

VULNERABILITY SCENARIOS

Driver Forecasts #3: Education

July 2010

Background

As the 21st century opened, the U.S. education system was quickly falling behind the systems in other countries. Reports by the OECD found that the U.S. ranked 21st among 30 OECD countries in science, 25th in mathematics,¹ and 15th in reading². Some economists expressed concern that this would negatively impact future American competitiveness in a globalized economy, given the long-term consequences of educational quality on the workforce for decades to come.

The U.S. education system suffers from inequities in student performance: 18% of variation in performance is explained by students' backgrounds, such as family structure, socio-economic background, and number of books in the home. By contrast, less than 10% of performance variation is due to students' backgrounds in five out of the seven OECD countries with the highest science scores, suggesting that quality and equity can be achieved simultaneously. While private schools significantly outperform public schools in the U.S., this advantage disappears once one has controlled for socioeconomic factors,³ which correlate with the emphasis placed on education by parents.

The result of these inequities is that large portions of the American population are being left behind in an economy that rewards educational achievement. College graduates earn on average \$25,738 more each year than high school graduates and \$35,372 more than those who have not finished high school.⁴ Additionally, college graduates suffer much lower unemployment rates compared to high school graduates and non-graduates. In 2009, for instance, high school graduates and non-graduates experienced an average unemployment rate of 9.7% and 14.6%, respectively, while this rate was only 5.2% for bachelor degree holders.⁵ Thus, the future holds few opportunities for the nearly one-half of Latino and African-American children who do not even finish high school.⁶ These inequities may be

¹ Organisation for Economic Co-operation and Development (2006), *Programme for International Student Assessment 2006*, accessed on May 25, 2010 at

http://www.pisa.oecd.org/document/2/0,3343,en_32252351_32236191_39718850_1_1_1_1,00.html#ES

² Organisation for Economic Co-operation and Development (2001), *Knowledge and skills for life: First results from PISA 2000*, accessed on June 26, 2010 at <http://browse.oecdbookshop.org/oecd/pdfs/browseit/9601141E.PDF>

³ Organisation for Economic Co-operation and Development (2006), *Programme for International Student Assessment 2006*, accessed on May 25, 2010 at

http://www.pisa.oecd.org/document/2/0,3343,en_32252351_32236191_39718850_1_1_1_1,00.html#ES

⁴ U.S. Bureau of the Census (2006), *Income in 2005 by educational attainment of the population 18 years and over*, Table 8, U.S. Government Printing Office, Washington, DC, accessed on June 2, 2010 at <http://www.census.gov/population/www/socdemo/education/cps2006.html>

⁵ U.S. Bureau of Labor Statistics (2010), "Education pays ...", May 27, accessed on June 17, 2010, at http://www.bls.gov/emp/ep_chart_001.htm

⁶ Greene, J. P. (n.d.), *Leaving boys behind: Public high school graduation rates*, Manhattan Institute for Policy Research, accessed on June 2, 2010, at

exacerbated by the current fiscal woes of many state and local governments, as budget cuts are felt disproportionately in struggling schools.⁷

Many efforts had been made in recent years to improve the U.S. education system. The No Child Left Behind (NCLB) reform initiated by President George W. Bush mandated rigid standardized assessments of student performance, with guidelines for penalizing or closing underperforming schools. President Obama's Race to the Top has reduced the punitive aspects of NCLB, which were often linked to assessments of absolute performance, and has leveraged American Recovery and Reinvestment Act funds to create incentives for states to evaluate principals and teachers based on student performance, remove ineffective teachers, turn around their worst-performing schools, and achieve other objectives articulated by the Department of Education. Reforms to teacher evaluation and tenure have also been initiated within individual school districts.

President Obama's reforms also encourage the further proliferation of "charter schools," schools that receive public funds but are exempted from some of the rules and statutes that govern public schools. In 2009, 4,900 charter schools enrolled more than 1.5 million students nationwide, with another 365,000 on their waiting lists.⁸ Charter schools provide parents with more options for their children's education, but raise several policy questions that have yet to be answered. First, it is unclear that charter schools provide better educational outcomes or spur innovation in the public schools around them. A March 2008 study of Philadelphia's charter schools found that "students' average gains attending charter schools are statistically indistinguishable from the gains they experience while at traditional public schools."⁹ Similarly, a June 2009 report found that nearly half of all charter schools produced educational results similar to those of public schools, while 17% produced better outcomes and 37% produced worse outcomes.¹⁰ Second, critics have suggested that charter schools promote economic or racial segregation. Because students in charter schools must *choose* to be there, children whose parents do not emphasize education may be less likely to apply.

New technologies have changed the way education is conducted, although more fundamental changes are expected in the years to come. The internet, computer simulations, online gaming, or social

http://www.manhattan-institute.org/html/cr_48.htm

⁷ Because teacher lay-offs are often based on seniority, they may disproportionately affect struggling schools where teacher turnover is high. This was the key issue in a recent case in which a Los Angeles Superior Court Judge William Highberger blocked further lay-offs at three struggling middle schools in Los Angeles, saying that further cuts would threaten the children's constitutional right to an equal education. See "Judge blocks teacher layoffs at three middle schools" (2010), *The Los Angeles Independent*, May 14, accessed on May 18, 2010 at <http://www.laindependent.com/news/local/93806339.html>

⁸ National Alliance for Public Charter Schools (2009), "Number of Public Charter Schools and Students, 2009-2010", September, accessed on June 1, 2010 at http://www.publiccharters.org/files/publications/090903_2009-10_Charter_Schools.pdf

⁹ Zimmer, R., Blanc, S., Gill, B., and Christman, J. (2008), *Evaluating the performance of Philadelphia's charter schools*, RAND Education, March, p. iii.

¹⁰ Center for Research on Education Outcomes (2009), *Multiple choice: Charter school performance in 16 states*, Stanford University, June, p. 1, accessed June 1, 2010 at http://credo.stanford.edu/reports/MULTIPLE_CHOICE_CREDO.pdf

networking have all been incorporated into classrooms to some degree.¹¹ As these technologies evolve, many experts anticipate important shifts in the learning process itself.¹²

These shifts may occur in the context of larger changes in the skills students need to learn and in the curriculums that direct their learning. While some curriculum changes reflect political agendas¹³, other changes reflect new thinking about what children ought to be studying or how they should be learning, such as Daniel Pink's popular ideas about right-brained thinking, Howard Gardner's theory of multiple intelligences, and the integration of "emotional intelligence" into school curriculums. Over the coming decades, vulnerability will to a large extent be shaped by how well we ascertain what skills and knowledge children need to learn and how different groups of children learn them most effectively, and then deliver that learning equitably to all.

Forecasts

The Alpha forecasts represent expectable or "most likely" futures, the Beta forecasts envision challenging possibilities (e.g., what could go wrong), and the Delta forecasts represent visionary or surprisingly successful futures that would have a positive impact on reducing vulnerability.

Alpha Forecast – Education 2030

In the early 2010's, President Obama's Race to the Top program created a wide array of incentives and funding programs to help schools improve their performance. While assessments of school performance remained critical, the absolute measures found in President Bush's No Child Left Behind reform gave way to more sophisticated assessments that acknowledge a given school's starting position. The Obama administration also encouraged the expansion of charter schools, subject to more rigorous competitive processes and stricter accountability standards to screen out underperformers. The innovations pioneered by charter schools were increasingly adopted by superintendents of public school systems, who were often recruited from the ranks of corporate CEOs.

In the mid-2010's, the internet and social networking became more integrated in the classroom, with teachers and principals managing online communities of their students. Some of these communities expanded to include other schools in the U.S. or around the world, allowing American students to collaborate with their counterparts in other countries on class projects, language learning, and extracurricular activities. However, concerns about privacy and safety, as well as a widespread feeling that children were spending too little time on more familiar classroom activities, hindered more

¹¹ Gray, L., Lewis, L., and Tice, P. (2009), *Educational technology in public school districts: Fall 2008*, National Center for Education Statistics, accessed on June 16, 2010 at <http://nces.ed.gov/pubs2010/2010003.pdf>

¹² Klopfer, E., Osterweil, S., Groff, J. and Haas, J. (2009), *Using the technology of today, in the classroom today: The instructional power of digital games, social networking, [and] simulations, and how teachers can leverage them*, MIT Education Arcade, accessed on May 24, 2010 at http://education.mit.edu/papers/GamesSimsSocNets_EdArcade.pdf

¹³ Sean Cavanagh. (2009), "Teaching evolution at issue in two states: Policymakers in Louisiana, Texas debate science rules", *Education Week*, 28(19), p. 4.

fundamental changes to the learning process itself. As a result, many experts noted that the educational process was not as technologically advanced as what children were doing in their spare time.

Sensing a threat to U.S. competitiveness in a globalized knowledge economy, corporations, foundations, and government agencies made increased investments in education. As the 2020's progressed, these investments concentrated in poorer areas in order to reduce educational disparities that through crime, corrections, unemployment, social services, and the lack of a well trained workforce were seen increasingly as a major drag on the U.S. economy. While these initiatives provided poor school districts with more advanced technology and increased funding, these districts still lagged behind schools in wealthier areas. Graduation rates among children of color have improved, but in 2030 they still hover around 68% (up from around 50% in 2007), significantly lower than that of white children. While absolute levels of education have increased in aggregate, disparities in educational attainment remain a significant force in perpetuating vulnerability, particularly because the increasing sophistication of jobs in the knowledge economy continues to raise the bar for those entering the job market.

Beta Forecast – Education 2030

The crisis in public education at the beginning of the 2010's left many schools shuttered but provided few new pathways for children of vulnerable communities. As teachers unions fought off attempts to curtail tenure and seniority systems through lobbying and legal challenges, children and parents in vulnerable communities saw public schools as less and less relevant to their lives, and perhaps even dangerous given the rising rates of violence in the schools that served them. As public school curricula were increasingly revised to reflect political ideologies in the state or community, parents that wanted to give their children a broad education either moved to wealthier areas at great expense or placed their children in private or charter schools. Children whose parents did not pay attention to their education, however, remained in the public schools. In some parts of the U.S., this created a *de facto* segregation reminiscent of the pre-*Brown v Board of Education* era.

In the late 2010's, many school districts looked to technology as a way to meet their federally mandated objectives while reducing cost. By increasing the share of time students spent doing exercises and projects on computers, many districts were able to cut their teacher payrolls by hiring lower-skilled "proctors" to supervise the children as they completed their computer-based assignments. Without training as educators, these proctors lacked the ability to evaluate students' work or provide guidance. Furthermore, a large portion of this software was provided by corporations that used this to market their products and services to the next generation of consumers.

In parallel with the decline of public school systems, private and charter schools have expanded, incorporating state-of-the-art internet, virtual reality (VR), and social networking technologies into the learning process. While many children spend time on the waiting lists of the schools they prefer, the market has expanded to allow most families who value education to place their children in acceptable schools, where graduation rates exceed 80%. Children in inter-generationally poor communities whose parents do not value education remain in public schools, where graduation rates hover around 40%. As a result, by 2030 the divide between the "knows" and the "know-nots" has become more rigid as vulnerable populations have – and seek – fewer alternatives to the increasingly backward, underfunded, and inadequate schools of the public system. Experts look back on this evolution of the education system as a key factor in creating the widespread vulnerability that exists in 2030.

Delta Forecast – Education 2030

In the early 2010's, growing public recognition of the failures and inequities of the U.S. education system prompted many of the changes that experts had recommended for years. Teacher unions acquiesced to performance-based compensation and an elimination of tenure systems in exchange for higher salaries.¹⁴ An increasing number of districts extended the school year to fill the whole year and school days to match a typical parent's workday; by 2020, this had become the norm. Funding also became more balanced between children aged 12-17, where U.S. spending exceeded the OECD average in 2009, and children under age 6, where investment can bring the greatest return in improving student level outcomes.¹⁵ The federal government also expanded support for programs like Teach for America that recruit high-caliber college graduates to teach in the country's most challenging schools.

During the late 2010's, new technologies that had been introduced in the previous two decades were fully integrated into the learning process. The internet evolved to provide distributed learning environments in which students could access a wealth of resources, such as games, simulations, and lectures by the world's greatest professors. Middle and high school teachers communicated with students through blogs and social networking sites, providing mentorship across a broader range of life issues. Increasingly sophisticated virtual reality (VR) allowed students to stroll through medieval England, participate in the dialogues of Plato, or ride atop an orbiting electron. Online educational games have allowed teachers to take advantage of the 10,000 hours that the average young person was already spending playing computer games during childhood and adolescence¹⁶ – equivalent in number of hours to an entire K-12 school career with perfect attendance – to create social learning environments that bring out the highest potential of each student. By simultaneously presenting content across many subject areas, these games gave students a better understanding of systems and relationships.

Because they provide alternative worlds online, these technologies offer children in vulnerable communities the chance to participate in learning environments where they are not identified as "poor" or "different." In the 2020's, school districts in poor communities focused on creating "learning zones" that met all the preconditions for learning, such as a safe environment, healthy food, basic health services, and adult mentors who emphasize education. From these zones, or via low-cost mobile devices, children from poor communities can access a world of resources and interact with other students in schools around the world. This infrastructure has also allowed the education system to shift from a K-12 to a lifelong learning paradigm, in which all members of the community are encouraged to improve their literacy, job skills, and educational level.

In 2030, the public no longer tolerates inequality of opportunity across social and racial groups. This idea was already nascent in 2010 in the work of the Children's Defense Fund, America's Promise, and others, but has only intensified as globalization and telecommunications gave Americans more exposure to successful *and* equitable education systems in other countries. The dividends of this shift in values

¹⁴ Michelle Rhee's reforms in Washington, DC schools served as a model for this type of agreement; see Turque, B. (2010), "D.C. schools, teachers union reach tentative deal", *The Washington Post*, April 7, p. A01.

¹⁵ Organisation for Economic and Co-operative Development (2009), *Doing Better for Children*.

¹⁶ McGonigal, J. (2010), "Gaming can make a better world" (video), TED.com, accessed on June 2, 2010 at http://www.ted.com/talks/lang/eng/jane_mcgonigal_gaming_can_make_a_better_world.html

have been tremendous: lower unemployment, lower rates of crime and incarceration and a substantial improvement in U.S. competitiveness in the global knowledge economy. Achieving more than 90% high school graduation rates across all social and racial groups, the U.S. education system has effectively eliminated education-related vulnerabilities by 2030.