

# Issues by the Numbers

## The solution revolution in education

November 2013



"SINCE 1946 CONGRESS TRIED REPEATEDLY, AND FAILED REPEATEDLY, TO ENACT MEASURES FOR ELEMENTARY AND SECONDARY EDUCATION."

— President Lyndon B. Johnson, 1965

\$600 BILLION A YEAR (7.8% OF GDP) SPENT ON EDUCATION, MORE THAN ANY OTHER COUNTRY

20% OF FIRST-YEAR UNDERGRADUATES REQUIRE ONE OR MORE REMEDIAL COURSES

## THE WAVEMAKERS



CONVENERS



STEADY SUPPLIERS



INNOVATORS

$$\cos(x) = \sin(x + \pi/2)$$

INVESTORS



MULTIRATIONAL  
MULTINATIONALS



CITIZEN  
CHANGEMAKERS



$$A \sin \frac{2\pi t}{T}$$

$$A_c \cos(2\pi f_c t + \phi)$$

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# The solution revolution in education

**I**N their just-released book, *The Solution Revolution*, William D. Eggers and Paul Macmillan provide vivid illustrations of how social problems are being addressed in radically new ways. The old model, where government was the primary actor in devising and delivering solutions, is being replaced by a new, more nimble system that draws on the collective strength of the public, private, and nonprofit sectors. The initiatives discussed in *The Solution Revolution* span the global spectrum of human need: energy, health, nutrition, education, security, and other forms of critical infrastructure. Eggers and Macmillan argue that:

The common thread across these initiatives is that of mutual advantage: the unprecedented alignment of financial and social incentives toward a greater public good. Private enterprise for public gain no longer need be an oxymoron. A growing army of societal problem solvers are rewarded for successfully tackling big, hard problems. Trillions of dollars in value potentially lies largely untapped at the intersection of the public, private, and nonprofit sectors.<sup>1</sup>

One area where this revolution is well underway is education. Prompted by widespread dissatisfaction with the results of the current US educational system, a wide variety of non-traditional actors are deploying disruptive technologies and new, scalable business models to improve education performance. Examples of various “wavemakers” described in *The Solution Revolution* that are transforming education in the United States include:

**Investors:** Investment in education has long been a focus of a wide variety of charitable investors, from individuals and religious organizations to corporations and foundations.

Today, however, many other players are also investing to improve educational outcomes. The private sector is very active in this regard, as evidenced by growing private-sector investment in education technology companies.

**Conveners:** From large formal gatherings featuring prominent leaders and scholars—such as the Clinton Global Initiative Annual Summit—to small informal gatherings of community members who find each other on Meetup.com, people are coming together to brainstorm solutions—and the act of forming the connections helps to power change.

**Multirational multinationals:** A growing number of companies are acting on the belief that there is a link between social responsibility and shareholder returns. Some of these companies focus on providing educational products and services specifically, while others contribute to the cause because they see a more indirect link between their company’s goals and the goal of a better-educated population.

**Steady suppliers:** Societal problem solvers do not have to come from outside the “system.” In fact, large-scale progress in education could not be made if the traditional players—teachers, administrators, and government—were not active in the movement to revolutionize education.

**Citizen changemakers:** With increased connectivity, one person with a great idea can see that idea become reality, quickly growing to impact students’ lives—as evidenced by the activities of Teach For America and the Khan Academy. Technology also makes it easier for citizens to reach the critical mass needed to make a substantive difference. For instance, individual donors are contributing directly to teacher and student projects through crowdfunding platforms.

**Innovators:** Innovative social enterprises, including the other wavemakers discussed above, are using new technology and new business models to help spur improvements in curricula, delivery, and measurement. These innovators are coming together to form a new education ecosystem—an ecosystem that serves to foster positive change.

We are still in the nascent stages of the education solution revolution, but these efforts are already having an impact. Although the numbers associated with the abovementioned activities, whether measured in dollars, instructors, or students, are tiny compared to the size of traditional government education spending, they are true game-changers—laboratories that can guide societies in deploying many more resources, both monetary and human, to educational efforts in the future. Moreover, the benefits of the solution revolution in education will not be confined to the United States. Already, such efforts are starting to change the face of education on a global scale.

Following an overview of the current US educational system and its challenges, this report considers how some of these

change-makers are revolutionizing—and ultimately improving—the practice of education in the United States.

## The United States outspends all countries on education . . .

The United States spends more per student on education than any other country (figure 1)—a sum equivalent to 7.3 percent of total GDP in 2010 (the most recent year for which data are available).<sup>2</sup>

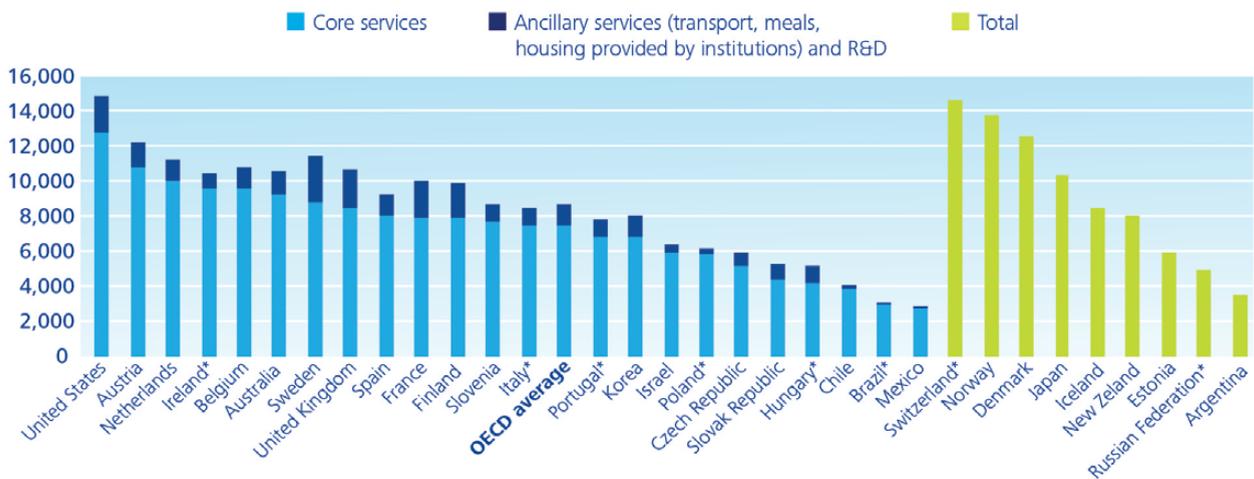
### Elementary and secondary education

In the fall of 2011, there were 49.4 million students enrolled in public elementary and secondary schools and 5.3 million in private elementary and secondary schools.<sup>3</sup> The United States spent \$527 billion a year on public elementary and secondary education alone for these students during fiscal year 2011. This is equivalent to an average expenditure per pupil of \$10,658.<sup>4</sup>

Revenues spent on education come predominantly (87.5 percent) from state and local

**Figure 1. Annual expenditure per student by educational institutions, by type of services (2010)**

In equivalent USD converted using purchasing power parities, based on full-time equivalents, for primary through tertiary education



Countries are ranked in descending order of expenditure per student by educational institutions for core services.

\*Public institutions only.

Source: OECD Publishing, "Education at a glance 2013: OECD indicators," Chart B1.1, 2013, doi: <http://dx.doi.org/10.1787/888932846747>.

funds.<sup>5</sup> Just over 80 percent of the local funds spent on education come from property taxes.<sup>6</sup> Because of the US educational system’s substantial dependence on state and local economic conditions, per-pupil expenditures vary significantly among states and school districts and even within school districts.

Overall, spending per pupil is expected to rise, in total, by 15 percent in real terms over the next 10 years. With enrollment also rising, total spending on elementary and secondary education will increase by 23 percent in real terms over the same 10-year period.<sup>7</sup>

### Higher education

The United States spends more on higher education per student than any other OECD country. In 2010, a year of higher education cost almost \$26,000 per student in the United States. Switzerland, at No. 2, spent \$22,000 per student, while the OECD average spend per student was just under \$14,000.<sup>8</sup>

Unfortunately, the cost of higher education in the United States means that obtaining a college or advanced degree is often a financial

burden—and one that is increasing every year. The average tuition to attend a public four-year college has risen by more than 250 percent over the past three decades, while incomes for typical families grew by only 16 percent.<sup>9</sup> Between the 2000–01 and 2010–11 school years, prices for undergraduate tuition, room, and board at public institutions rose 46 percent, and prices at private not-for-profit institutions rose 30 percent, after adjusting for inflation.<sup>10</sup>

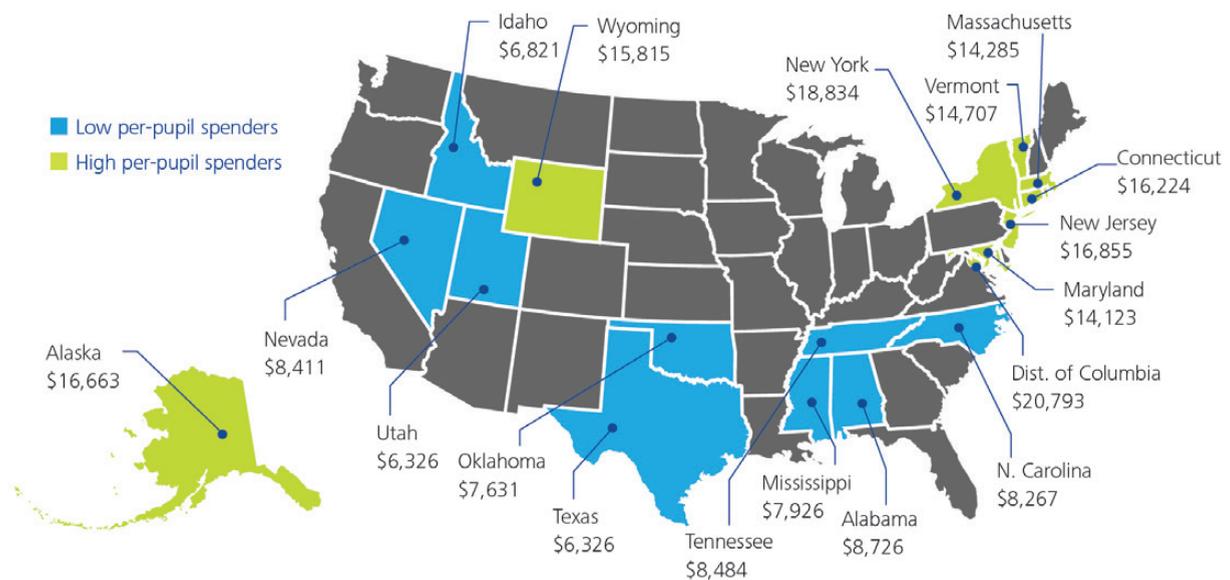
### ... but the results are disappointing

Even with its high level of spending, educational outcomes in the United States are less than we should expect and lower than the nation needs to maintain its competitiveness.

### Elementary and secondary education

Students are not graduating from high school prepared for college. Approximately 20 percent of first-year undergraduate students

**Figure 2. Per-pupil expenditures on education in selected states**



Source: US Department of Education, National Center for Education Statistics, “Revenues and Expenditures for Public Elementary and Secondary Education: School Year, 2010–11 (Fiscal Year 2011), (NCES 2013-342), Table 3, <http://nces.ed.gov/pubs2013/2013342.pdf>. Estimates for current expenditures only and do not include capital expenditures.

enrolled in institutions of higher education for the 2007–08 school year required one or more remedial courses.<sup>11</sup> Moreover, students in the United States generally perform at or below the OECD average in core subjects. On the OECD’s Programme for International Student Assessment (PISA), an international study that assesses 15-year-olds’ competencies in the key subjects of reading, mathematics, and science, the United States tied with three other OECD countries for 8th place in reading while ranking 21st in mathematics and 13th in science.<sup>12</sup>

### Higher education

The United States has a higher proportion of four-year college degree holders than all but four other OECD countries (Russian Federation, Canada, Japan, and Israel),<sup>13</sup> and some of its universities rank among the best in the world. However, there are growing indications that the quality of US university education, if not declining absolutely, is very uneven. A 2005 study by the National Center for Education Statistics found that the average literacy of college-educated Americans declined significantly from 1992 to 2003. In 2005, only 25 percent of college graduates scored highly enough on the tests to be deemed “proficient” from a literacy standpoint. Those with at least some graduate study fared only slightly better, with 31 percent being judged proficient.<sup>14</sup>

The United States also has high college dropout rates, with only 39 percent of students who start a four-year college program actually graduating.<sup>15</sup> And although the unemployment rate for college graduates—4 percent in 2012—is much lower than for the population as a whole, it is double what it was in 2006 and 2007. Anecdotal evidence suggests that the situation is much worse for recent college graduates. Worsening job prospects for these recent graduates is reflected in the rising rate of student loan defaults. According to the US Education Department, the latest three-year default rate, which applies to borrowers who began repaying their loans during fiscal year 2010, was 14.7 percent—up from 13.5 percent for the previous cohort.<sup>16</sup>

## Wavemakers in education: Rising new players engaged in delivering societal solutions

That there are problems in the US educational system is not a recent realization. When President Lyndon B. Johnson signed the Elementary and Secondary School Act into law on April 11, 1965, creating a major commitment by the federal government to quality and equality in the schooling as part of the War on Poverty, he noted that “Since 1946, Congress [has] tried repeatedly, and failed repeatedly, to enact measures for elementary and secondary education.”<sup>17</sup> Almost 50 years after President Johnson signed “the most sweeping educational bill ever to come before Congress,”<sup>18</sup> inequality of educational opportunity still remains, as do concerns about overall quality despite substantial efforts at the federal, state, and local levels.

With all the dollars, brainpower, and legislative actions that have been directed toward improving education since 1965, why now the sentiment that we are on the verge of transformative change? The reason is the emergence of the wavemakers—new participants, using new technologies, employing new business models—who are now focused on this issue. As Eggers and Macmillan state:

Wavemakers can use their influence through direct and indirect means, funding compelling solutions, delivering the solutions, or congregating the various players in an ecosystem to progress toward their chosen social agendas. In each capacity, the wavemaker can amplify the capabilities of other players and promote collaboration across the ecosystem. Wavemakers do more than dent the problems society faces; they change the battlefield on which people face the problems.<sup>19</sup>

### Investors

Education draws money from all parts of the economy beyond the sizable amounts invested by the public sector. A wide variety of charitable investors, from individuals and

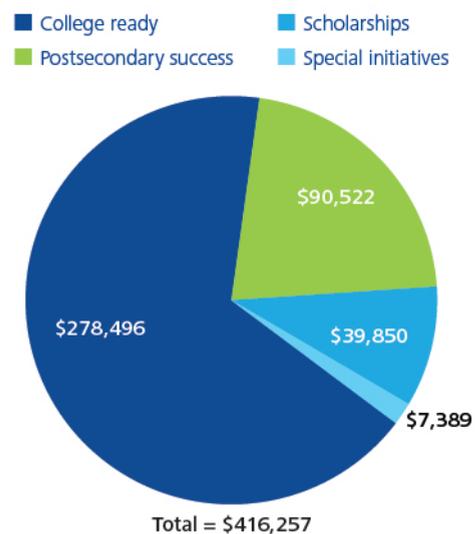
religious organizations to corporations and foundations, collectively invested \$41 billion in 2012 to support and improve educational outcomes in the United States. The private sector is also investing in education as a business, with considerable interest being directed toward developing and disseminating education technology. According to data from CB Insights, the US education sector received \$1.1 billion of financing in 2012 from venture capitalists, angel investors, corporations, and private equity investors. Individuals are also coming together in new ways to improve education through crowdsourcing sites that allow teachers to post requests for specific needs.

**Charitable contributions.** Education received 13 percent of all charitable contributions made in the United States in 2012, garnering \$41.33 billion in donations (out of a total of \$316.23 billion donated to all types of recipient organizations).<sup>20</sup> The bulk of this contribution went to colleges and universities—\$31 billion in 2012—with more than half of the total coming from foundations (29.5 percent) and alumni (24.8 percent).<sup>21</sup> Just over 60 percent, or \$18.8 billion, of the contributions were for current operations, while 31 percent, or \$12.1 billion, were donations for capital purposes.<sup>22</sup>

Overall numbers for K-12 donations are much smaller and more difficult to track. Family and private foundations make up 66 percent of grantmakers, followed by community foundations (12 percent), and corporate funders (8 percent total from corporate foundations and giving programs).<sup>23</sup> Funders of educational institutions and initiatives at this level generally have a very specific educational issue they want to address with their investments. Grantmakers for Education asked funders to identify where they are focusing their policy investments. In the 2012 study, three issues rose to the top: early childhood education, school finance and funding, and college and career readiness.<sup>24</sup>

**Mega-investors.** Education benefits from being the focus of some very large foundations, including the Lumina Foundation for Education, which invested \$48.7 million in 2011,<sup>25</sup> and the Kresge Foundation, which invested \$26.0 million in education in 2012.<sup>26</sup> The largest investment in US education, in fact, comes from the world’s largest foundation—the Bill and Melinda Gates Foundation. In 2011, 13 percent, or \$416 million, of the total \$3.2 billion the Gates Foundation paid out in grants went to support US education efforts (figure 3).<sup>27</sup> The Gates Foundation’s US education grants are disseminated through two primary programs: the College Ready Education program, which works to ensure that all students graduate from high school prepared for college, and the Postsecondary Success program, which is focused on increasing high-school graduation rates and developing certificate programs with real labor-market value.<sup>28</sup>

**Figure 3. Spending on US education programs by the Bill and Melinda Gates Foundation (\$ thousands)**



Source: Bill and Melinda Gates Foundation, *Building better lives together: 2011 annual report, 2012*, p. 10.

Graphic: Deloitte University Press | DUPress.com

**Private investment in education technology companies.** Not all non-governmental investment in education comes from philanthropic sources. There are a growing number of players, including venture capitalists, angel investors, corporations, and private equity investors, who are betting that investments in education can also be profitable. Education technology or “ed tech” companies, in particular, are attracting substantial private investment. According to CB Insights, this sector received \$1.1 billion of financing in 2012, approximately the same amount as was invested in 2011.<sup>29</sup> This area of investment may have a strong upside if investment in this sector were to begin to approach its relative importance to the economy: GSV Advisors notes that, although education represents nearly 9 percent of US GDP, it receives less than 1 percent of both venture investment and public market capitalization.<sup>30</sup>

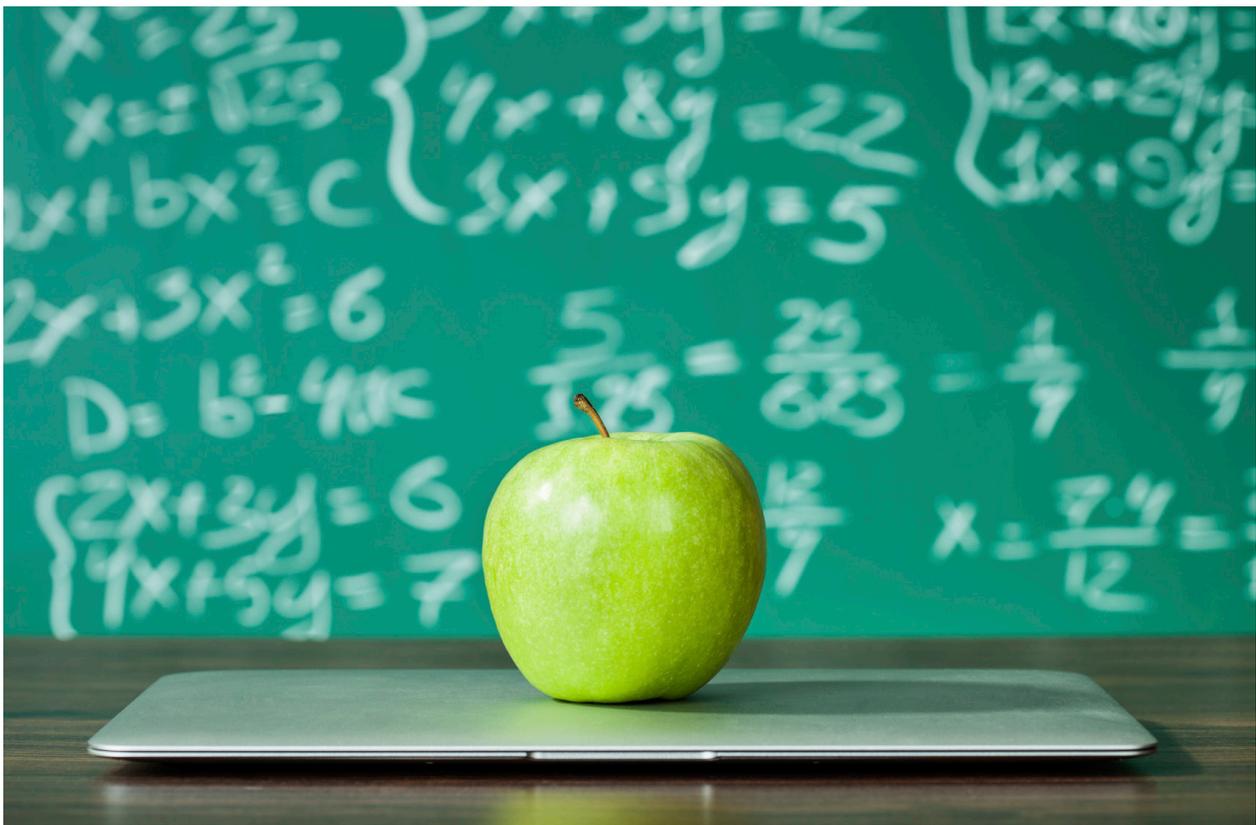
**Crowdfunding.** The availability of education crowdfunding websites allows individuals to contribute to very specific efforts. Sites

such as DonorsChoose.org allow public school teachers to go directly to the public and ask for help with very specific classroom projects that “range from pencils for poetry to microscopes for mitochondria.”<sup>31</sup> Since its founding in 2000, DonorsChoose has deployed over \$195 million across 51,499 US schools, helping almost 10 million students.<sup>32</sup>

### Conveners

The new societal wavemakers influence on education goes beyond the dollars invested; they also make an impact when they bring people together, either formally or informally, to share information and ideas and to brainstorm possible solutions.

The Clinton Global Initiative (CGI) brings together top world leaders in government, business, and public engagement to explore and implement innovative solutions to the world’s most pressing challenges. At CGI’s 2013 annual meeting, one of the sessions (“Majoring in employment: Transforming higher education to deliver a twenty-first-century



workforce”) explored the question, “Is there a need for new higher education business models that can keep pace with changing economic, labor market, and workforce demands?”<sup>33</sup>

TED, a nonprofit devoted to “ideas worth spreading,” also acts as a convener in the area of education. TED began in 1984 as a conference bringing together people from technology, entertainment, and design. When TED started releasing videos of the conference talks online, they rapidly attracted a global audience in the millions. As of November 2012, TED talks had been viewed more than 1 billion times. One hundred forty of those talks focus specifically on education, and some of these have been viewed more than 2 million times.<sup>34</sup> TED’s newest initiative, TED-Ed, was established with the intention of supporting teachers and sparking the curiosity of learners around the world. TED-Ed has created a platform where users can create, customize, take, and track lessons.<sup>35</sup>

Individual corporations have also become important conveners in education. An example is NBC News’ year-round initiative, Education Nation, whose purpose is to engage the country in a solutions-focused conversation about the state of education in America.<sup>36</sup>

Finally, peer-to-peer networks are important platforms that allow interested individuals or groups to self-convene for the purpose of learning. The Skillshare network, for instance, seeks to bring together teachers and students through online sign-up for in-person, project-based classes for everything from how to bake cupcakes to how to get startup funding. This financially self-sustaining model—the average class costs \$20, and Skillshare takes 15 percent of the proceeds—allows anyone to teach, with their compensation based on their classes’ popularity and perceived effectiveness.<sup>37</sup> As another example, OpenStudy, another for-profit business funded by the National Science Foundation, the National Institutes of Health, and the Georgia Research Alliance, is a social learning network based on a study group model where students ask questions, give help,

and connect with other students studying the same things.<sup>38</sup>

## Multirational multinationals

*The Solution Revolution* highlights the growth of corporate social responsibility reporting, and the expanding interest in “double bottom line” reporting in which companies focus on both financial and social returns, as evidence of an evolving attitude that companies can do well by their stockholders by doing good by society. Education has proved to be a very popular cause for many companies, in part because their leaders realize that the current system is not providing the quality of workers they need.

Corporate interest in improving educational outcomes manifests itself in many forms that target different segments of the educational system:

- Target is on track to contribute \$1 billion to K–12 education between 2010 and 2015, with a significant portion of the funding aimed at helping more US children read proficiently by the end of third grade.<sup>39</sup>
- Intel, also a very large contributor, sponsors a wide variety of IT solutions for teachers at all levels of education, including programs that help teachers incorporate digital learning into their classrooms and encourage students’ interest in science with the Intel Science Talent Search.<sup>40</sup>
- Goldman Sachs supports diverse educational organizations in low-income communities. The company recently awarded a \$20 million gift to construct Harlem Children’s Zone’s new Promises Academy Charter School in Harlem.<sup>41</sup>
- Through its “Partners in Learning” program, Microsoft works with private organizations worldwide to help young people gain access to the technology tools they need. To date, the company has deployed \$500 million toward education systems globally, reaching more than 196 million teachers and students in 114 countries.<sup>42</sup>

- The Cisco Networking Academy partners with schools and other institutions to teach networking technology to millions worldwide, enabling participants to acquire the skills they need to find good-paying jobs.<sup>43</sup>

Energy companies have made major investments specifically to support science, technology, engineering, and math (STEM) education. For example, ExxonMobil has committed \$125 million to support the non-profit National Math and Science Initiative, an organization currently operating in 29 states that focuses on increasing the availability of and pass rates in college-level science and math courses in high schools, particularly among minority and female students.<sup>44</sup>

Firms with interest outside the STEM grouping are also banding together to support education directly related to their industries. The Insurance and Finance Academy, for instance, is a public college preparatory (grades 9–12) charter school in Hartford, Connecticut, for students interested in pursuing higher education in the finance and insurance industries. The school is supported by Connecticut Insurance and Financial Services (IFS) Cluster, Travelers Companies, Franklin Trust Federal Credit Union, Smith Barney (Morgan Stanley), The Hartford Financial Services Group, and Waddell & Reed.<sup>45</sup>

### Steady suppliers

Some of the most active educational wavemakers are in the “steady suppliers” category, which includes both organizations that independently address community needs and those with government contracts to do so. Career educators are working with education technology creators to find out what really works in the classroom. The federal government is also exploring new models for funding outcomes, rather than projects, in the quest to improve the US educational system.

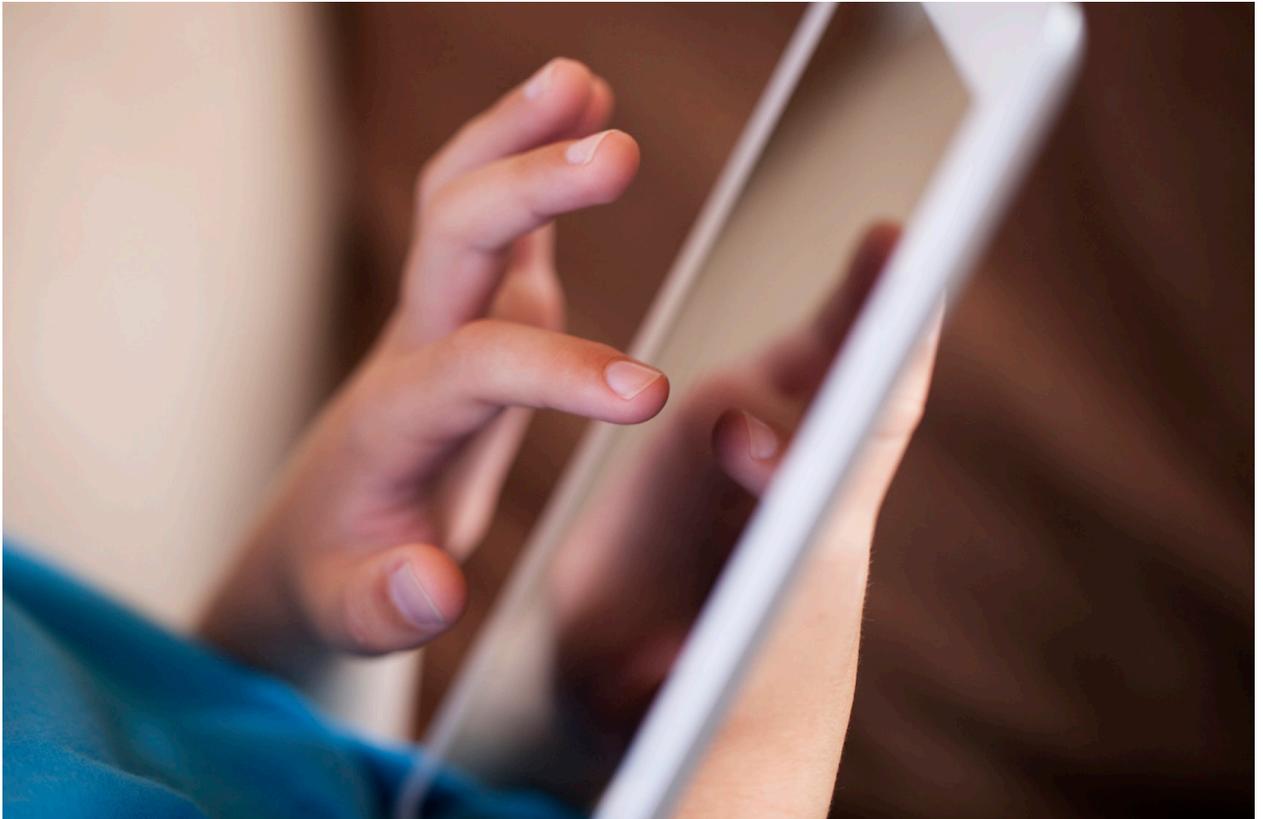
**Career educators:** In 2012, there were 13.5 million people working in education in the United States.<sup>46</sup> Not only are they key to ensuring that the innovations sparked by

other wavemakers are used in classrooms, but they themselves are also an important source of innovation. A significant proportion of investment by philanthropic groups is aimed at improving teacher effectiveness in the classroom by providing them with the knowledge and support they need to effectively utilize technology. Some conveners, for instance, are working to ensure that the best in in-classroom teaching methods are widely disseminated. New platforms, such as TED-Ed and Edmodo.com, are being created to support peer-to-peer interactions in which teachers can connect with each other and with students.

**Race to the Top:** The Race to the Top grant program is an example of the federal government’s efforts to improve educational outcomes. Launched with \$4.35 billion in ARRA funds in 2009, the Race to the Top program has rewarded states that have demonstrated success in increasing student achievement or that have the strongest plans to accelerate educational reforms in the future. The purpose of these awards is to highlight models for others to follow and to spread the best reform ideas across the country.<sup>47</sup>

**Companies adapting to the new education environment:** The private sector has always been a vitally important partner to the public sector in providing learning tools, supplying everything from books, chalkboards, and erasers to e-books, laptops, and collaboration tools. Just as companies in other sectors have had to change, these steady suppliers in education have had to adapt to rapidly changing technological landscapes or risk erosion of their businesses.

Education companies are one of the top 10 fastest-growing industries in the United States, growing by 132 percent between 2009 and 2012.<sup>48</sup> Certain niches in the education sector are growing even faster. For example, the market for electronic textbooks is growing by about 50 percent per year. Some of this growth is being fueled by startups, while some is coming from well-established publishing firms that are remaking their companies through strategic investments to compete in



an increasingly digitized world. For instance, Pearson Education, a textbook publisher, has not only expanded into electronic publishing but has also become a significant player in providing online learning and testing services. Pearson recently announced a mobile solution to help students become better writers and communicators, and has partnered with Indiana Wesleyan University to create a digital campus to link educators and students.<sup>49</sup>

### **Citizen changemakers**

The progress being made by the steady suppliers described above is being augmented by individuals who see a need and devise and implement a solution. Recognizing the role of educational inequality in perpetuating the poverty, Wendy Kopp proposed the idea for Teach For America (TFA) in her Princeton University undergraduate thesis in 1989, and launched the first TFA corps of 500 recent college graduates in 1990. Since then, nearly 33,000 participants have reached more than 3 million children nationwide during their two-year teaching

commitments. In the 2012–13 school year, 10,000 TFA corps members taught 750,000 students.<sup>50</sup> The success of TFA is reflected in the selectivity of its admissions process. In 2012, TFA accepted only 14 percent of applicants for its teaching positions—making gaining admittance to the program harder than winning a seat at Northwestern University, which admitted 18 percent of applicants.<sup>51</sup>

TFA's target population is a particularly vulnerable one. According to a study published by the Department of Health and Human Services, nearly a third of youth from low-income families (29 percent) fail to earn high school diplomas, approximately three times more than the percentage of youth from middle-income families (10 percent) and roughly six times greater than the percentage of youth from high-income families (5 percent) who do not graduate from high school. Only one in ten youth from low-income families go on to graduate from a four-year college, compared with over a quarter (28 percent) of youth from middle-income families and half of youth from

high-income families. One in five youth from low-income families (20 percent) are charged with an adult crime by the age of 24, which is higher than the number of youth from middle- and high-income families (16 percent and 12 percent, respectively).<sup>52</sup>

Another example of a citizen changemaker is Salman Khan of Khan Academy. Khan was not looking to start a business in 2004 when he began tutoring his niece over the telephone and the Internet. However, as more relatives began to be interested in his tutoring services, he decided that it would be more efficient to record a series of videos and post them to YouTube. After working on the idea for Khan Academy part-time, Khan quit his hedge fund job in the fall of 2009 to pursue the effort full-time. He received his first significant donation from Ann Doerr in 2010, followed by grants from Google (\$2 million) and the Bill and Melinda Gates foundation (\$1.5 million). Using these funds, he began to build out an organization. Khan Academy is now a 501(c)3 non-profit on a mission to provide a *free* world-class education for anyone, anywhere.

Khan Academy focuses on all learners, including individual grade-school and college students, classroom teachers and students, and adult lifelong learners. It attracts 6 million unique users per month to its 30,000-plus virtual classrooms, reaching learners in 216 countries (65 percent US, 35 percent non-US). Khan Academy content has been translated into more than 28 languages.<sup>53</sup>

In addition to allowing interested individuals to self-convene, peer-to-peer sites have become an important way for citizen changemakers to find each other. With the advent of sites such as Meetup.com, individuals can find others who have a shared interest in a particular topic, activity, or cause. With just with a click, a viewer can explore educational interests with the Silicon Valley Educator Network (87 members), Medical Education Tech Professionals (101 members), New York Education Tech Entrepreneurs (579 members), or the Science, Technology, Engineering, and Math Education Coalition (408 members).<sup>54</sup>

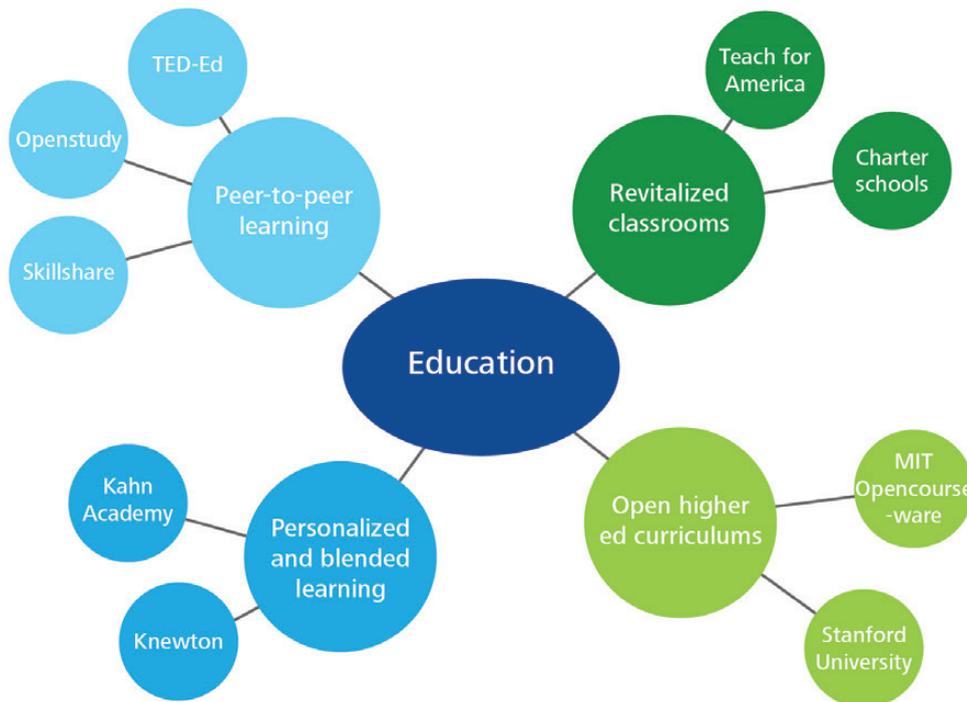
## Innovators

Enlisting a new generation of citizen changemakers, creating new organizational structures for steady suppliers, and increasing private funding and awareness will all help move the dial on educational outcomes, particularly in cases where all of these components work together to innovate. Each of the different types of wavemakers discussed above is an important force in the quest to improve educational outcomes; however, when various wavemakers join together, the impact is multiplied.

Figure 4 provides a different lens with which to view Eggers and Macmillan's wavemakers—looking at the “what” in addition to the “who” in the new education ecosystem.

**Revitalized classrooms:** In addition to activities as varied as Teach For America and Race to the Top, another path toward revitalizing education is through the growing number of charter schools. Public charter schools are a relatively new model for providing education in the K–12 space in which the emphasis is on results rather than process, which makes them ideal laboratories in which to explore new ways of teaching. Authorized in 41 states and the District of Columbia, a public charter school is a publicly funded school that operates independently of most state and local rules and regulations. A school's charter is periodically reviewed, and its charter can be revoked if guidelines on curriculum and management are not followed or if the specified standards are not met.<sup>55</sup>

Charter schools enroll a small but growing proportion of American elementary and secondary school students. In the 11 years since public charter schools were authorized, enrollment has grown by 426 percent. In school year 2010–11, California enrolled the most students in charter schools (364,000), and the District of Columbia enrolled the highest percentage of public school students in charter schools (38 percent, representing 27,000 students). In that same year, more than 10 percent of public school students in Arizona were enrolled in charter schools.<sup>56</sup>

**Figure 4. The education ecosystem is full of new public-value innovators**

Source: Deloitte Research

Graphic: Deloitte University Press | DUPress.com

The Knowledge is Power Program (KIPP) gives one example of how charter schools can improve educational outcomes. Created to serve students in underserved communities, KIPP is a national network of free, open-enrollment college preparatory public charter schools. The first two KIPP middle schools opened in 1995 in Houston and in New York City. After these first two schools rose to become among the highest-performing schools in their respective communities, KIPP’s founders, Mike Feinberg and Dave Levin, formed a partnership with Doris and Donald Fisher, the co-founders of Gap, Inc., to train leaders to replicate the KIPP model and expand it into elementary and high school education. Today, the 141 schools in the KIPP network serve 50,000 students—86 percent from low-income families and 95 percent African-American—in 20 states and the District of Columbia. Nationally, more than 80 percent of KIPP alumni have gone to college.<sup>57</sup>

**Personalized and blended learning:** The integration of technology into teaching is an especially important field for innovation. For

decades, technology has had an increasing presence in our nation’s classrooms. Now, we have reached a crossroads where technology is not simply a means for improving the existing process of learning—it is a means for changing the process of learning. The use of technology in education is moving beyond the point where teachers use computers and Web-based interactive features simply to augment their lesson plans. New paradigms such as the notion of the “flipped classroom,” where students watch lectures outside class and do exercises during class, are changing the way education is being delivered. The term “mass customization” arose in the 2000s to describe a new age in manufacturing, but its most significant impact just might be in an increase in highly individualized learning.

Many different types of flexible learning systems are being developed by a wide variety of participants, working independently or in partnership—and sometimes both. For example, Knewton, an adaptive learning company, has developed a platform that enhances the services of third-party digital learning

developers by allowing them to consolidate “data science, statistics, psychometrics, content graphing, machine learning, tagging, and infrastructure in one place in order to enable personalization at massive scale.”<sup>58</sup> Knewton now works with partners such as Arizona State, Macmillan Education, Triumph Learning, Houghton Mifflin Harcourt, Wiley Global Education, and Pearson. These classes not only allow students flexibility in completing work, but also allow teachers to track the progress of individual students and make timely interventions when needed.<sup>59</sup>

**Open higher education curricula:** At the same time as technology offers the ability to provide a more customized learning experience, it also allows educators to extend the learning experience well beyond classroom walls. While online learning materials are available for all levels of education, interest in the concept jumped when a growing number of the country’s top colleges and universities started moving courses online. These institutions are using a variety of business models, ranging from “freemium” or no-cost courses to tuition-based online offerings, to offer Web-based instruction. Some universities have adopted the Massive Online Open Courses (MOOCs) model, which provides instruction directly or through aggregators such as Coursera. Coursera currently has over 5 million students who can choose among 458 courses from 90 education partners.<sup>60</sup> Some universities, including San Jose State, and private companies, such as Udacity, offer MOOCs for which students can earn college credit. According to a recent survey by Babson Survey Research Group, 32 percent of higher education students now take at least one course online.<sup>61</sup>

## A new way forward in education

The United States spends more than any other nation on education, but the results have been less than what we should demand. More than for any other sector, our strength in education will be the key to our global economic competitiveness. The solution revolution, where innovators across all economic sectors leverage new technological capabilities to effect positive social change, can offer a way forward. There will be fits and starts and plenty of dead ends, but wavemakers in education should be able to make great strides in improving access to and the quality of education.

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