The View from the Schoolhouse:

How Middle and High School Educators See the Skills Shaping the Modern Economy

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burningglass TECHNOLOGIES

American Student Assistance®

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1.

Executive Summary

Labor market data and previously reported research confirm that the skills required of the modern workforce have changed. The **new foundational skills** of the modern economy include greater digital savvy, increased business acumen, and more versatile human and team-centered workplace competencies. These skills generate substantial salary premiums for the students and workers who master them, and demand for these skills is large and growing at all levels of educational attainment.

Middle and high schools that embrace these skills will be setting their students up for future success. However, the nature and prevalence of education in these new foundational skills during middle and high school is unclear. In this report, American Student Assistance and Burning Glass Technologies present the view from the schoolhouse: What is the value that students can gain from mastering these new foundational skills, how do educators understand the value to students that these skills offer, and how do educators feel about the quality of education in these skills that their schools provide. The report finds the following:

1. Students in middle and high school benefit from mastering the new foundational skills whether they continue to postsecondary education or enter the labor market. Nearly two-thirds (62%) of job postings last year asked for new foundational skills, up from just over half (53%) in 2017. The digital and business skills offer salary premiums ranging from 7% to 38%, depending on the skill. Digital skills offered insulation from the economic

WHY NOW?

The crises of the moment underscore the importance of empowering students with the new foundational skills of the modern economy. COVID-19 has placed a strain on communities, workplaces, businesses, and education. The pandemic has accelerated digitization and required students and workers to be more resilient, creative, and coordinated than at any time in recent history. The economic shutdowns have required businesses to adapt to difficult terrain. Students, workers, and companies endowed with the new foundational skills of the modern economy are more likely to weather this storm. Unfortunately, just as the adverse economic effects of COVID-19 are felt unequally along familiar racial, ethnic, socioeconomic, and class lines, so too do these lines often divide access to educational opportunities. Recent social movements and civil unrest are responding to these inequalities, and the dual economic and health crises are exacerbating them. There is therefore an urgent need to lift up the strategies and practices that will close these gaps. Equitable education in the new foundational skills during the middle and high school grades is an auspicious step toward reversing these trends.

downturn due to COVID-19. Finally, new foundational skills are the building blocks upon which postsecondary institutions instruct other career-oriented skills.

2. Educators recognize the value of the new foundational skills and want these skills taught in their schools.

For each category—human and team-centered workplace competencies, digital building blocks, and business-enabler skills—more than half of educators believe employers will regard these skills as "essential" by the time their students are looking for a job. Educators in both middle and high school are in agreement about the value of these skills, and educators at both levels want these skills to be taught in the classroom. School administrators cite the value of the new foundational skills to students particularly highly. Educators of majority black or African American students also value these skills more highly than their counterparts teaching mostly white students. In a follow-up survey after the onset of COVID-19, educators said they now value the new foundational skills even more than before the pandemic. For example, fully 94% of educators say that COVID-19 has increased the need to teach digital skills.

3. Educators do not think the new foundational skills are being taught adequately.

The educational opportunity gap—the difference between the percent of educators who value the skill as essential and the percent who believe the skills are being taught well—is large for all of the new foundational skills and grows larger the more teachers value the skill. Further, the opportunity gaps are not distributed equally among students. The gaps are often twice as large for students in majority black or African American classrooms and more than 50% as large for students in majority Latinx classrooms relative to majority white classrooms. The gaps are twice to four times as large for classrooms where 75% or more of students receive free or reduced lunch compared to classrooms where no more than 25% are program recipients.

4. Educators do believe that they can incorporate the new foundational skills into their classroom.

Two-thirds of teachers and nearly nine-in-ten school counselors and administrators say they feel they could personally take steps to increase the teaching of these skills in their schools and classrooms. Further,

nearly nine-in-ten educators (88%) believe that career exploration and experiential learning are productive avenues to better teach these skills.

The report concludes with recommendations to educators, policymakers, and other stakeholders. In an effort to provide some initial ideas to middle and high school educators about their options, the report provides a map of skills and the sequence in which they should be taught in future curricula based on the principle that skills most widely applicable across the workforce be taught first. Integrating these skills into middle and high school curricula will require developing frameworks at the executive level of schools, municipalities, states, and nationally. These frameworks will include traditional testing, metrics and benchmarks for learning outcomes, and professional development goals for teachers and administrators, as well as creative forms of education such as career exploration days in middle school and experiential learning through internships, apprenticeships, college and employer site visits, and industry days in high school. These interventions should be implanted in a targeted way to close gaps in access and outcomes along racial, ethnic, and socioeconomic lines.

The foundational nature of what Burning Glass terms the new foundational skills initially referred to centrality of these skills in the modern economy. In order for the students of today to thrive in the workforce of tomorrow, preparation in these skills should be foundational to education, too. Middle and high school educators see the value of these skills to their students, and they need institutional support to enable them to enact the curricular and pedagogical changes that will set their students up for success.

2.

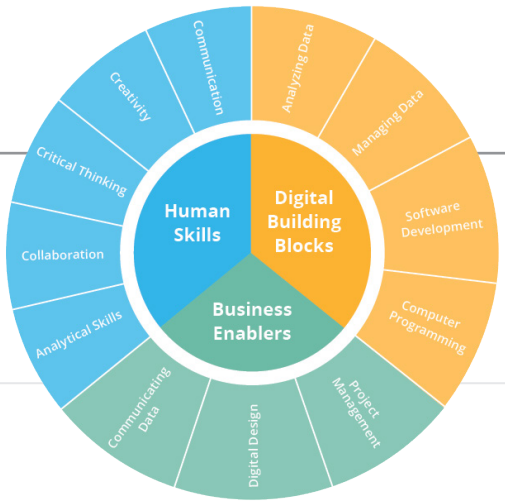
Overview and Methodology

The New Foundational Skills and the Case for Understanding Educators' Perspectives

As the nature of work changes, educational systems are forced to adapt. Previous research by Burning Glass determined that essential skills initiated in digitally intensive sectors are spreading to the wider world of work and identified the new foundational skills that form the basis of the modern workforce. In concert with multiple research and program partners, Burning Glass has repeatedly refined the many manifestations of these new foundational skills, and has developed a wide range of research and analysis demonstrating that they have become powerful drivers of the economy. Ample evidence extracted from online job postings and online professional profiles demonstrated that incumbent employees and jobseekers who possess these skills will thrive in the 21st century economy.[1] Other scholars have established similar taxonomies of skills that are of particular importance and utility in the modern economy, confirming the importance of a combination of capacities that encompass communication and social skills, organizational and analytical skills, and digital and technical skills.[2] Additional research shows that companies across industries recognize the need to engage in digital transformations of their work, are aware of their general lack of preparedness for this transition, and understand that their workforce is undersupplied with people who possess the foundational skills that future success will require.[3]

The New Foundational Skills of the Digital Economy

These 14 skills, already in wide demand by employers, command salary premiums and are crucial for workers who want to keep pace with a changing job market.



1 The New Foundational Skills of the Digital Economy: Developing the Professionals of the Future," Business-Higher Education Forum and Burning Glass, 2018.
2 "21st-century digital skills instrument aimed at working professionals: Conceptual development and empirical validation," Estervan Laar, Alexander J.A.M. van Deursen, Jan A.G.M.van Dijk, Jos de Haan, 2018.
3 "Skills for Digital Transformation Research Report," Patrick Hoberg, Helmut Krcmar, Bernd Welz, Initiative for Digital Transformation, Technical University of Munich, and SAP, 2017. "Are They Really Ready to Work? Employers' Perspectives on the Basic Knowledge and Applied Skills of New Entrants to the 21st Century U.S. Workforce," Robles, M. M., The Conference Board, 2012.

Education systems face the challenging task of imparting these skills to students. Some in higher education have begun to recognize and embrace these new foundational skills as core to their students' future success. Some colleges have enabled students to combine majors across disparate fields such as computer science and the humanities. Others have begun to help instructors and students understand the nature of in-demand skills within their fields. Still others have expanded co-ops and internship opportunities for students, exposing them to employer demand for these skills and fostering these skills through applied learning. Facing a significant decline in enrollment, many higher education institutions have begun to examine and question their alignment with labor market demand and consider their learning offerings in light of career readiness concerns. The postsecondary system is in the process of adjusting to the new foundational skills.

The labor market presents clear challenges for students who look for a job immediately after high school, but it rewards those students who have developed new foundational skills prior to their search.

Currently, a third of students seek full-time employment after high school while their peers pursue post-secondary education. In October 2019, the percentage of high school graduates between the ages of 16 and 24 who were enrolled in college dropped to 66%, down from a high of 70% in 2016. For the 776,000 young people not in college and actively participating in the labor market in 2019, there were more than 20 million online job postings in the U.S. requiring a high school diploma and 0-2 years of work experience. While demand is high, however, compensation is low: The average salary advertised in these job postings hovered around $34,000. The more rewarding roles demanded digital and business skills:

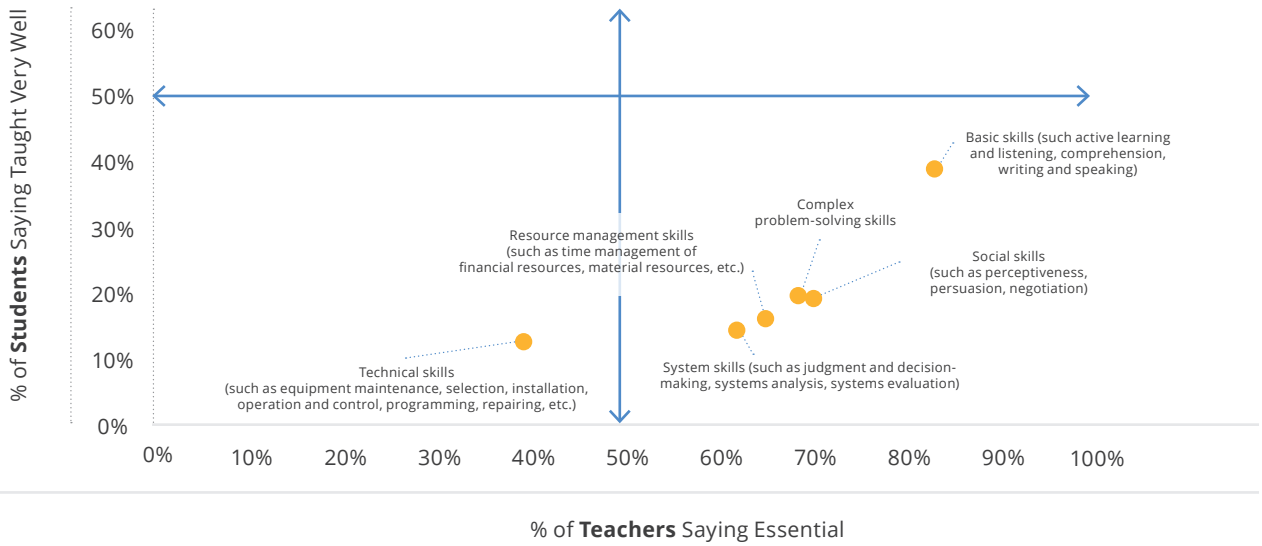
There were over 2.5 million of such job postings for high school graduates, with an average salary nearly $20,000 higher. However, these jobs were out of reach to the young people who did not have the opportunity to develop the requisite skillset in middle and high school.

Developing new foundational skills in middle and high school is also beneficial to students who go on to pursue college degrees. The salary premiums for mastering these digital, business, and workplace skills increase with additional years of education. The types of digital and business skills required by employers also change, as do the number of these skills that are requested together. College provides the opportunity for additional specialization, and more sophisticated digital and business skills can be developed on top of the new foundational skills referenced above. In this way, a middle and high school system that includes these skills in its curricula is also benefitting the students who will go on to college and university. This presents middle and high school educators with chance to view new foundational skills as helping all students, whether they are entering the workforce or pursuing post-secondary learning.

Endowing students with the skills they will need to succeed is increasingly important in a social and economic period that is marked with downward mobility, income inequality, and declines in real wages for less educated or less skilled workers.[4,5] These issues are heightened along racial and ethnic, socioeconomic, and class lines. Recent social movements and civil unrest are responding to these inequalities, while dual economic and health crises exacerbate them.[7,8] There is therefore an urgent need to lift up the strategies and practices that will close these gaps and reverse trends of economic decline.

4 "Skills, education, and the rise of earnings inequality among the" other 99 percent" Autor, David H. Science 344, no. 6186 (2014): 843-851.
5 "Where is the land of Opportunity? The Geography of Intergenerational Mobility in the United States," Raj Chetty & Nathaniel Hendren & Patrick Kline & Emmanuel Saez, The Quarterly Journal of Economics, Oxford University Press, vol. 129(4), 2014, pages 1553-1623.
6 "Race and Economic Opportunity in the United States: an Intergenerational Perspective," Raj Chetty, Nathaniel Hendren, Maggie R Jones, Sonya R Porter, The Quarterly Journal of Economics, Volume 135, Issue 2, May 2020, Pages 711–783, https://doi.org/10.1093/qje/qjz042
7 "Race and the COVID-19 pandemic," Graziella Bertocchi & Arcangelo Dimico, https://voxeu.org/article/race-and-covid-19-pandemic
8 "Socioeconomic determinants of Covid-19 infections and mortality: Evidence from England and Wales," Filipa Sá https://voxeu.org/article/socioeconomic-determinants-covid-19-infections-and-mortality

Another reason to understand the view from the schoolhouse is because it correlates closely with the experience of students. The graph below charts the percent of teachers who say a skill is essential against the percent of students who strongly agree that the skill is being taught well. The skills included in this graph are not the new foundational skills, but they reinforce the notion that the value teachers place on skills correlates with the extent of their instruction.



Researchers have made the case for helping students develop skills that will help them in their careers, and they have identified strategies that work. These researchers place a strong emphasis on career exploration in middle school as a way to gain both new skills and an appreciation for their future value, and they cite experiential education in high school such as internships as a way to make professional skills stick.[9,10,11]

Despite this research, however, there is presently very limited knowledge about how educators at the middle and high school levels think about, and value, the skills that have emerged as critical for career success. The state of new foundational skill education in middle and high school is unclear. The degree to which educators themselves value these skills has not been measured, nor has there been much study

9 "A New Mission for the Middle Grades: Preparing Students for a Changing World," Bottoms, G., Southern Regional Education Board, 2011.
10 "Middle School Career Education and Development," Kerka, Sandra. Practice Application Brief No. 9, ERIC, 2000.
11 "Empowering Today's Youth to Plan their Tomorrow: Understanding middle school and high school students' attitudes toward future planning," American Student Assistance, Strategic Insights Series, 2019.

of the ways that educators regard the value of these skills on the job market. It is also unclear how strongly educators believe that these skills should be taught in middle and high school, and, to the extent they are taught, whether or not they are being taught well. Finally, it is not clear how these educator perspectives change according to the racial and ethnic composition of the classroom, the socioeconomic status of the students, or the location of the school. Since many students lack equitable access to opportunities to learn in other areas of school, there is reason to suspect that such barriers exist for students to acquire the new foundational skills.

Incorporating the view from the schoolhouse is fundamental to making the case for the importance of new foundational skills at the middle and high school levels. This view has not been presented in a comprehensive way to educators or other stakeholders. As they learn about and recognize the emergent and primary nature of the new foundational skills, middle and high school professionals, policymakers, and others will be looking for insight and guidance.

METHODOLOGY

American Student Assistance and Burning Glass Technologies collaborated on an analysis that paired labor market data with two rounds of surveys of education professionals to investigate the demand for new foundational skills and the prevalence and nature of education of these skills at the middle and high school level. The first round of surveys was conducted before the COVID-19 pandemic, and the second round was conducted in the fifth month of the crisis, allowing educators to reflect on how the pandemic has affected their perspectives on these skills. This research represents the first large-scale investigation of educator attitudes toward new foundational skills. The report is instrumental in both surveying the landscape of new foundational skill education and also charting a way toward a future where all students have the opportunity to develop these skills.

The report has five sections: an executive summary and overview; discussions of three sets of findings; and a set of recommendations for educators; policymakers; and other stakeholders.

The first findings section explores the actual value that new foundational skills have in the job market and compares it to the expected value that educators anticipate these skills will have for their students. This section addresses not only the salary premiums of new foundational skills but also how these skills insulated workers during the COVID-19 pandemic and how the pandemic has affected educators' attitudes toward these skills. The second findings section enters the classroom to compare the perceived importance of the new foundational skills with the perceived success in teaching these skills. In the classroom, findings are also presented relating to the race and ethnicity, and socioeconomic status, of the student body. The final findings section explores an interesting conclusion from the survey: Despite the overwhelming demands on educators' time and the myriad challenges confronting them, they believe they have the ability to successfully integrate these skills into their curricula. Given that finding, the section explores which skills should be prioritized, when, and how. The report concludes with a section that includes recommendations for educators, students, intermediary organizations, employers, jobseekers, and policymakers.

3.

The Value of the New Foundational Skills to the Labor Market, Students, and Educators

Value to Students

The new foundational skills for the digital economy cluster in three groups: human skills of social, creative and critical intelligence; digital building block skills involving data analysis, software development, and computer programming; and business-enabler skills deployed in practical situations, including project management, business process, and communicating data.

The new foundational skills are in high demand in the U.S. economy: Employers clearly place a high value on them.

- In 2017, one or more of the 14 foundational skill areas were requested in 11.9 million job openings – 53% of the 22.4 million total openings that year. Nine of the skills had over two million annual openings, and each saw an increase in demand, averaging 30% over the prior five years. By 2019, of the total of 34 million job postings, 21,160,008 asked for new foundational skills, an increase to 62% of all job postings, just two years later.
- Workers with digital building block and business-enabler skills reliably earn a salary premium, ranging from 7% to 38%. New foundational skills increase in value as careers advance, and are 49% more likely to be requested in senior or managerial-level roles than in other jobs. Job seekers and incumbent employees possessing a diversity of the new foundational skills also experience increased job mobility.
- The new foundational skills are already sought in the majority of jobs across the economy, and recent Burning Glass research makes it clear that in order to thrive, incumbent and future employees now need skills from each of the three skill groups.

12 "The New Foundational Skills of the Digital Economy: Developing the Professionals of the Future," Business-Higher Education Forum and Burning Glass, 2018.

Unfortunately, the supply of students and workers handy with these new foundational skills does not meet demand. While employers often seek these skills in job postings, resumes show that most jobseekers claim a small number of them. Less than a fifth of jobseekers claim skills in all three groups, and one in four claim none of these skills. Some fraction of those who do not claim the skills may in fact have one or more of them, either because they do not think it important to mention, or they do not recognize or name it in the same way a prospective employer does. However, the overall infrequency with which workers lay claim to these skills suggests that the skill gaps are real.

Value to Educators

While evidence from employers and workers demonstrates that the new foundational skills earn workers high salary premiums and enjoy robust demand in the job market, educators are striving to understand and tie these phenomena to their work with students. Based on its experience that academic and career success often have their roots in middle school students' early explorations of career interests and high school students' engagement in experiential education, ASA and Burning Glass studied the views and practices of middle and high school educators.

Middle and high school educators are responsible for teaching the baseline social skills essential for students' future success as employees. They and their students face a dual mandate of college preparation and career preparation, and their curricula must serve both objectives. Unlike post-secondary educators and institutions, middle school educators in particular face a long time-horizon between their work and its eventual economic effects on students—many middle schoolers are more than a decade away from beginning their careers. For all these reasons, ASA and Burning Glass sought the views of these critical figures in the skill development of American students

American Student Assistance and Burning Glass asked 900 middle and high school educators whether they believed employers would value the new foundational skills as

13 BHEF and BGT, 2018.

essential by the time their students were looking for jobs. These responses were compared against the size of demand and average level of compensation that these skills earn in the labor market. This comparison is shown in the table below.

Overall, middle and high school educators believe employers value the new foundational skills. For each category—human skills, digital building blocks, and business-enabler skills—more than half of educators believe that employers will regard these skills as "essential" by the time their students are looking for a job, and over 92% believe the skills will be deemed "essential" or "somewhat important." Educators' beliefs are validated by current demand, even for students with just a high school education: In 2019, new foundational skills were sought in 8.7 million job postings for people with no more than a high school degree.

Educators overestimate the proficiency of their former students in the new foundational skills. Across the country, one in five jobseekers claims to have at least one skill in each of the three categories: human; digital building block; and business enabler.[14] By contrast, only 14% of responding educators estimated this number accurately, and fully 43% thought that more than half of their former students showed proficiency in all three skills areas.

Value Landscape for the New Foundational Skills

New Foundational Skill Category	% of Educators Who Believe Employers Will Value These Skills as Essential	Minimum Educational Requirements on Job Postings	Annual Salary from Job Posting	Salary Premium (Where Relevant)	Number of Job Postings (2019)
Human Skills	77%	High School Diploma	$41,396	-	8,749,799
		Bachelor's Degree	$60,270	-	3,498,624
		Advanced Postsecondary Degree	$80,063	-	461,857
Digital Building Blocks	68%	High School Diploma	$74,026	$28,914	1,291,509
		Bachelor's Degree	$75,056	$14,312	1,084,679
		Advanced Postsecondary Degree	$84,442	-	124,609
Business Enablers	50%	High School Diploma	$58,615	$13,503	1,586,856
		Bachelor's Degree	$68,431	$7,687	1,352,713
		Advanced Postsecondary Degree	$83,252	-	98,096

Educators believe that human skills offer the greatest labor market value to their students. They are partially correct: Human skills, which include communication, critical thinking, collaboration, analytical skills, and creativity, are cited in over 12 million job postings, which is a testament to the value they provide to employers. However, though much in demand, these skills do not command significant salary premiums on their own. Their value emerges when employers request human skills in tandem with business and digital skills, which they do 65% of the time for business-enabler skills and 58% of the time for digital building blocks. In these instances, the possession of human skills increases career opportunities and justifies the emphasis that teachers place on these skills.

Teaching digital building block skills in middle and high school appears to have immediate benefits for students who seek to enter the workforce upon completion of high school. Digital building blocks offer the highest salary premiums among the new foundational skills, and this effect is greatest among those without a Bachelor's degree. The average job posting requesting these digital skills offers a worker with a high school degree a salary of $74,000, nearly $30,000 more than the average salary for people in this education cohort. This compensation level approximates that earned by workers with Associate's and Bachelor's degrees. Affirming this labor market data, more than two thirds of educators (68%) believe employers will see digital building blocks as essential by the time their students are looking for a job.

Of the business-enabler skills, project management promises the greatest value to students, and 56% of educators believe employers will view this skill as essential. In 2019, there were 562,000 job postings requesting the project management skillset at the high school level, and these job postings advertised an average salary of $65,000. The top occupations in these postings included retail sales associate, project coordinator, software developer, program administrative assistant, and customer service representative.

The salary premiums for new foundational skills diminish at the advanced postsecondary level. In jobs requiring this level of academic achievement, workers are compensated for continuing to develop

14 "The New Foundational Skills of the Digital Economy: Developing the Professionals of the Future," Business-Higher Education Forum and Burning Glass, 2018.

more sophisticated proficiencies within these skillsets, and for cultivating advanced knowledge and skill in their particular industrial or professional domain. This trend shows that the benefits of acquiring new foundational skills in middle and high school differ, depending on the educational and career trajectory of the individual student and future worker. For those with a high school education who join the workforce immediately, the premiums over average salaries earned by new foundational skills also pay off immediately. For students aiming for college or advanced degrees, the acquisition of new foundational skills in middle and high school lays a foundation for the development of more advanced skills and domain knowledge during college and the earlier stages of employment.

Value for the Future

According to a Burning Glass analysis of the 2019 job market and its projected growth over the ensuing two, five, and ten-year periods, the demand for new foundational skills in the economy will grow, substantially, with modest declines in the demand for four skills, and increased demand for all others, including steep increases in each of the three skills categories. This data directly addresses educators' efforts to align what gets taught in school to what is needed in the job market. Taking a long view, the demand for these skills would appear likely to remain strong.

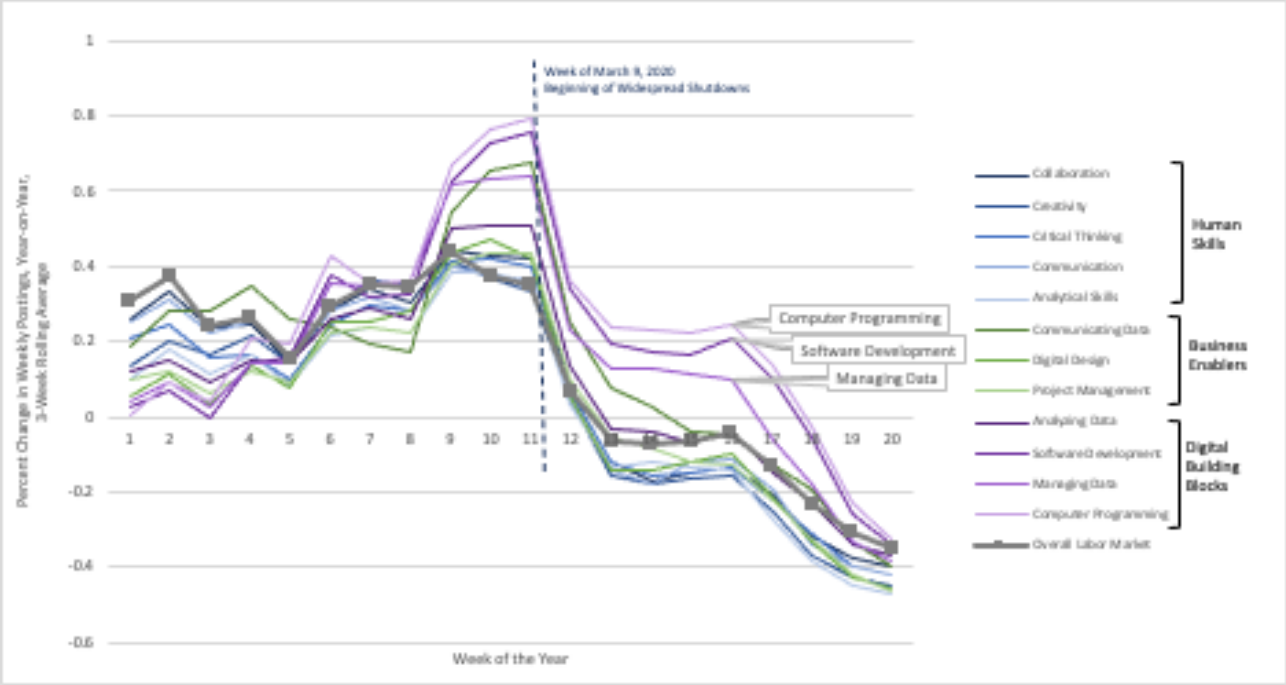
Value Landscape for the New Foundational Skills

New Foundational Skill Category	New Foundational Skill	Job Postings (High School, 2019)	Projected Growth (2-Year)	Projected Growth (5-Year)	Projected Growth (10-Year)
Human Skills	Collaboration	2,522,768,396	5%	13%	21%
	Creativity	825,539	2%	5%	11%
	Critical Thinking	2,405,745	-	1%	4%
	Communication	5,819,946	-	-	-
	Analytical Skills	1,033,803	-	-	-
Business Enablers	Communication Data	41,079	21%	53%	103%
	Digital Design	316,260	-	4%	12%
	Project Management	519,422	-	-	-
Digital Building Blocks	Analyzing Data	349,558	15%	38%	78%
	Software Development	531,695	1%	6%	14%
	Managing Data	566,915	-	-	7%
	Computer Programming	399,666	-	-	-

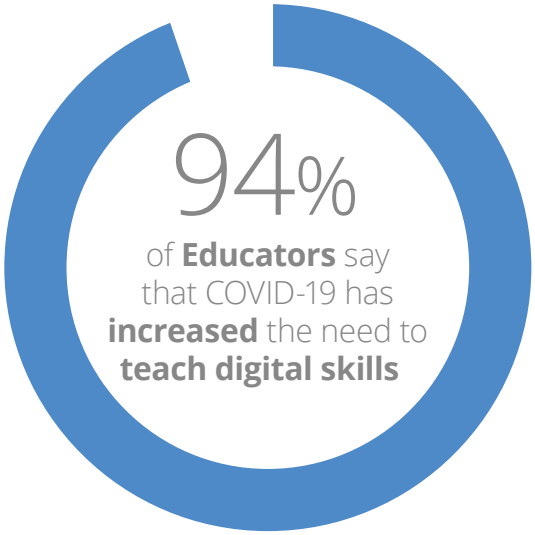
The labor market value for these skills is large for both college prep and career prep middle and high school students, and teachers understand that value. Overall, educators see room for improvement in preparing students for life after high school, and incorporating these new foundational skills into the classroom could be a step in the right direction.

Value in the COVID-19 Era

The health and economic crises caused by COVID-19 have left millions without a job and millions more in jobs that put their health and safety at risk. In the early days of the crisis, digital skills insulated many workers from the sharp decline in demand experienced by other jobs. Weekly demand for digital skills remained above 2019 levels for nearly two months after widespread economic shutdowns began during the week of March 9. By comparison, overall demand dropped below 2019 levels within two weeks. Demand for computer programming, software development, and managing data were insulating abilities during the early days of the COVID-19 pandemic.



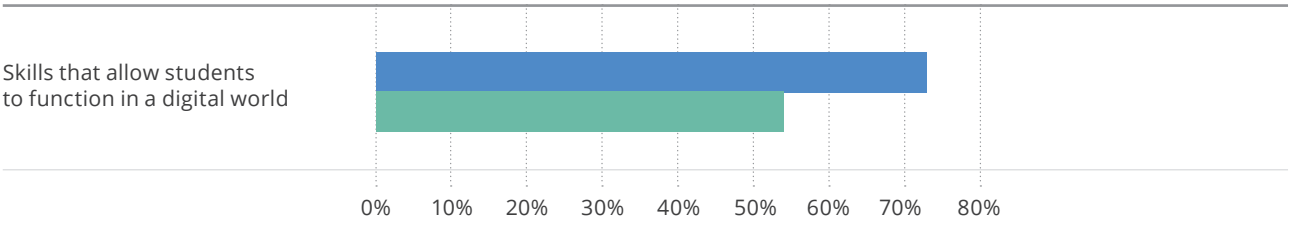
Demand for occupations that require new foundational skills is also likely to return faster in the COVID recovery, and these jobs are less likely to be displaced with a temporary workforce. Data from the Occupational Information Network, or O*NET, provides insight into the occupational characteristics and worker attributes for all jobs. Data are collected through surveys of workers and employers that include input from technical and scientific experts in the relevant field. One set of questions addresses the extent to which a job requires the worker to perform job tasks in close physical proximity to other people. This proximity metric can be used to proxy for COVID-19 infection risk, as the pathogen is transmitted through the air. Occupations that typically request new foundational skills tend to require less physical contact with others. Given that the health risk of these jobs is lower, they will return more quickly in a phased reopening, and they are not good targets for replacement by a temporary workforce.



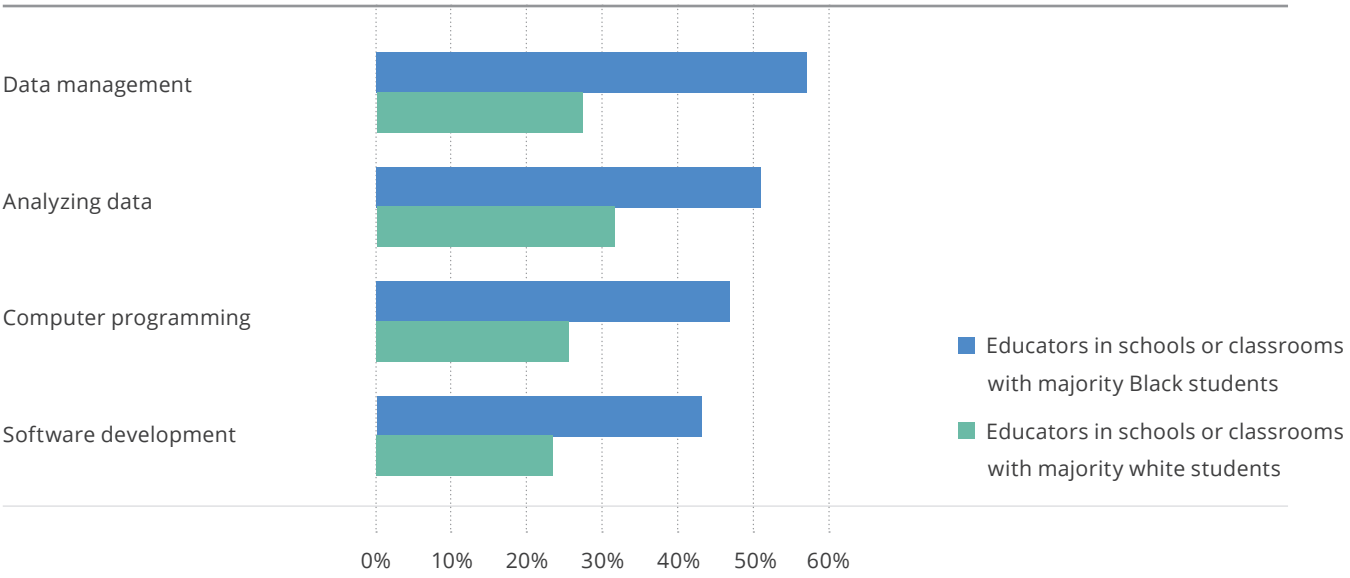
The COVID-19 pandemic has also had the effect of altering educators' perspectives on digital skills. Fully 94% of educators say that the pandemic has increased the value they place in students learning digital skills. Additionally, a large majority of educators believe COVID-19 will result in a long-term premium on digital skills: 77% estimate that the increased value for digital skills on the job market will persist even by the time their students are looking for jobs. Teachers, school administrators, and educational professionals may be able to capitalize on this renewed attention on digital skill development and access to digital resources.

The upward valuation of digital skills was particularly great among educators with majority black or African American students. More than one third as many educators in schools or classrooms with majority black or African American students believe COVID-19 has made education in digital skills much more important, compared to their colleagues in schools or classrooms with majority white students. Nearly twice as many educators of majority black or African American students believe employers will find digital skills much more valuable due to the effects of the COVID-19 pandemic, even by the time their students are looking for jobs.

Educators who *themselves* believe that these general skills are *much more important* due to the effects of the Covid-19 pandemic



Educators who *themselves* believe that *employers* will find these specific skills *much more valuable* due to the effects of the Covid-19 pandemic



4.

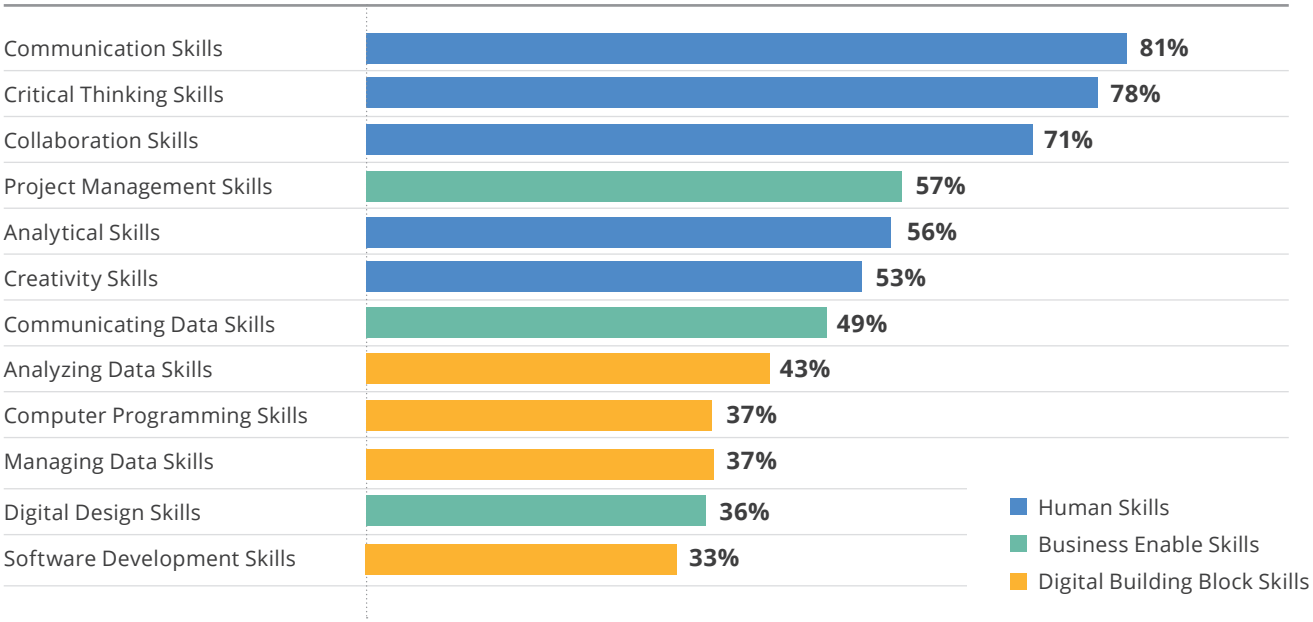
Educator Judgment and Practice: Perceptions of Middle and High School Professionals

Educator Perspectives on the Importance of Teaching New Foundational Skills

Building on its examination of how the labor market prioritizes the new foundation skills, and what middle and high school educators believe about employers' emphasis on these skills, American Student Assistance and Burning Glass set out to learn from educators how students currently learn and develop these skills while in school. How important do middle and high school educators think it is that their schools teach these skills? How well is such teaching done? Do administrators, school counselors, and teachers see these issues differently?

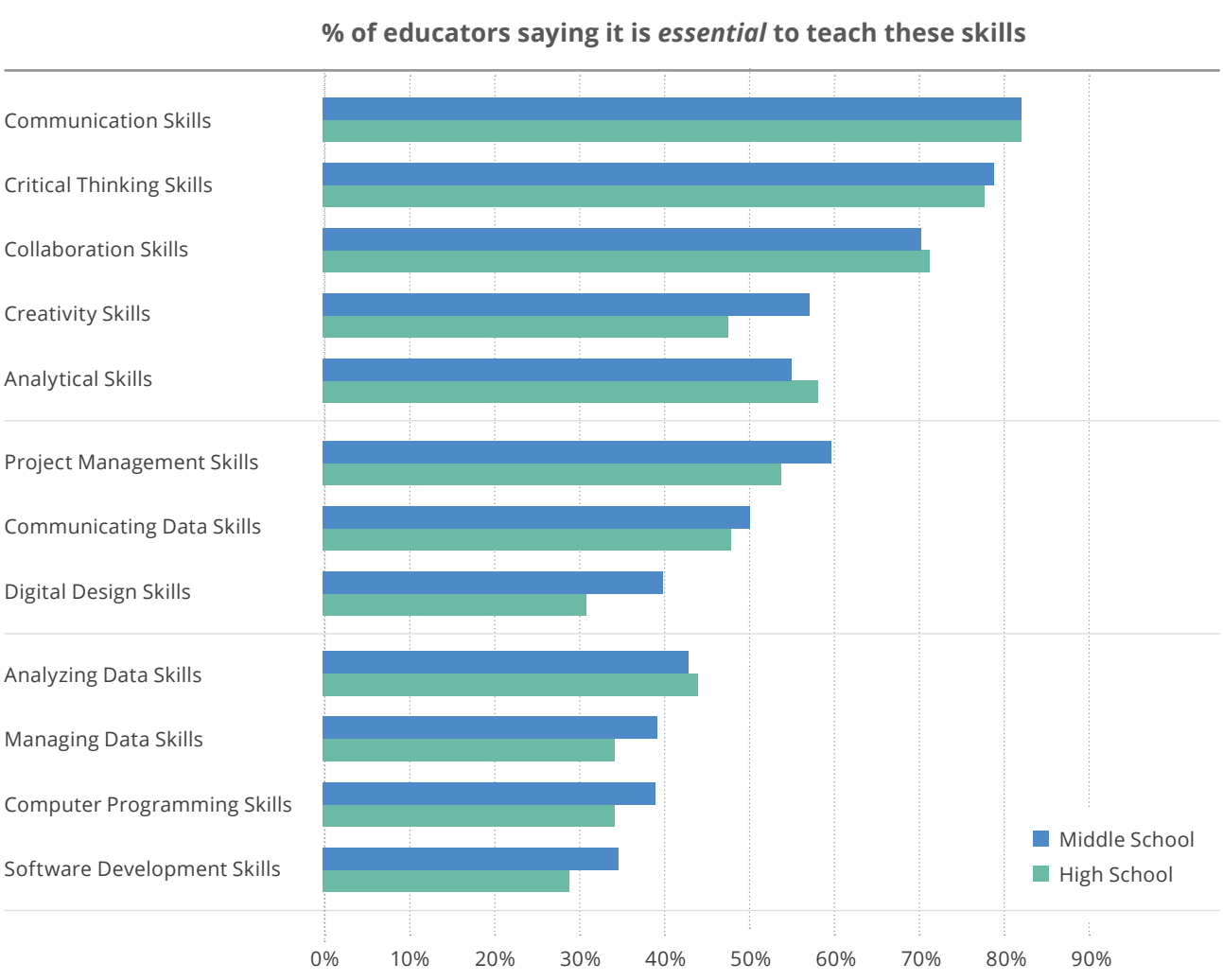
American Student Assistance and Burning Glass asked educators how important they felt it was that students have the opportunity to learn the new foundational skills in their school. For six of the twelve skills, between 53% and 81% of educators deemed it "essential" that schools offer students the opportunity to learn the skill. No skill had less than a third of educators judging it "essential" for students to learn, even advanced technical skills like software development and computer programming.

Percent of educators who say that it is *essential* to provide the opportunity to learn these skills



Educators in both middle school and high school are in agreement about the importance of providing students the opportunity to learn these skills. This finding is important, because it simplifies collective decisions around prioritizing the education of new foundational skills between levels of instruction in secondary school. Further, a greater percentage of middle grade educators than high school educators believe their students should have the opportunity to develop highly career-aligned business and digital skills, such as project management, digital design, and computer programming. One-third to one-half of middle school educators are keen that these skills be integrated into the curriculum. This finding helps make the case that students should be exposed to these skills early on. Career exploration in the middle grades would accomplish this goal.

Agreement between Middle and High School Educators on the Importance of the New Foundational Skills

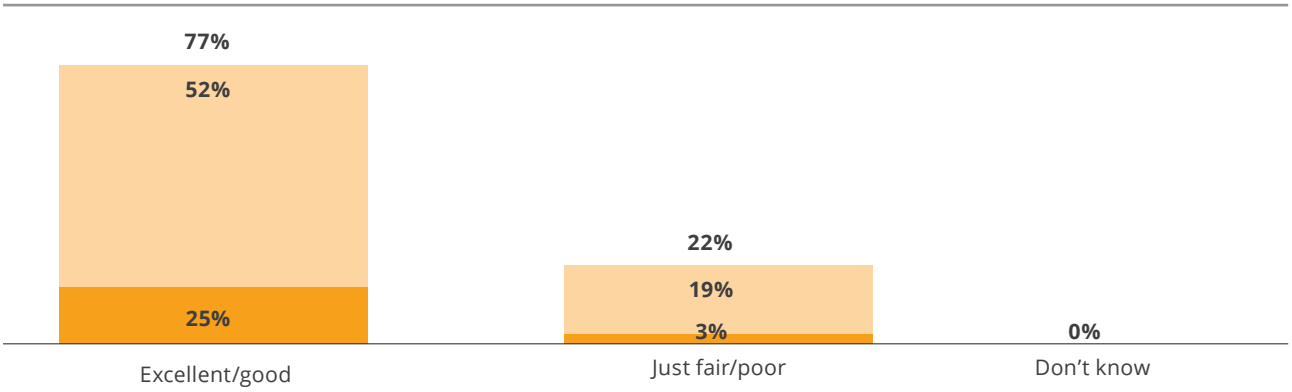


Opportunity Gaps: The Difference Between Value and Practice

A clear majority of educators (77%) believe their school fairs well at preparing students for job opportunities, but this leaves roughly a quarter of educators (22%) who feel the school does a fair or poor job at preparing students for the workforce. Further, only a quarter of educators (25%) believe their school is doing an excellent job at preparing students for job opportunities.

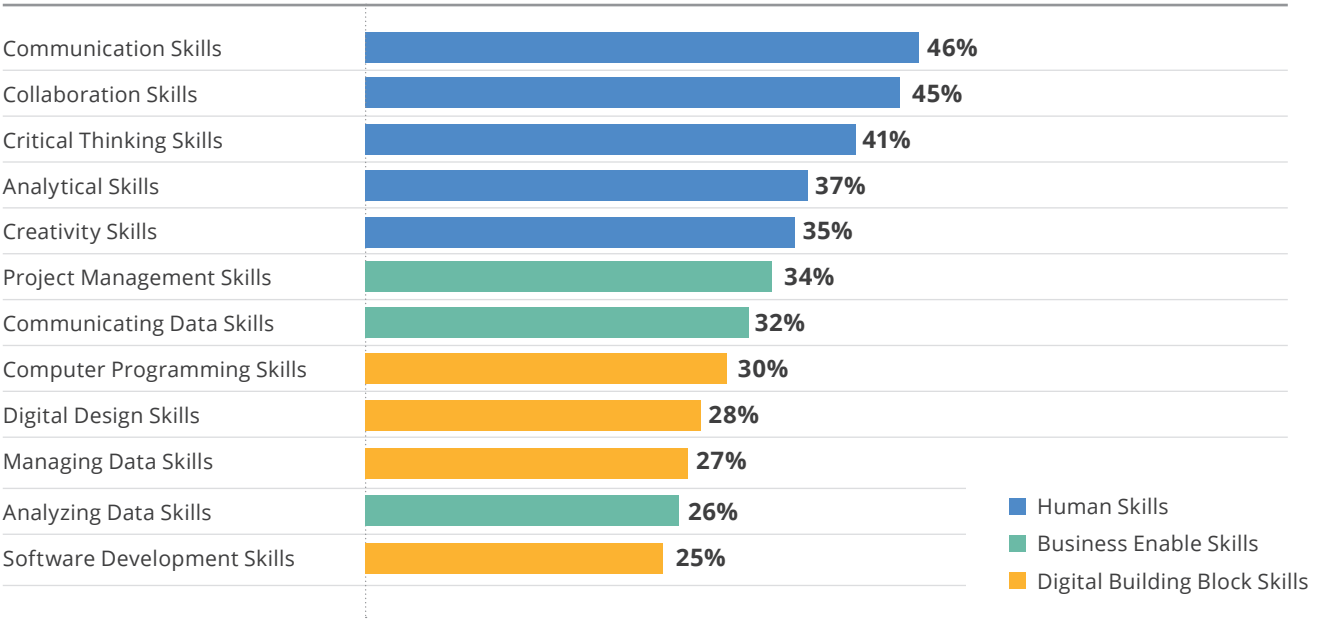
Three-in-four say their school does at least a good job in preparing students for job opportunities, but only one-in-four say their school does an excellent job of this.

Overall, how would you rate the job your school does in preparing students for the types of job opportunities that will be available by the time they finish their secondary education?



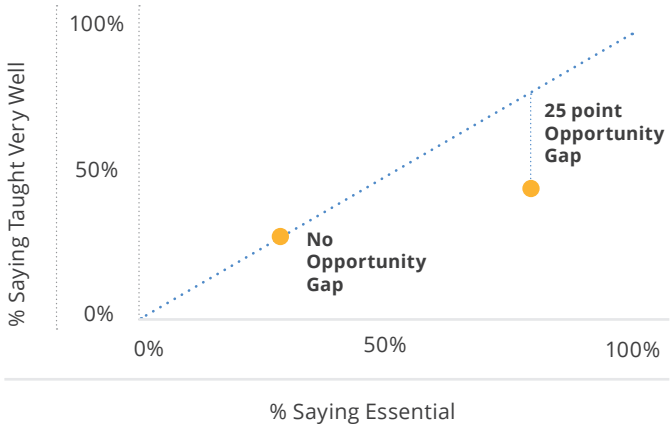
Arming students with the new foundational skills will help prepare them for the workforce. However, despite the high value educators place in new foundational skills, they are unanimous in their view that their schools do not yet prepare students very well in these skills. When asked to assess how well their school provided learning opportunities for each of the skills, educators found there was not a single skill for which the majority felt their schools did "very well" in providing students opportunities to develop proficiency.

Percent of educators who say their school or classroom teaches these skills very well

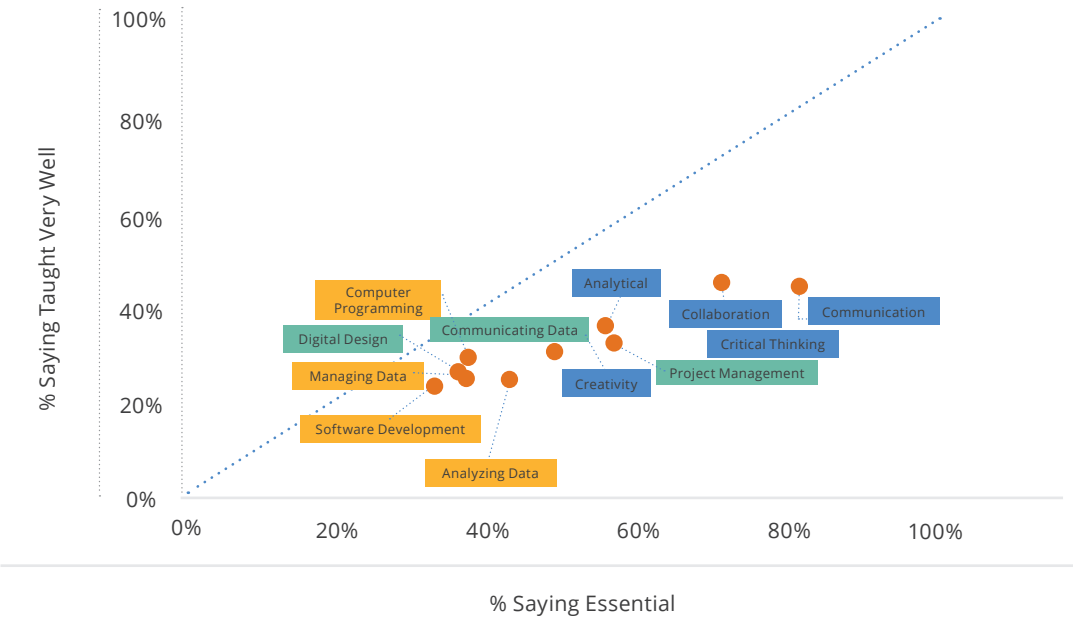


Burning Glass and American Student Assistance define opportunity gaps for each new foundational skill. Opportunity gaps represent the distance between the percentage of teachers who believe it is essentially to provide students the opportunity to learn a skill and the percentage who believe their school is teaching the skill well. Put simply, the difference between value and practice. If every educator who believes a skill was essential for instruction was also able to teach that skill well, the opportunity gap would be zero. It is important to remember that the opportunity gap is calculated at a system-wide level and that there can be great variability among individual educator opinions. The graph below shows a visual representation. The distance under the curve represents lost opportunity in the education of each skill on the graph.

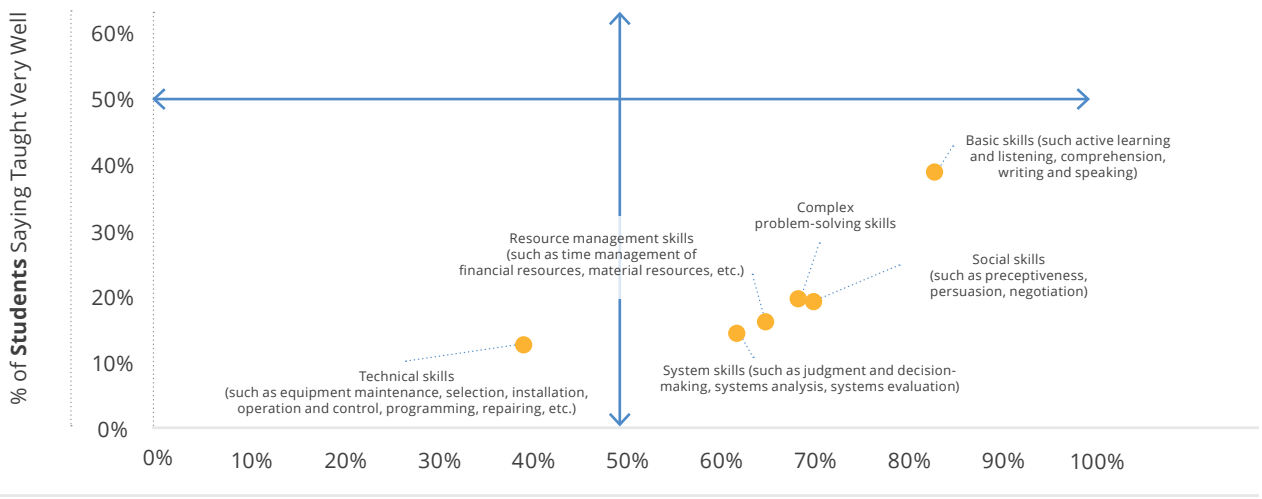
Opportunity Gaps



Opportunity Gaps for New Foundational Skills



Graphing the opportunity gaps for new foundational skills, a few trends emerge. First, opportunity gaps exist for all new foundational skills: There is no skill that is taught well as consistently as it is deemed essential. Second, opportunity gaps are largest for the new foundational skills the largest number of educators deems essential: critical thinking (37pts); communication (35pts); and collaboration (26pts). These skills all fall under human and workplace competencies, and educators can teach them together. Third, the opportunity gaps expand as educators value the skills more highly. Given the high labor market value of digital skills discussed in the earlier section, it is likely that over time the number of educators who believe digital skills are essential will grow. Presently, however, there are fewer teachers who feel the school is failing their expectations for the digitally intensive new foundational skills compared to, for example, human skills, where as many as 37% of educators believe the skill is essential but are concerned it is not being taught very well. Forward-looking policies that appreciate the growing workforce demand for digital skills will empower the approximately one-third of middle and high school educators who view these skills as essential to increase both the capacity of the school to teach these skills as well as an estimation of these skills among other educators.



The same relationship exists when students, instead of teachers, are asked to evaluate how well certain skills are being taught. The graph below charts, as above, the percent of teachers who say a skill is essential, against the percent of students who strongly agree that the skill is being taught well. The skills included in this graph are not the new foundational skills—rather they come from a skill framework that ASA has used in other work—but they reinforce the notion that the value teachers place on skills correlates with the extent of their instruction.

Not all educators see the new foundational skills in the same way. Three groups of educators participated in the survey: teachers; school counselors; and school administrators. Their views and priorities differed in ways that may be useful in understanding conditions in schools and possible pathways forward. For instance, teachers report seeing less value in digital, data, and technology skills, which the data show can often command such high salary premiums, at multiple points in the labor market. By contrast, a majority of school administrators and many school counselors believe it is essential to provide students with the opportunity to develop these skills. Skills with a large delta between teacher and school administrator interest include analytical skills, analyzing data, managing data, communicating data, and computer programming. A number of possibilities emerge for addressing these differences creatively: They are discussed in the following section of the paper.

Educators Address Barriers to Teaching the New Foundational Skills

In response to an open-ended question about the barriers to teaching and learning the new foundational skills, educators cited these factors:

Funding

- "Funding is the biggest issue."

Structured curriculum. Teaching to standardized tests.

- "Structured curricul[a] [that] force me to teach to the test… my evaluation is based on this."
- "The curriculum does not have room for extra stuff."
- "The current skill level of our students and the requirements for meeting the demands of testing at the end of the year."
- "We have so many testing requirements and are being pulled in so many directions…that it leaves little time for teaching non-tested concepts. It's a tough reality."

Time

- "Technology and time."
- "The main barrier that prevents me from increasing these types of skills is time."

Administration

- "Approval from senior level."
- "The admin will not support such action."

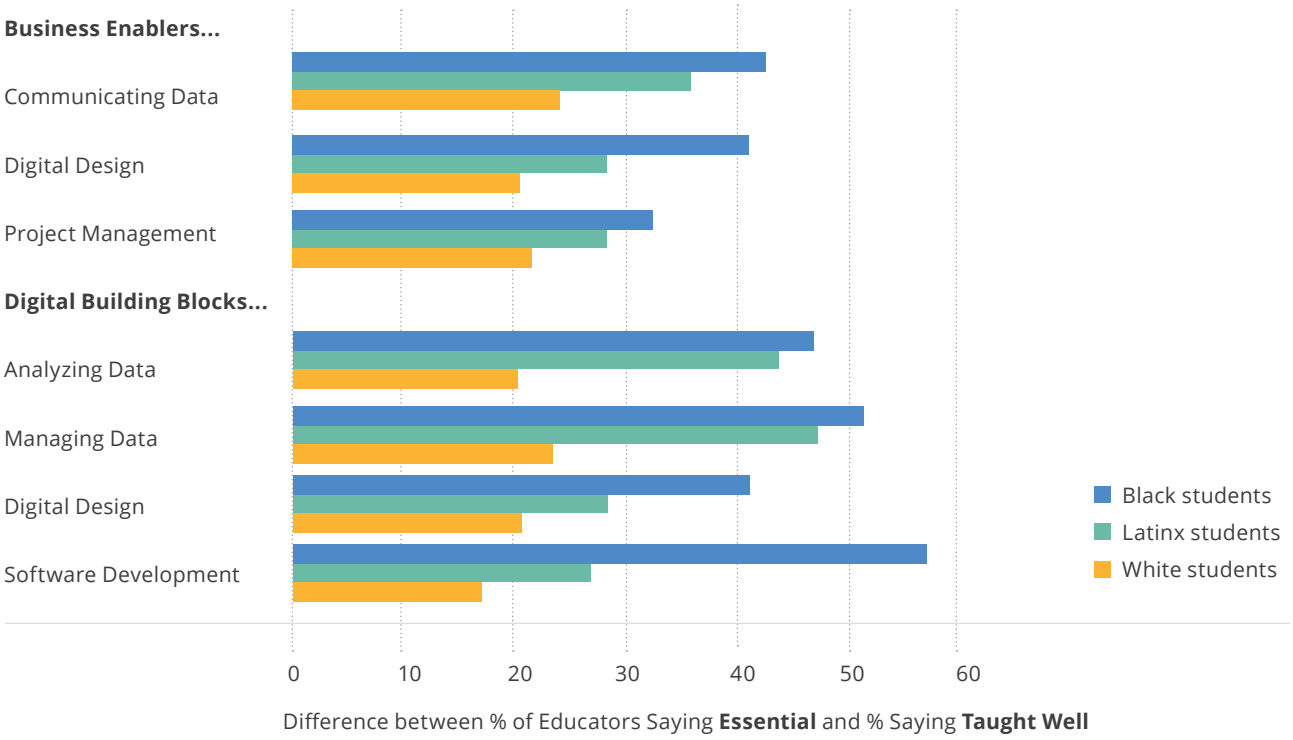
Students Facing the Largest Opportunity Gaps

The students facing the largest opportunity gaps for developing new foundational skills are those typically imperiled by the fault lines that run through the American education system. Regardless of the racial, ethnic, or socioeconomic composition of their classrooms, educators are consistent in the value they place in the new foundational skills and in the value they estimate employers will place in these skills by the time their students are looking for a job. But there are stark differences along racial, ethnic, and socioeconomic lines in how educators judge these skills are being taught in their schools or classrooms.

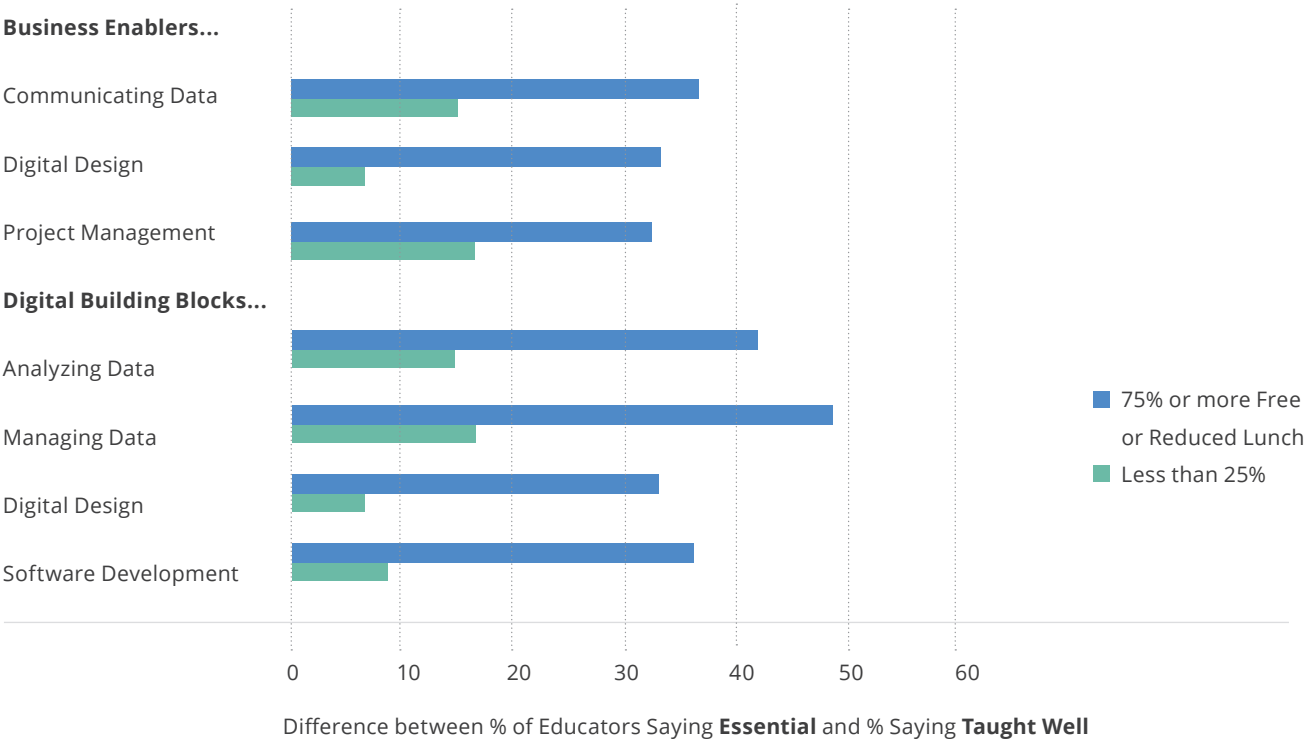
Opportunity gaps are largest for students in majority black schools or classrooms, followed closely by students in majority Latinx classrooms. The opportunity gaps are larger for black and brown students both because educators in these classrooms value the new foundational skills more highly than their counterparts in majority white classrooms and because fewer educators in these classrooms report the new foundational skills are being taught well. The same is true for students in classrooms where most students qualify for free or reduced lunch relative to classrooms where fewer students qualify for the program.

Across the different new foundational skill areas, the gaps are particularly large for the digital building block skills. These findings echo other research that shows a digital divide in access to computers and Internet connectivity between high-income, majority white communities and low-income communities with a majority of people of color. The opportunity gaps are also large for business-enabler skills.

Opportunity Gaps by Race or Ethnicity



Opportunity Gaps by % of Classroom with Free or Reduced Lunch



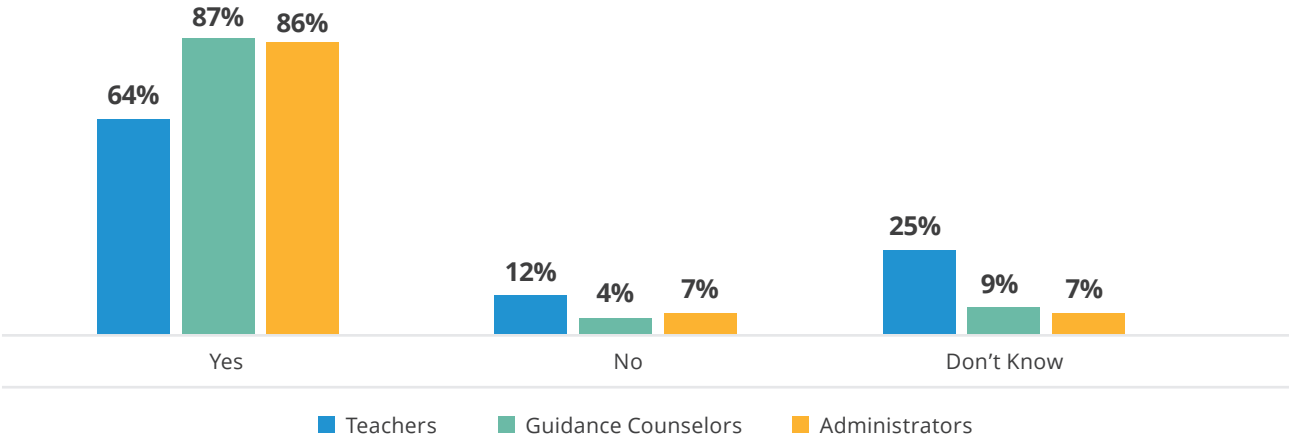
5.

Developing the New Foundational Skills in Classrooms, Schools, and Beyond: Seeking Results for Middle and High School Students

Despite the reasons cited by educators for why it is difficult to implement new foundational skill education in the classroom (see Educators Sidebar on Barriers), there is hope: Two-thirds of teachers and nearly nine-in-ten school counselors and administrators say they feel they could personally take steps to increase the teaching of these types of skills in their classes/schools.

Teachers: Do you feel that you personally could take steps to increase the teaching of these types of skills in your class?

Counselors and Administrators: Do you think your school could realistically take steps to increase the teaching of these types of skills in your school?



The devil is often in the details. Educators will struggle with implementation when the curricular suggestions are vague, such as "skills of the future" or "career and technical skills." Each of the new foundational skills is composed of hundreds of more discrete skills, concepts, technologies, and tools. The table below shows more granular skill classifications that appear, at high levels of demand, in job postings, which would also be appropriate learning subjects for middle and high school students. While each falls into one of the general categories of Human, Digital Building Block, and Business Enabler skills, the skills in the chart delineate a series of discrete proficiencies that would be most beneficial for middle and high school students. These skills are drawn from teaching and learning practices that have proven fruitful at multiple educational levels and school settings, and across many skillsets.

New Foundational Skills:

Concrete Concepts, Tools, and Technologies for Development in Middle and High School

Human Skills

- Teamwork
- Troubleshooting
- Conducting research
- Mentoring and leadership
- Using creativity to solve problems
- Oral communication
- Verbal communication
- Written communication

Business Enablers

Project Management

- Project planning and development
- Managing a team
- Engaging with stakeholders
- Familiarity with cost and price analyses
- Business acumen

Digital Design & Communicating Data

- Adobe Photoshop, Acrobat, Illustrator
- Tableau or data visualization software

Digital Building

Managing and Analyzing Data

- SQL and relational databases
- Database administration
- Excel and pivot tables

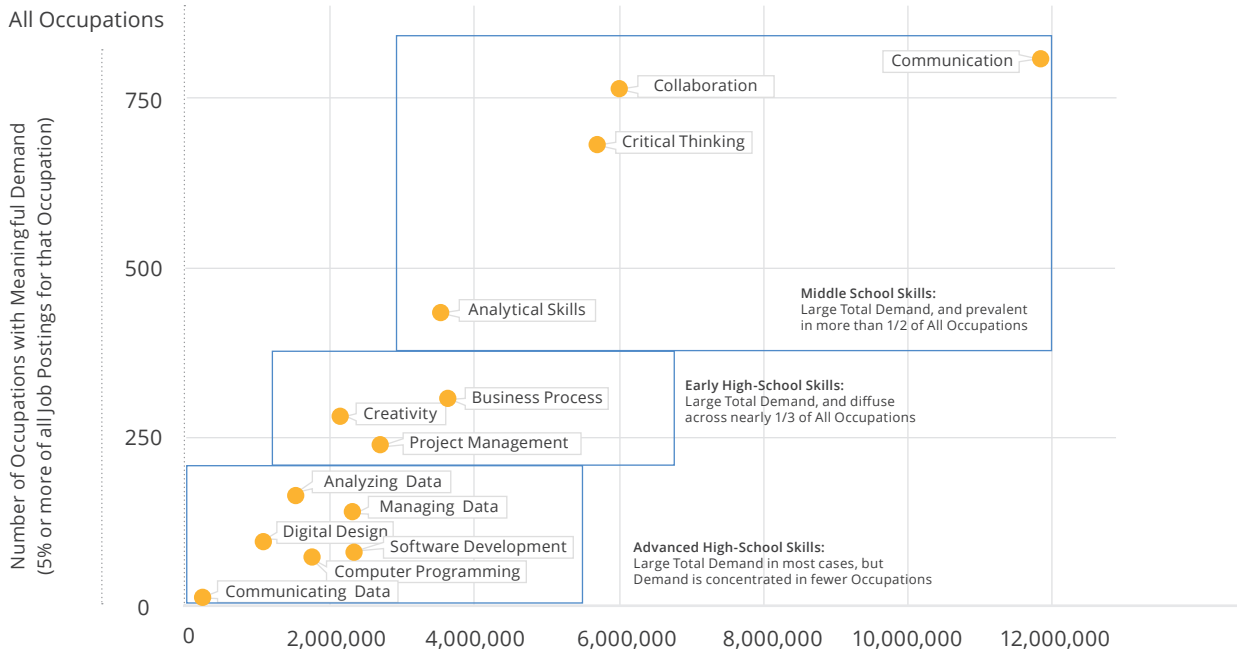
Computer Programming & Software Development

- Java and JavaScript
- C#, .NET
- Python
- Basic structural concepts in software development, software engineering, and web development

Digital Building Blocks are a helpful case study: 68% of educators believe it is essential to develop the skills that will allow their students to function in an increasingly digital world. However, digging one level deeper, only between 33%-43% of teachers feel convinced the digital building blocks listed in this report fit in that essential category.

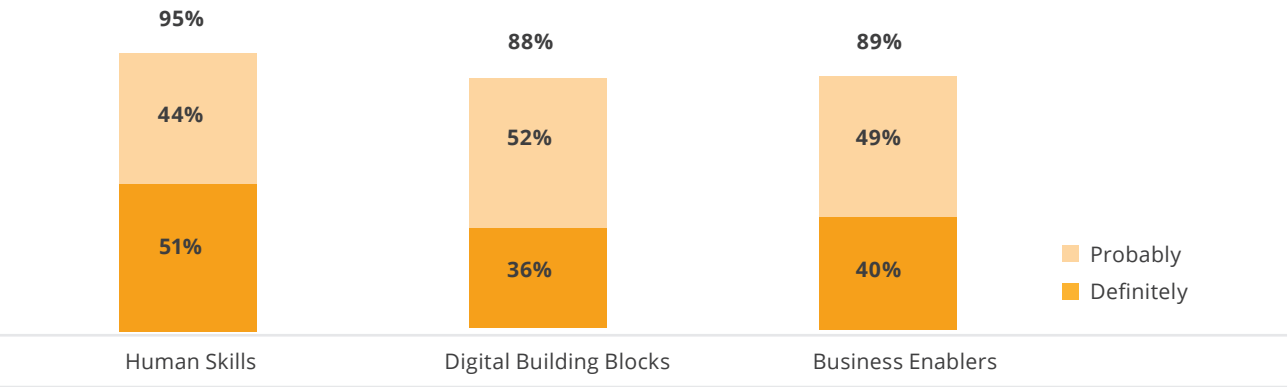
The survey of educators also addressed the question of when to introduce these skills into the classroom. To answer this question with labor market data, we compared the total demand for each skill to its distribution across different occupations. As a general practice, skills with demand across many occupations should be introduced earlier on, to give students the broadest avenues for career exploration. Skills that are in demand in fewer occupations, or that are highly technical or specialized, are good subjects for targeted and later study, especially when paired with real-life exposure to these skills in practice, through apprenticeships, internships, field trips, and other experiential learning. Of course, the scope and sequence of these learning experiences must align with student development and teachers' pedagogical concerns, such as ensuring students demonstrate proficiency in core mathematics before jumping into data or programming learning that is predicated on this prior knowledge.

Who Should Skills Be Taught?



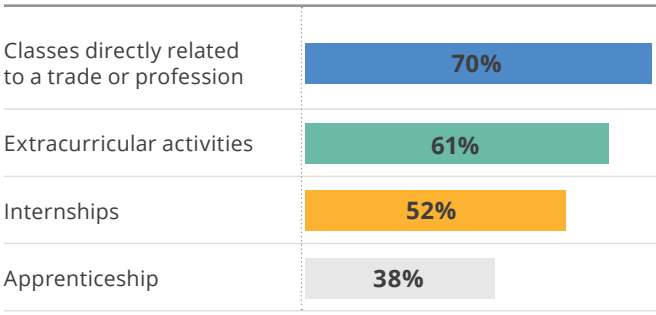
What are the strongest methods for teaching these new foundational skills? Educators responded favorably to the question of whether career exploration in middle school and experiential learning in high school could be used to develop new foundational skills. Teachers support incorporating career exploration/experiential learning to develop these skills. An overwhelming majority says having a chance to acquire human skills probably or definitely gives these students an advantage. Fully 30% of teachers and 42% of school counselors/administrators say students who have career exploration/experiential learning opportunities in school definitely have a greater chance to learn digital building block skills. One-in-three teachers, close to half of school counselors, and a majority of administrators say students with career exploration opportunities definitely have a greater chance to acquire business-enabler skills.

Do students who have [middle school: career exploration / high school: experiential learning] opportunities have a better chance of acquiring these skills?

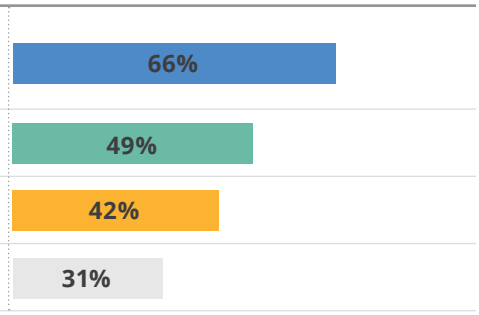


Some approaches can be advantageous because they share the responsibility of education with strategic partners: dedicated business, computer science, or digital design classes and workshops led by industry; employers in co-op programs, internships, and apprenticeships; extracurricular activities, clubs, and visits to colleges and employer and industry sites. Further, as the chart below details, educators report seeing this approach succeed, particularly for the business and digital skills that have a lower rate of successful implementation in the classroom.

In what ways, if any, have you seen students develop the type of business enabler skills described? Select all that apply.



In what ways, if any, have you seen students develop the type of digital building block skills described? Select all that apply.



Educators Highlight What Works

In response to an open-ended question about the barriers to teaching and learning the new foundational skills, educators cited these factors:

Visits to/by employers and colleges

- "All students go visit a college the first week of school so they can get to see what it takes to get in college and after that they have a different career person every month to talk about their field and how important school is."
- "AVID (Advancement Via Individual Determination) is a huge part of our school in which students take trips to experience different job related things…We have also had professionals from the community come and give presentations during student lunch times."
- "Guest speakers from different pathways come speak; there are job tests students take to help them think about their careers."
- "Field trips every week."

Apprenticeships, internships, and shadowing

- "Apprenticeship."
- "Job shadowing."
- "School to work programs that allow students to work outside the school during the school day."
- "Students are given the opportunity to spend one semester doing job shadowing with someone in a profession that interests them."
- "We have internships in CTE programs. Student sintern in the flower shop, cafe, and outside businesses."

Experiential learning in the classroom:

- "Business and computer science classes and STEM classes are provided for our students."
- "Career and tech courses."
- "My students have a school store they run based on their developed business plan. They do all the ordering, prices, and accounting needed."
- "Students are to select a career, research it, report on it and shadow someone in the community."
- "We have an agricultural program [that] teaches kids farming and a cooking class, wood working and tech degree programs that work with college credit."

6.

Recommendations

Based on the findings of this paper, and its prior work, American Student Assistance recommends the following action steps for the wide range of stakeholders whose leadership is needed to ensure the future success of both students and of the U.S. economy. Achieving a deeper grasp of the nature of the new foundational skills and strategizing on how best to foster their development is not a project for one or two organizations or partnerships. Just as ASA and BGT draw continuously on the insights and research of others, we are eager to share this recent work with others.

Recommendations for All Stakeholders

Stakeholders		Action Items
Educators	Teachers	• Evaluate curriculum for opportunities to connect what students are doing in the classroom to these skills • Petition administrators for additional tools and resources necessary to realize education in these skills • Guide students toward outside opportunities for skill development (e.g., apprenticeships) • Engage students with industry partners inside of school through speaker series or virtual events, shark tank events that would allow students to pitch concepts to industry leaders • Create units with culminating projects or showcases that connect to career exploration or to NFS • Look for grants (such as ASA innovation grants)
	Administrators	• Incorporate the development of NFS into school vision and mission • Identify the core NFS that the school strives to help students develop • Assist teachers in identifying opportunities to develop NFS within existing and enhanced curriculum • Identify teachers who want to spearhead this work, asking them to work with peers to build a schoolwide focus on NFS development • Align teaching and testing to NFS • Budget for experiential learning and career exploration • Develop teacher buy-in by encouraging teachers to incorporate these skills into their curricula • Encourage teachers to teach and test for NFS • Professional development • Implement frameworks for teaching these skills • Reach out to other exemplar administrators for advice and to create a strong network for this type of education • Be looking for exemplar models and exposing teachers to these models
	School Counselors	• Foster partnerships outside the school with local employers to create opportunities for interaction with students through career fairs, speaker series, etc. • Encourage students to pursue the development of these skills

Recommendations for All Partners, Page 2

Partners		Action Items
Intermediary Organizations	Education Associations	• Advocate for including these skills in curricula
	Industry Associations	• Be explicit about the skills needs of member companies and employers, and of whole industries • Publish market intelligence on challenges in sourcing talent • Form partnerships with schools/districts to engage school communities about the importance of NFS • Collaborate with school districts or state or regional education associations to advance a shared vision of the value and impact of NFS development in middle and high school
	Business Councils	
Students	Middle School	• Participate in curriculum-embedded skills development • Engage in routine career exploration activities, including parent/guardian/adult-at-work days, job shadowing • Travel outside of school to work- and career-related off-sites • Focus on developing a stronger sense of interests and options
	High School	• Enroll in experiential education courses and activities • Develop and articulate career aspirations • Participate in internships and summer learning experience
	College	• Select courses, consider majors with career aspirations in mind • Use summers and vacation times to secure hands-on work experience, either paid or with stipends • Engage in on- and off-campus interviews with prospective employers
Jobseekers		• Advertise these skills on resumes where appropriate
Employers		• Be explicit and future-oriented about skillsets required for the job • Work with educational institutions to develop on-site training opportunities for employees and other interested attendees • Develop pathways into work (e.g., apprenticeships)

Recommendations for All Partners, Page 3

Partners	Action Items
Policymakers	• Develop educational frameworks for teaching and learning these skills • Develop a framework and state standards for learning these skills • Establish statewide metrics and benchmarks for learning outcomes of these skills (these skills should be part of what states evaluate when judging high-quality schools and student progress) • Ensure adequate funding is available for teaching these skills • Ensure appropriate professional development for teaching these skills (perhaps as a required part of teacher and counselor certification; could also suggest increased state support for teacher externships) • Increase funding to decrease the ratio of students to school counselors in order to support this work • Increase availability of regional (or even local) labor market data, and the corresponding foundational skills, so teachers have access to up-to-date information for their students • Change high school graduation requirements to require a work-based learning experience (or a softer version): Ensure all appropriate work-based learning experiences receive credit toward high school graduation requirements • Create state or federal tax benefits or grant funding to incentivize employer participation in internships and co-ops

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