schools & Care Providers			**5%**
Childcare centers	$30,506,500	$40,110,800	6%
Pre-School, State Funded	$4,164,500	$4,973,600	4%
Pre-School, Private	$943,500	$1,126,800	4%
Headstart	$8,041,400	$9,603,700	4%
Family Child Care	$4,850,700	$5,793,000	4%
K-12	**$692,074,300**	**$837,888,400**	**4%**
Schools			**4%**
Public	$584,682,000	$699,876,000	4%
Charter	$19,537,900	$34,849,600	12%
Private	$49,389,600	$56,694,300	3%
Home School	$1,320,000	$1,774,000	6%
Catholic	$10,853,600	$9,736,000	-2%
Instructional Materials			**8%**
Print: Text Books	$3,266,300	$2,952,400	-2%
Print: Supplemental Materials	$1,088,800	$984,100	-2%
Digital: Text Books	$1,758,800	$2,584,200	8%
Digital: Supplemental Materials	$586,300	$861,400	8%
Games	$2,160,000	$5,374,800	20%
Management & Administration			**4%**
Learning, Assessment & Behavioral Mgmt	$1,140,700	$1,322,400	3%
Data (SIS & Data Warehouse)	$905,000	$1,155,000	5%
Assessment			**2%**
State Tests (High Stakes)	$1,700,000	$1,877,000	2%
Entrance & Aptitude Exams (ACT, SAT, etc.)	$494,300	$545,700	2%

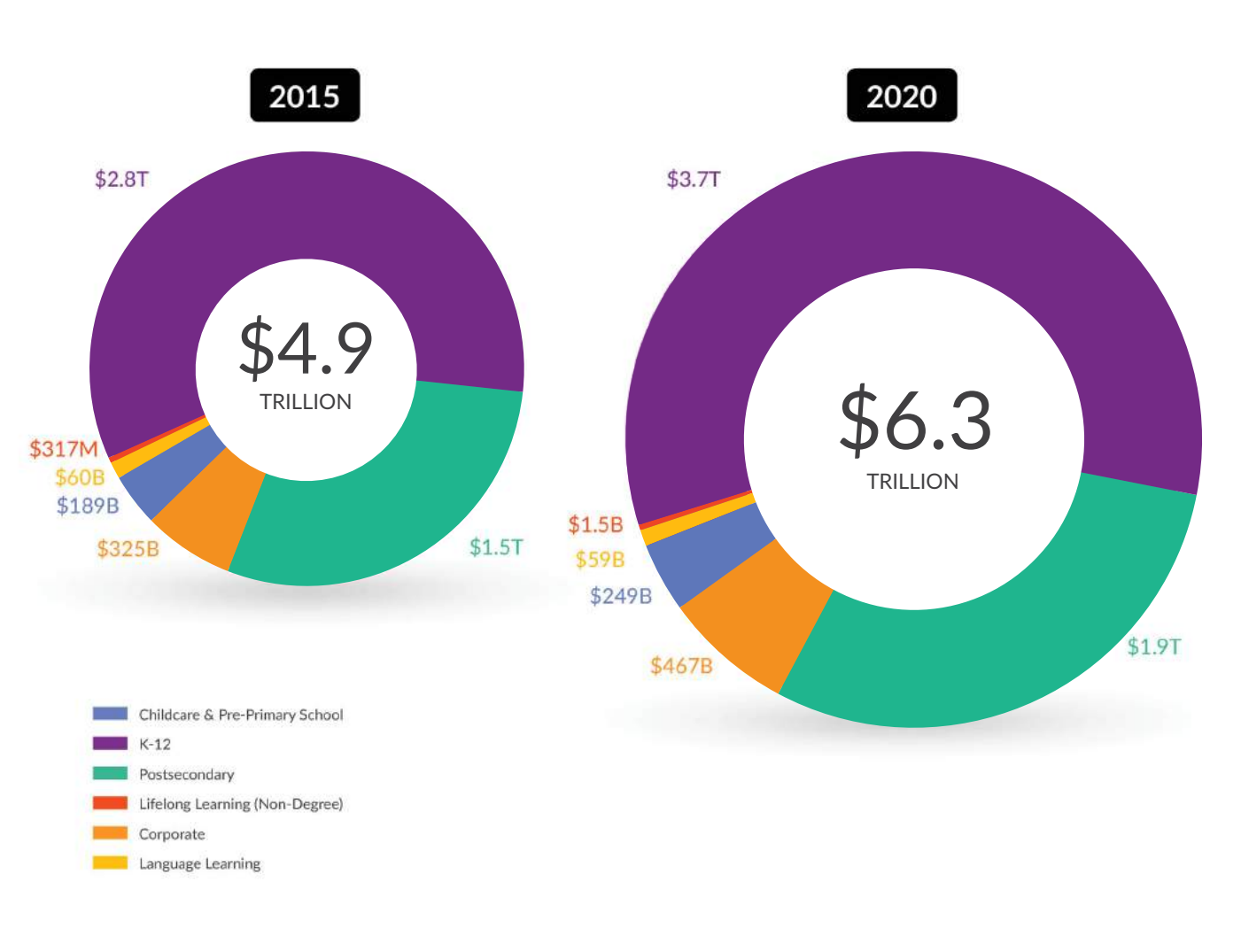
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	2015 (000s)	2020	CAGR
K-12 *(continued)*			
Tutoring & Test Prep	$6,000,000	$6,955,600	3%
Devices			**10%**
Windows	$1,201,200	$1,392,500	3%
Mac OS	$400,400	$361,900	-2%
iOS	$778,400	$1,091,800	7%
Chrome OS	$1,061,200	$2,780,900	21%
Android	$54,300	$87,500	10%
Professional Development			**5%**
Curriculum & Content	$954,000	$1,217,600	5%
Services	$2,247,000	$2,867,800	5%
POSTSECONDARY	**$591,447,400**	**$690,356,900**	**3%**
Undergraduate			**3%**
Non-Profit Public: 2-Yr & Vocational	$54,030,600	$61,130,600	2%
Non-Profit Public: 4-yr	$251,503,600	$284,553,300	2%
Private: 2-Yr & Vocational	$585,500	$662,400	2%
Private: 4-yr	$159,287,900	$180,219,600	2%
For-Profit: 2-Yr & Vocational	$5,718,000	$6,956,900	4%
For-Profit: 4-yr	$21,204,800	$25,798,900	4%
School-as-a-Service	$900,000	$1,810,200	**15%**
Graduate			**7%**
Law School	$14,345,000	$11,666,000	-4%
MBA	$21,236,000	$27,180,700	5%
Teaching	$9,703,900	$14,357,500	8%
Nursing	$4,245,400	$9,899,100	18%
Medical	$3,545,400	$5,245,600	8%
Masters - Other	$6,724,200	$13,737,800	15%

Continued on next page

	2015 (000s)	2020	CAGR
POSTSECONDARY *(continued)*			
Instruction Materials			**4%**
Print: Text Books	$12,425,100	$14,404,100	3%
Print: Supplemental Materials	$5,325,000	$6,173,200	3%
Digital: Text Books	$3,711,400	$4,966,700	6%
Digital: Supplemental Materials	$1,590,600	$2,128,600	6%
Management & Administration Learning, Assessment & Behavioral Mgmt Data (SIS & Data Warehouse)	$1,233,600	$1,430,000	**3%**
Marketing & Recruiting	$14,131,300	$18,035,600	**5%**
LIFELONG LEARNING (NON-DEGREE)	**$230,000**	**$838,200**	**30%**
MOOCs	$30,000	$227,800	50%
Non-Degree Learning	$200,000	$610,400	25%
CORPORATE	**$236,200,000**	**$309,792,800**	**6%**
Corporate Education			**7%**
Internal Programs	$100,917,300	$141,541,800	7%
External Programs	$45,089,300	$63,240,100	7%
Tuition Reimbursement	$18,193,400	$25,517,100	7%
Leadership Development	$18,800,000	$26,368,000	7%
Recruitment	$72,000,000	$79,493,800	**2%**

Global Education Market Breakdown



Global Market Size	2015 (000s)	2020	CAGR
TOTAL	$4,868,619,800	$6,331,806,100	5%
CHILDCARE & PRE-PRIMARY SCHOOL	$188,585,000	$249,130,700	6%
K-12	$2,810,583,500	$3,682,842,800	6%
POSTSECONDARY	$1,484,134,700	$1,872,842,800	5%
LIFELONG LEARNING (NON-DEGREE)	$316,667	$1,496,300	36%
MOOCs	$50,000	$379,700	50%
Non-Degree Learning (21st Century Skills)	$266,700	$1,116,600	33%
CORPORATE	$325,000,000	$466,579,500	8%
LANGUAGE LEARNING	$60,000,000	$59,218,700	-0.3%
Non-Digital	$55,500,000	$50,167,600	-2%
Digital	$4,500,000	$9,051,100	15%