UNDERSTANDING SOFT SKILLS

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Success in school, work, and life depend on more than concrete skills and content knowledge. While a strong education in how to do something specific—in teaching or engineering, in plumbing or computer science—goes a long way towards supporting students' employability, there's been a recent burst of awareness for just how important so-called "soft skills" are for success as well. One's sense of responsibility, communication proficiency, curiosity in the face of the unknown, perseverance in the face of challenge, and emotional awareness go a long way in supporting success in nearly any field.

These less tangible traits fall under many titles: Soft skills, noncognitive skills, employability skills, character, social and emotional learning, 21st Century learning, and more. Each of these addresses similar and overlapping sets of strengths. Drawing on each of these literatures, the present paper examines three overarching questions, referring to these characteristics primarily as "soft skills":

- What are soft skills? (beginning on page 2)
- How much do they matter for success? (turn to page 11)
- How can we strengthen students' soft skills? (turn to page 23)

Part I: What are soft skills?

The role of soft skills in supporting students' success has risen in the public interest over the past several years, but this area of study is by no means new. For over half a century research has demonstrated the value of what are, essentially, soft skills. The 1950s saw great interest "self-actualization" (Stevenson 2015). The 1960s turned to "self-efficacy," an "internal locus of control" and "achievement motivation" (ibid). In the 1970s research examined "intrinsic motivation," a "fixed versus growth mind-set" and "delay of gratification" (ibid). The 1980s saw heightened interest in "conscientiousness" and "openness" (ibid). Each of these concepts is still studied, and the large literature that has accumulated upholds current interest in soft skills.

However, one of the greatest challenges of research in soft skills is just how many skills can be thought of as "soft." It is difficult to define a comprehensive set of soft skills. Nevertheless, there have been attempts to categorize soft skills under some useful rubrics. One typology, which may be considered to address soft skills, was developed by early personality psychologists. They "extracted words from the (English) dictionary that characterized individual differences between people (e.g., irritable, proud), after eliminating synonyms and words not associated with traits. They designed and administered studies of trait inventories to large samples of individuals [and]…produced a widely (but not universally) shared consensus taxonomy of traits, known as the Big Five…The Big Five posits a hierarchical organization for personality traits, with five factors at the highest level and progressively more narrowly defined traits (or facets) at lower and lower levels" (Almlund, Duckworth, Heckman, Kautz 2011). The Big Five are as follows:

1. **Openness to Experience (Intellect)**. The American Psychological Association Dictionary (2007) defines this as "the tendency to be open to new aesthetic, cultural, or intellectual experiences." Facets include being imaginative, artistic, excitable, curious, unconventional, and having wide interests (find additional details on facets listed here and below in the NEO-PI-R personality inventory,

Costa and McCrae 1992b, and the Adjective Check List, Gough and Heilbrun 1983).

2. **Conscientiousness**. This is "the tendency to be organized, responsible, and hardworking" (American Psychological Association Dictionary 2007). Facets include being efficient, organized, ambitious, and *not* careless, lazy, or impulsive. These characteristics are thus linked to grit , perseverance, delay of gratification, impulse control, achievement striving, and having an ambition work ethic.

3. **Extraversion**. This is "an orientation of one's interests and energies toward the outer world of people and things rather than the inner world of subjective experience; characterized by positive affect and sociability" (American Psychological Association Dictionary 2007). Aspects of this include being friendly, sociable, self-confident, energetic, adventurous, and enthusiastic.

4. **Agreeableness** . The American Psychological Association Dictionary (2007) defines this as "the tendency to act in a cooperative, unselfish manner." Facets include being forgiving, warm, sympathetic, and *not* demanding, stubborn, or a show-off. These traits are linked to empathy, perspective taking, cooperation, and competitiveness.

5. **Emotional Stability / Neuroticism**. "Emotional stability is predictability and consistency in emotional reactions, with absence of rapid mood changes" (American Psychological Association Dictionary 2007). It's counterpart, Neuroticism, includes a "chronic level of emotional instability and proneness to psychological distress" (ibid). Components include worrying, being irritable, depressed, shy, moody, or lacking self-confidence. These characteristics are related to locus of control, core self-evaluation, self-esteem, self-efficacy, optimism, and depression and anxiety disorders.[1]

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[1] This discussion of the Big Five draws heavily on Almlund, Duckworth, Heckman, Kautz (2011); their report offers comprehensive coverage of this topic.

Thus the Big Five offers a thorough, lasting typology of what are commonly thought of as soft skills, though it is certainly not the only typology out there.

Another excellent literature review comes from the University of Chicago. Conducted by a broad team of researchers (see Farrington, Roderick, Allensworth, Nagaoka, Keyes, Johnson, and Beechum 2012), it specifically documents the role of soft skills in shaping school performance. The authors identify five key components of school performance soft skills:

1. **Academic behaviors**, such as going to class, doing homework, organizing materials, participating, and studying.

2. **Academic perseverance**, including grit, tenacity, delayed gratification, self-discipline, and self-control.

3. **Academic mindsets**, for example "I belong in this academic community," "My ability and competence grow with my effort," "I can succeed at this," and "This work has value for me."

4. **Learning strategies**, including study skills, metacognitive strategies, self-regulated learning, and goal-setting.

5. **Social skills**, such as interpersonal skills, empathy, cooperation, assertion, and responsibility.

Beyond presenting these five components of soft skills, the researchers also illustrate how these skills work in combination to influence students' academic performance. They describe how mindsets (#3) influence perseverance (#2), which in turn influences

behaviors (#1), ultimately shaping academic performance. Learning strategies (#4) are broadly influential, shaping perseverance (#2), behaviors (#1), and academic performance each directly. And social skills (#5) influence behaviors (#1), thereby shaping academic performance.

The full report (Farrington, Roderick, Allensworth, Nagaoka, Keyes, Johnson, and Beechum 2012) offers much more detail on each of these areas of soft skills, how they relate to one another, and how they are likely shaped by school, classroom, socio-cultural, and demographic contexts. The report also takes a specific look at how soft skills matter for college, particularly at the time of transition into college. These findings are included in the next section of this paper covering how soft skills matter for success.

Additional relevant work that defines a broad set of soft skills comes from the *Collaborative for Academic, Social, and Emotional Learning* (CASEL). As CASEL describes, "social and emotional learning (SEL) is the process through which children and adults acquire and effectively apply the knowledge, attitudes, and skills necessary to understand and manage emotions, set and achieve positive goals, feel and show empathy for others, establish and maintain positive relationships, and make responsible decisions" (CASEL 2015). Thus, social and emotional learning encompass a great deal of soft skills. CASEL highlights five competencies, which may also be loosely considered a typology of soft skills. These include:

1. **Self-awareness**: "The ability to accurately recognize one's emotions and thoughts and their influence on behavior. This includes accurately assessing one's strengths and limitations and possessing a well-grounded sense of confidence and optimism" (CASEL 2015).

2. **Self-management**: "The ability to regulate one's emotions, thoughts, and behaviors effectively in different situations. This includes managing stress, controlling impulses, motivating oneself, and setting and working toward achieving personal and academic goals" (CASEL 2015).

3. **Social awareness**: "The ability to take the perspective of and empathize with others from diverse backgrounds and cultures, to understand social and ethical norms for behavior, and to recognize family, school, and community resources and supports" (CASEL 2015).

4. **Relationship skills**: "The ability to establish and maintain healthy and rewarding relationships with diverse individuals and groups. This includes communicating clearly, listening actively, cooperating, resisting inappropriate social pressure, negotiating conflict constructively, and seeking and offering help when needed" (CASEL 2015).

5. **Responsible decision making**: "The ability to make constructive and respectful choices about personal behavior and social interactions based on consideration of ethical standards, safety concerns, social norms, the realistic evaluation of consequences of various actions, and the well-being of self and others" (CASEL 2015).

Finally, in exploring soft skills typologies, it is also worth turning to the *Partnership for 21st Century Leaning* (P21), which aims to "define and illustrate the skills and knowledge students need to succeed in work, life and citizenship" (P21 2015). Given this aim, it is not surprising that much of what the Partnership identifies as key twenty-first century skills aligns with what are commonly referred to as soft skills. The Partnership emphasizes how softer skills must be applied in combination with strong content knowledge, and it demonstrates the need for students to be fluent in creativity and innovation, critical thinking and problem solving, and communication and collaboration. Specifically, they recommend development of: [2]

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[2] This overview of skills emphasized by the Partnership for 21st Century Learning draws heavily on their paper detailing their framework. Learn more and see their original work at www.p21.org.

Creativity and innovation

- Students must be able to think creatively, including the ability to "Use a wide range of idea creation techniques (such as brainstorming); Create new and worthwhile ideas (both incremental and radical concepts); [and] Elaborate, refine, analyze and evaluate their own ideas in order to improve and maximize creative efforts" (P21 2015).

- Students must learn to work creatively with others, including the facility to "Develop, implement and communicate new ideas to others effectively; Be open and responsive to new and diverse perspectives; incorporate group input and feedback into the work; Demonstrate originality and inventiveness in work and understand the real world limits to adopting new ideas; [and] View failure as an opportunity to learn" (P21 2015).

- Students must strive to implement innovations, including acting on "creative ideas to make a tangible and useful contribution to the field in which the innovation will occur" (P21 2015).

Critical thinking and problem solving

- Students need to develop effective reasoning

- Students should be trained in systems thinking—the ability to "analyze how parts of a whole interact with each other to produce overall outcomes in complex systems" (P21 2015).

- Students must learn how to make judgments and decisions, including the capacity to "Effectively analyze and evaluate evidence, arguments, claims and beliefs; Analyze and evaluate major alternative points of view; Synthesize and make connections between information and arguments; Interpret information and draw conclusions based on the best analysis; [and] Reflect critically on learning experiences and processes" (P21 2015).

- Students need to be problem solvers, able to "Solve different kinds of non-familiar problems in both conventional and innovative ways [and] identify and ask significant questions that clarify various points of view and lead to better solutions" (P21 2015).

Communication and collaboration
- Clear communication is also key—encompassing the ability to "Articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts; Listen effectively to decipher meaning, including knowledge, values, attitudes and intentions; Use communication for a range of purposes (e.g. to inform, instruct, motivate and persuade); Utilize multiple media and technologies, and know how to judge their effectiveness a priori as well as assess their impact; [and] Communicate effectively in diverse environments (including multi-lingual)" (P21 2015).
- Relatedly, being capable of collaborating with others is vital. Students should be able to "Demonstrate ability to work effectively and respectfully with diverse teams; Exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal; [and] Assume shared responsibility for collaborative work, and value the individual contributions made by each team member" (P21 2015).

Also highly relevant to the development of soft skills, the Partnership details the importance of skills that support the complex contexts in which we now live our lives and cultivate our careers. The Partnership explores five key components of life and career skills:

Flexibility and adaptability
- Students must posses the ability to "adapt to varied roles, jobs responsibilities, schedules and contexts [and] work effectively in a climate of ambiguity and changing priorities" (P21 2015).
- Today's students require flexibility, such as the capacity to "Incorporate feedback effectively; Deal positively with praise, setbacks and criticism; [and] Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments" (P21 2015).

Initiative and self-direction

- Managing one's time and goals is vital in today's world, including the capacity to "Set goals with tangible and intangible success criteria; Balance tactical (short-term) and strategic (long-term) goals; [and] Utilize time and manage workload efficiently" (P21 2015).

- In addition to collaboration, the ability to work independently—to "monitor, define, prioritize and complete tasks without direct oversight"—is paramount (P21 2015).

- Relatedly, learners must be "self-directed." That is, it's become fundamental to "Go beyond basic mastery of skills and/or curriculum to explore and expand one's own learning and opportunities to gain expertise; Demonstrate initiative to advance skill levels towards a professional level; Demonstrate commitment to learning as a lifelong process; [and] Reflect critically on past experiences in order to inform future progress" (P21 2015).

Social and cross-cultural skills

- The ability to interact effectively with others is key—knowing "when it is appropriate to listen and when to speak," and how to conduct themselves in a respectable, professional manner" (P21 2015).

- Working well in diverse teams is also vital, including the capacity to "Respect cultural differences and work effectively with people from a range of social and cultural backgrounds; Respond open-mindedly to different ideas and values; [and] Leverage social and cultural differences to create new ideas and increase both innovation and quality of work" (P21 2015).

Productivity and accountability

- Students must learn to manage projects by setting and meeting goals, "even in the face of obstacles and competing pressures," and prioritizing, planning and managing "work to achieve the intended result" (P21 2015).

- Students must be able to produce results, including the ability to "Work positively and ethically; Manage time and projects effectively; Multi-task; Participate

actively, as well as be reliable and punctual; Present oneself professionally and with proper etiquette; Collaborate and cooperate effectively with teams; Respect and appreciate team diversity; [and] Be accountable for results" (P21 2015).

Leadership and responsibility
- Students need to learn how to guide and lead others—to "Use interpersonal and problem-solving skills to influence and guide others toward a goal; Leverage strengths of others to accomplish a common goal; Inspire others to reach their very best via example and selflessness; [and] Demonstrate integrity and ethical behavior in using influence and power" (P21 2015).
- It's also key for students to know how to be responsible to others—that is, to "Act responsibly with the interests of the larger community in mind" (P21 2015).

Thus, an array of entities—from academics to experts on the modern economy—have identified key sets of soft skills. Similarities across these typologies are clear, while differences emphasize just how nebulous definitions of soft skills still are. The next section the paper turns to what employers and experts identify as particular gaps in soft skills—and what research says about which soft skills predict success in school, work, and life.

Part II: Soft skills matter

"Eighty percent of success is showing up."
Woody Allen

Employers and experts identify gaps

One reason soft skills have gained interest in recent years is that employers are increasingly highlighting employee shortcomings that do not necessarily pertain to academic training.[3]

For example, the Manufacturing Institute conducted an employer survey in 2011 that identified "inadequate **problem-solving** skills" as employers' leading insufficiency among manufacturing employees (Kiviat 2012). The third greatest deficiency employers identified was "inadequate basic employability skills (**attendance, timeliness, work ethic**, etc.)" (ibid).

Likewise, a quantitative and qualitative inquiry out of the Brookings Institution focused on unemployment among young adults in the Chicago and Louisville areas found that "While many firms appreciate the **flexibility, energy**, and tech-savviness of younger workers, they identify academic and soft skills, **dependability**, and **ability to fit in**to the workplace culture as both fundamental requirements and pervasive weaknesses among younger workers" (Ross et al 2015).

An online study of approximately 2000 18-24 year-old students and 1000 hiring managers ("The Student Skill Index") identified "large gaps between students' perception of their level of preparation and employers' perception. For example, a far greater number of students saw themselves as very capable in the areas of **prioritizing** work, **organization**al skills and **leading** a group than did hiring managers" (Tugend 2014).

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[3] Note that soft skills mentioned throughout this section are bolded; bolding is not original to quotations but added for emphasis.

Even very basic things like **grooming, communication**, and **manners** were identified as shortcomings (ibid).

One reason employers may be identifying inadequate soft skills may actually be that today's employees often feel overqualified for their first jobs (Tugend 2014). "When employers can tell new employees are not excited by the work—they're not **going above and beyond** to learn about their role and exceed expectations—they are dissatisfied with employees, and a bad recommendation is not a strong path to a more interesting role (ibid).

Vicky Oliver, career development author and job interview consultant, summarizes this issue well by describing how things as simple as employer **dress codes** are "hugely important. They're a sign of **respect** for the [work]place. If you're violating them, you're saying 'I don't respect the culture'" (quoted in Tugend 2014). Oliver encourages students to find ways to make their work interesting to them—e.g., for an entry marketing role, "learn about this company's marketing and advertising. During the downtime, ask about floor design, customer satisfaction metrics or employee retention. Show your supervisor that you're interested in the business" (ibid). Oliver also mentions that "I always think it's a good idea to check in with a supervisor during a calm moment and **solicit feedback**" (ibid).

It appears that entry-level employees do tend to fill these gaps through experience on the job. In fact, two-thirds of Americans working for minimum-wage rise above minimum-wage earnings within a year—and James Sherk of the Heritage Foundation argues that this is in part because "minimum-wage jobs teach these workers valuable employment skills, such as being a **dependable** employee, **accepting direction** from a supervisor, and **working constructively with coworkers and customers**. Employers highly value these 'soft skills,' and workers must acquire them before they can advance to higher-paying positions" (Sherk 2014). Following this line of thinking, if students were to develop these kinds of soft skills before even entering the labor market, they would be better equipped

for more advanced work sooner—perhaps earning the chance to skip the minimum-wage "apprenticeship" in soft skills (as Sherk describes it).

Soft skills deficits may be exaggerated by trends encouraging students to study "hard" fields like science, technology, engineering, and mathematics, rather than "softer" humanities and arts. As Kiviat (2012) describes: "In many cases, the sorts of 'skills' employers want – **problem-solving, creativity** – demand better thinking and communication, the types of abilities one picks up in English, history, and arts classes. Yet by drawing a direct line from coursework to jobs, these are exactly the areas of curriculum that get tossed aside for more industry-specific concerns."

Along similar lines, in response to the question "What kinds of skills can help young people transition into a rapidly changing work force?" Jan Muehlfiet, Chairman of Microsoft Europe, responded: "The essentials are **flexibility**, the ability to do **lifelong learning** and soft skills, which are not taught in schools today. Outside of school, young people are exposed to globalization. They are connected via Skype and other social networks, but school is mainly still about chalk and blackboards. There is a huge difference between what's learned in schools today and the reality of the jobs students can expect…Young people today will change jobs an average of 10 times in their life. The new generation really needs to be ready to adapt to changes" (Appel 2012).

Harvard education specialist Tony Wagner underscores this essential point: "because knowledge is available on every Internet-connective device, what you know matters far less than what you can do with what you know. The capacity to **innovate**—the ability to solve problems **creative**ly or bring new possibilities to life—and skills like **critical thinking, communication** and **collaboration** are far more important than academic knowledge" (Wagner quoted in Friedman 2013).

Yet technical skills and soft skills complement each other beautifully. Lawrence Katz, a Harvard labor economist, argues that "the economic return to pure technical skills has flattened, and the highest return now goes to those who combine soft skills — excellence

at **communicating** and **working with people** — with technical skills" (Kristof 2015). He explains: "I think a humanities major who also did a lot of computer science, economics, psychology, or other sciences can be quite valuable and have great career flexibility, but you need both, in my view, to maximize your potential. And an economics major or computer science major or biology or engineering or physics major who takes serious courses in the humanities and history also will be a much more valuable scientist, financial professional, economist, or entrepreneur" (Katz quoted in Kristof 2015).

Taking an international perspective on gaps in soft skills, Randolph (2014) argues: "Perhaps our math scores on the PISA [Program for International Student Assessment] tests are lower than that of Singapore, but to reduce human endeavor to a math score is just as faulty as reducing our achievements to an SAT score or to the place we go to university. We need to broaden our approaches to conceptualizing and measuring human endeavor in all its richness. Moreover,   if you ask the question, Why does Singapore so dramatically outperform the US in math, you might come around to the idea that character strengths like **self-control** and **perseverance** may be cultivated more intentionally, and more successfully, in cultures other than ours… If we focused on the development of character skills as much as we focus on the development of scientific, programming or literary skills, I believe we would live in a much better world. It is not an either/or proposition – we need both" (Randolph 2014).

Also with an eye to international competitiveness, David Audretsch of the CATO Institute argues that soft skills are not merely important for individual's success in the American economy, but they must also become a vital component of what America offers to the world economy. He cites data indicating that America may be loosing ground when it comes it international entrepreneurship, but he believes that America's competitive role can be maintained with an eye to developing stronger soft skills: "Americans need to be equipped with the attitudes, orientation, skills, and competencies to go out in to the world to discover, create, and act upon those opportunities. This involves acquiring the so-called soft skills of **cultural and language competencies** and feeling at home not just at home by also in other countries and cultures" (Audretsch 2014).

Indeed, Atamian and Mansouri (2013), from the University of Texas and Texas Tech University respectively, also emphasize how "**social intelligence, communication, collaboration**, and **adaptive thinking** are among the skills most associated with career success in many professions." According to employers and experts on our changing economy, soft skills matter.

Soft skills predict success

Turning to research studying whether and how soft skills make a difference, the conclusion is much the same: *soft skills matter*. Though the nascent nature of much of this research also suggests the need for many more studies to fully define and understand the mechanisms behind soft skills.

Nevertheless, characteristics such as **self-restraint, persistence**, and **self-awareness** "might actually be better predictors of a person's life trajectory than standard academic measures. A 2011 study using data collected on 17,000 British infants followed over 50 years found that a child's level of mental well-being correlated strongly with future success. Similar studies have found that kids who develop these skills are not only more likely to do well at work but also to have longer marriages and to suffer less from depression and anxiety. Some evidence even shows that they will be physically healthier" (Kahn 2013).

Likewise, Mark Greenberg of Penn State University described how "Everybody said, Oh, It's how kids achieve academically that will predict their adult employment, and health, and everything else…And then it turned out that for both employment and health outcomes, academic achievement actually predicted less than these other factors" (Kahn 2013).

Similarly, Richard Davidson from the University of Wisconsin at Madison explains that "because social-emotional training develops the prefrontal cortex, it can also enhance academically important skills like **impulse control, abstract reasoning, long-term planning** and **working memory**" (Kahn 2013). In fact, "a 2011 meta-analysis found that K-12 students who received social-emotional instruction scored an average of 11 percentile points higher on standardized achievement tests. A similar study found a nearly 20 percent decrease in violent or delinquent behavior" (ibid).

As Marc Bracket of Yale University explains, "Something we now know, from doing dozens of studies, is that emotions can either enhance or hinder your ability to learn…They affect our attention and our memory. If you're very anxious about something, or agitated, how well can you focus on what's being taught?" (Bracket quoted in Kahn 2013). Bracket believes that teaching children about emotions is vital: "It's like saying that a child doesn't need to study English because she talks with her parents at home…Emotional skills are the same. A teacher might say, 'Calm down!'—but how exactly do you calm down when you're feeling anxious? Where do you learn the skills to manage those feelings?" (ibid).

Importantly, the goal of teaching soft skills is not necessarily to override negative emotions, but rather to help students **understand and channel their feelings** most effectively. When well-managed, negative emotions can even be valuable for some tasks: "Studies have shown that people in a slightly sad mood are better at analyzing or editing a written document (they focus better on details), while people who are slightly angry are better able to discriminate between weak and strong arguments" (Kahn 2013).

Expanding on these conclusions, Angela Duckworth from the University of Pennsylvania studies soft skills that predict success in life. Her work focuses in on two key traits: "**grit**—the tendency to sustain interest in and effort toward long-term goals—and **self-control**—the voluntary regulation of behavioral, emotional, and attention impulses. A major difference between the two qualities is that grit equips individuals to pursue especially challenging aims over years and even decades, while self-control operates at a

more micro timescale in the battle against what could be referred to as 'hourly temptations.'…[Duckworth and colleagues have] found that these traits predict objectively measured success outcomes, even when controlling for cognitive ability" (Barkhorn 2013). Because the quality of this research is so high, its findings are particularly worth emphasizing.

Likewise, Paul Tough's recent book "How Children Succeed: Grit, Curiosity, and the Hidden Power of Character" has garnered great interest in the popular media. He makes a compelling case that soft skills including **persistence, self-control, curiosity, conscientiousness, grit** and **self-confidence** matter more than strictly academic abilities in achieving success. Tough explores in detail how a disadvantaged youth can undercut soft skills; he writes "The part of the brain most affected by early stress is the prefrontal cortex, which is critical in self-regulatory activities of all kinds, both emotional and cognitive. As a result, children who grow up in stressful environments generally find it harder to **concentrate**, harder to sit still, harder to **rebound** from disappointments and harder to **follow directions**. All that has a direct effect on their performance in school. When you're overwhelmed by uncontrollable impulses and distracted by negative feelings, it's hard to learn the alphabet" (Tough quoted in Paul 2012).

Furthermore, Tough argues that "character is not something you have to learn as a small child, or are born with, but can be instilled even in teenagers who have had extraordinarily difficult lives and had no previous grounding in these traits" (Nocera 2012). This point is particularly important: part of the great value of understanding soft skills lies in the fact they may be shaped across one's education, providing students with second (and third, and fourth) chances to succeed in school, even if their cognitive skills have be more firmly set.

Other research points to the possibility that soft skills may help to explain gender gaps in education. As Segal (2014) writes: "Adolescent girls are better behaved and more **self-disciplined** than adolescent boys. They also place a higher value on the future. These

gaps can account for the fact that girls have higher GPA than boys and higher college enrollment, again controlling for cognitive skills" (Segal 2014).

Likewise, Harvard economist Brian Jacob found that "while boys and girls scored similarly on cognitive tests, girls were better at **paying attention** in class, **keeping track** of homework, and **collaborating** with classmates." (Hymowitz 2011). Duckworth and Seligman (2006) demonstrated that part of the reason girls tend to earn higher grades than boys is because girls are more **self-disciplined** than boys. According to self-reports as well as teacher and parent ratings, girls scored higher for **delay of gratification** than did boys, and their higher GPAs were at least partly attributable to their greater self-discipline.

That said, "A different kind of non-cognitive skill may play a decisive role in explaining both the gender gap in earnings and the scarcity of women in leadership positions. To gain leadership positions, whether in the economic or the political spheres, individuals need to engage in a competition with others. So gender differences in levels of **competitiveness** may help explain the scarcity of women in leadership position and, as far as these jobs are very lucrative, this may also contribute to increasing the gender gap in earnings. Muriel Niederle and Lise Vesterlund have used lab experiments to investigate whether there are gender differences in competitiveness. They find that when given the choice, women were less likely than men to choose a tournament compensation scheme over a 'piece rate' compensation scheme. Beliefs about relative performance and risk help explain the different choices, but about 40% of the initial gender gap in tournament entry can be attributed to women's aversion to perform in a competition. Even among high-ability individuals, there remains a substantial gender gap" (ibid).

Turning from individual studies to the Big Five typology presented in the first section (to recap, they are Openness, Conscientiousness, Extraversion, Agreeableness, and Emotional Stability/Neuroticism), the Big Five have also been shown to mean a great deal in an array of studies.

Of the Big Five, **Conscientiousness** best predicts overall achievement and attainment. In fact, it matches the SAT in predicting college grades. **Openness to Experience** also predicts some measures of education including the difficulty of courses students choose to take and their attendance (see Almlund et al 2011).

Almlund, Duckworth, Heckman, and Kautz (2011) present many more fine tuned findings in their thorough treatment of the Big Five as well. Most relevant to the present paper (bolding added, for emphasis):

"Intrinsic interest in ideas and learning may affect educational attainment not measured by total years of schooling such as the student's difficulty with classes and attendance. Consistent with this supposition, a longitudinal study of talented high school students showed that when controlling for PSAT score, **students who expressed more intrinsic motivation in learning took more difficult math courses** one [,two, and three] year[s] later...but did not have higher grades in a standardized set of courses" (see Almlund et al 2011).

"Likewise, of the Big Five, **Openness to Experience is most consistently associated with fewer contemporaneously measured school absences** in seventh [and twelfth] grade...Still, interest in learning is not the whole story. Using prospective data, Lleras [2008] finds that controlling for cognitive ability, three Conscientious behaviors (**completing homework, working hard, arriving promptly to class) in tenth grade predicted educational attainment ten years later**" (ibid).

"Several prospective studies have shown that facets of Conscientiousness (e.g., self-control, distractibility) and facets of Neuroticism (e.g., internal locus of control) predict successful graduation from high school...When controlling for basic demographics, a[n] **increase in locus of control is associated with a[n] increase in graduating from high school**" (ibid).

"A meta-analysis of Big Five personality traits and course grades in primary, secondary, and post-secondary education [found] **associations between grades and**

Conscientiousness are almost as large as those between grades and cognitive ability" (ibid).

"In a sample of American middle school students, **self- control predicts report card grades**, controlling for both general intelligence and baseline grades…Likewise, changes in self-control predict subsequent changes in report card grades" (ibid).

"Overall, the empirical evidence suggests that Conscientiousness may be as predictive as cognitive ability in predicting and possibly causing higher course grades…There is evidence that **the association between Conscientiousness and course grades is mediated by positive study habits and attitudes, effort, and prosocial behavior in the classroom**" (ibid).

"Numerous studies and meta- analyses have found that **Conscientiousness is associated with job performance and wages**" (ibid).

Research suggests that "**locus of control and self-esteem predict adult earnings to a similar degree as cognitive ability**. However, the effects vary across educational levels. In general, noncognitive ability (personality) affects wages to a similar degree across all education levels, whereas cognitive ability tends to have little effect for GED recipients, high school dropouts, and college dropouts" (ibid).

In the first section of the paper another typology of soft skills was also presented, this time drawing on a literature review out of the University of Chicago, conducted by Farrington, Roderick, Allensworth, Nagaoka, Keyes, Johnson, and Beechum (2012). The authors identified five key components of soft skills: academic behaviors, academic perseverance, academic mindsets, learning strategies, and social skills.

Their report also offered a specific look at how soft skills matter for college, particularly at the time of transition into college. They describe how college not only brings new challenges with its more sophisticated content knowledge, it also calls for new **learning**

strategies and **mindsets**. To succeed in college, students must develop "their beliefs that ability and competence grow with effort; the notion that they can be successful in college coursework; and the conviction that courses are relevant and valuable" (Farrington et al 2012).

However, the report points out limitations in soft skills research to date as well: put simply, there is only limited research into which components of soft skills matter most for which outcomes, whether they are amenable to change, and how they might be influenced by different college contexts (Farrington et al 2012). But the researchers are clear that these limitations only underscore the great importance of more research into which soft skills matter most when and for whom, and how they can be shaped by distinct learning environments (ibid).

The researchers conclude (bolding added, for emphasis):

> "If we are truly to be a nation of college-goers, we must not only raise the bar on what students learn but we must also leverage an understanding of noncognitive factors to teach adolescents how to become effective learners…
>
> Academic behaviors and perseverance reflect the level of students' engagement in their work—the degree to which they are **coming to class, completing assignments on time, participating, studying, trying to master material, taking time to do challenging work,** and **sticking with a task until it is done well**. Students who do these things get higher grades, and students who do not do them struggle academically…
>
> Academic mindsets strongly influence the degree to which students engage in academic behaviors, persevere at difficult tasks, and employ available learning strategies. In turn, the use of appropriate learning strategies strongly influences the quality and effectiveness of academic behaviors and helps students stick with a task and persevere despite obstacles. Thus, **building students' academic mindsets and**

teaching them appropriate learning strategies are the best ways to improve academic behaviors and perseverance, which leads to better grades…

Our research framework of noncognitive factors sheds a different light on the phenomenon of students who exhibit poor academic behaviors. Perhaps **what looks like a lack of caring or persevering could be a student indicating that she is convinced that she cannot do the work**. Another student may not have effective strategies for engaging in classroom tasks. Students who cannot see the relevance of a class may have difficulty finding a way to engage in the work. Others may withdraw from participating in classroom activities because they are afraid of public failure or feel ostracized by their peers. In our own research, we find that the vast majority of students want to succeed in school, but many obstacles get in the way of their putting forth effort. **Developing adolescents as learners requires paying attention to students' mindsets, skills, strategies, and behaviors as well as their content knowledge and academic skills**...

The essential question is not how to change students to improve their behavior but rather how to create contexts that better support students in developing critical attitudes and learning strategies necessary for their academic success..." (Farrington et al 2012).

It is this final question—how to create learning environments or "contexts" in which valuable soft skills can be developed—that is covered in the final section of the present paper.

Part III: How to develop soft skills

Research into whether and how soft skills matter is convincing, though there is still much to be learned. However, the fact that soft skills are flexible into adulthood is yet another reason to seriously consider ways to strengthen them to benefit life outcomes. As James Heckman (2014) from the University of Chicago put it, "successful adolescent interventions largely operate through promoting character skills, since cognitive skills tend to be solidified before adolescence."[4]

International research verifies our ability to teach soft skills well in American schools. An international comparison of public schools demonstrated that while American students lag in performance compared to students in many countries (as measured by the Program for International Student Assessment, or PISA), "there are individual U.S. schools that are literally outperforming every country in the world" (John Schnur, quoted in Friedman 2013). And these aren't just the wealthiest schools—these are nonselective schools serving middleclass student bodies. The study found that the best schools "have strong fundamentals and cultures that believe anything is possible with any student: They 'work hard to choose strong teachers with good content knowledge and dedication to continuous improvement.' They are 'data-driven and transparent, not only around learning outcomes, but also around soft skills like completing work on time, resilience, perseverance—and punctuality.' And they promote 'the active engagement of parents and families" (ibid).

Almlund, Duckworth, Heckman, and Kautz (2011) detail much of the most convincing research in fostering soft skills in their report, concluding that "the evidence is strong that personality changes over the life cycle." They cite all of the following:

> "Behncke (2009) provides some experimental evidence that short-term exogenous shocks to non-cognitive skills affect test performance. She finds **giving words of**

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[4] Note that throughout this section strategies for strengthening soft skills are bolded; bolding is not original to quotations but added for emphasis.

encouragement, an intervention that might boost short-term self-efficacy or self-esteem, before a diagnostic math test was associated with 2.5% higher scores amongst all students…and 8% higher scores amongst those with self-reported difficulties with math…The result suggests that non-cognitive skills can be shaped, even in the very short-term" (Almlund et al 2011).

"Martins (2010) analyzes data from EPSIS, a program developed to improve student achievement of 13-15 year- olds in Portugal by increasing motivation, self-esteem, and study skills. The program consists of **one-on-one meetings** with a trained staff member or **meetings in small groups.** The intervention was **tailored to each participant's individual skill deficit**. Overall, the program was successful, cost-effectively decreasing grade retention [i.e., being held back a grade] by 10 percentage points" (ibid).

"Gottschalk (2005) shows evidence from a randomized control trial that working at a job can improve locus of control. He uses data from the Self-Sufficiency Project (SSP) in which some welfare recipients were randomly offered substantial subsidies to work. The subsidy more than doubled the earnings of a minimum wage worker, and people in the experiment group worked about 1/3 more hours than those in the control group. After 36 months, those who received the subsidy were more likely to have an improved locus of control" (ibid). Extrapolating from this, **programs that put students in real-life work roles** could benefit soft skills.

In a similar vein to giving students real-life work experience, another promising avenue may be expanding students' opportunities for volunteer work. Shirley Sagawa (2013) argues for the value of volunteer roles for building soft skills among American employees while simultaneously filling needed roles in the economy: "Individuals who face barriers in the job market often benefit from the work experience that service provides. **Service experiences that offer training and supervision, as well as mentoring to support the development of soft skills such as punctuality or appropriate workplace attire and behavior**, provide first jobs or transitional opportunities to many individuals that can lead to future careers. YouthBuild, which

engages youth in service coupled with education and job training, and VetCorps, which places veterans in institutions of higher education to help with veteran student retention, are examples of bridge-building programs."

In another vein, a recent study (Paunesku et al 2015) implemented growth-mind-set and sense-of-purpose interventions to 1,594 students in 13 geographically diverse high schools. Unlike previous interventions which have been delivered in-person to smaller groups, these were delivered online, lasting approximately 45-minutes, to test the scalability of such interventions. To provide a bit more background, these two interventions will be described briefly:

A growth-mind-set targets students' beliefs about whether they can learn and grow their intelligence: "Growth-mind-set interventions **convey that intelligence can grow when students work hard on challenging tasks—and thus that struggle is an opportunity for growth, not a sign that a student is incapable of learning**." In this intervention, "Students read an article describing the brain's ability to grow and reorganize itself as a consequence of hard work and good strategies on challenging tasks." Some students were asked to write about these findings in their own words. Others "read about a hypothetical student who was becoming discouraged and beginning to think of himself as not smart enough to do well in school. Participating students were asked to use what they had read to advise this student." A control group of students performed similar writing activities related to the brain, but without information about brain malleability.

Turning to a "sense-of-purpose," this involves students' beliefs about why they should learn: "Sense-of-purpose interventions **encourage students to reflect on how working hard and learning in school can help them accomplish meaningful goals beyond the self, such as contributing to their community or being examples for other people**…Sense-of-purpose interventions can sustain students' motivation when schoolwork is boring or frustrating but foundational to learning." In the sense-of-purpose intervention "students were first asked to write briefly about how they wished the world could be a better place. It went on to say that many students work hard in school because

they want to grow up to 'make a positive impact on the world,' to 'make their families proud,' or to be 'a good example for other people.' Students were then asked to think about their own goals and to write about how learning and working hard in school could help them achieve these goals." Students in the control group also completed writing assignments, but they did not relate to students' sense of purpose.

Both interventions were effective: *even with such a minor investment of time, they significantly raised the grade point averages of students at risk of dropping out of school*.

Many studies bolster the finding that a growth mindset is both open to intervention and a powerful lever for change. As Zinshteyn (2015) put it: "**Rewarding learners on effort rather than accomplishment** stimulates a host of cognitive signals that can have the effect of strengthening their resolve. Tell a student she's smart, and you run the risk of crimping her ambition to tackle more challenging tasks down the road; laud her for the time and energy she expended, and the link between effort and positive outcomes grows stronger." Zinshteyn cites additional research showing that interventions to teach students that our brains are malleable and can grow stronger with exercise (rather than the common misconception that intelligence is fixed) significantly raised students' grades in math (Zinshteyn 2015).

In addition to specific interventions teaching students about a growth mindset, one strategy to encourage students to learn from their mistakes and grow their intelligence—rather than fear making mistakes—is to **base grades more on what students know at the end of a course** rather than on their performance on quizzes throughout a course (Zinshteyn 2015). This allows students to take risks and struggle through challenges earlier in the course. Camille Farrington, from the University of Chicago, is a proponent of this approach. Indeed, "a growing number of education researchers say low early grades shake the confidence of students who are at risk of giving up. The researchers also contend that the low grades punish students who require more time to learn new content because their overall grade average doesn't reflect the knowledge they've actually acquired by the end" (Zinshteyn 2015).

Another avenue worthy of particular attention is online learning, as in the above growth-mindset study example, as increasingly postsecondary students are learning online—a flexible format for those balancing work and family at the same time, but a challenging environment for teaching many soft skills which are based on face-to-face factors like communication skills and teamwork (Myers et al 2014). Myers and colleagues (2014) explored classroom activities designed to develop soft skills that would translate well to online learning. **Process Oriented Guided Inquiry Learning (POGIL) "teaches process skills (such as collaboration and written expression)** as well as content using an inquiry-based approach" (ibid). The basic idea is that students work in groups including, among others, a Manager who "ensures that all team members understand the concepts," a Recorder who "scribes the group's discussions," and a Presenter who "delivers oral reports to the class using the Recorder's notes." All of the students on the team have an independent responsibility, yet depends on the other team members in order to carry their role out well. Myers et al (2014) studied efforts at two universities to employ this kind of teamwork in online courses, using a combination of online forums—from online learning platforms like Blackboard's "Collaborate" to social networks like Facebook groups to blogs. Their initial "qualitative evidence from the student perspective and the teacher perspective indicates that virtual group work can have the same results in developing soft skills [among online students] as face-to-face group work" (Myers et al 2014).

Many organizations have also developed specific approaches to strengthening soft skills. For example, the Character Lab is an organization dedicated to developing soft skills in students to support their educations and broader success in life. Their resources include research and intervention strategies related to the development of all of the following:[5]

> CURIOSITY—or a strong desire to learn or know something. "Evidence suggests that curiosity is separate from intelligence. It's also multi-faceted—one can be

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[5] The following draws heavily on Character Lab Materials available at
https://characterlab.org

intellectually curious, socially curious, or exhibit curiosity related to a specific task. Research also suggests that some aspects of curiosity are related to bravery and social intelligence. A few studies have shown that, regardless of a child's intelligence, intense curiosity can lead to cognitive development and academic improvement."

Curiosity can be inspired by making it ok to say "I don't know" within a classroom—and by admitting when you as a teacher don't know an answer, too. Also by **providing just a bit of information on something new**—enough to spark students' desires to learn more, but enough to inspire deeper interest. **Introducing contradictions** and asking students how we might understand them can inspire curiosity as well—along with **asking open-ended questions** (see https://characterlab.org/resources/curiosity).

GRATITUDE—or an appreciation of benefits we receive from others along with a wish to reciprocate. Gratitude is associated with positive life outcomes, and research has shown it can be sensitive to intervention. **Gratitude may be developed with school or teacher modeling** and through writing prompts (see https://characterlab.org/resources/gratitude).

GRIT—or perseverance and passion for long-term goals. Grit has been shown to be predictive of achievement, particularly in more challenging contexts. **Grit can be cultivated by reflecting on students' own past achievements or sharing the gritty path to success others have taken**, as the challenges others have faced in reaching success are often less evident (see https://characterlab.org/resources/grit).

GROWTH MINDSET—or an understanding that intelligence can be developed. Cultivating a growth mindset has been shown to increase academic achievement and narrow racial/ethnic and gender achievement gaps. **A growth mindset can be fostered by talking about the brain like a muscle, and teaching students to see failure as "not yet,"** e.g., "I'm not good at this *yet*" (see https://characterlab.org/resources/growth-mindset).

OPTIMISM—or being hopeful about and feeling agency over the future. Research shows that optimists "do better in school, exceed predictions on aptitude tests, have better health, are resilient to depression, and possibly live longer. Research also shows that optimistic thinking can be learned." **Optimism can be encouraged by being mindful when giving negative feedback, with particular attention to redirecting towards positive behaviors**, and by helping students to keep their own focus towards the positive (see https://characterlab.org/resources/optimism).

PURPOSE—or being driven by something larger than yourself. "Research shows that having a purpose is correlated with better outcomes in school and may lead to better self-regulation, increased social engagement, and a sense of well-being." **Purpose can be fostered by learning about students' passions and motivations, and connecting learning to students' own goals** (see https://characterlab.org/resources/purpose).

SELF-CONTROL—or aligning your responses with short- and long-term goals. "Self-control predicts academic, personal, health, and economic outcomes." **Self-control can be taught by designing learning environments with minimal distractions, encouraging students to reflect on times they were able to exercise self-control**, and teaching specific calming techniques (see https://characterlab.org/resources/self-control).

SOCIAL/EMOTIONAL INTELLIGENCE—or understanding feeling and using them to inform actions. "Research shows that social/emotional intelligence is positively associated with functioning competently in society, being liked by others, having a stronger support system (friends and family), having healthy relationships, having better mental health, and problem-solving more effectively." **Social/emotional intelligence can be developed through modeling respectful behavior during classroom conflicts, and providing praise in specific ways, e.g., while making eye contact and being authentic** (see https://characterlab.org/resources/social-emotional-intelligence).

ZEST—or approaching life with excitement and energy. "There is a fair bit of research about vitality and extroversion, which are related to zest but not quite the same. One line of research has shown that all people have the ability to act in both extroverted and introverted ways. When people act in a more extroverted way—even introverted people—they can increase their positive affect and well-being." **Zest, or vitality, can be encouraged by modeling enthusiasm and giving students enough agency** (see https://characterlab.org/resources/zest).

The Partnership for 21st Century Learning also explores how best to teach the competencies it identifies as key to the modern economy. The major categories of these competencies were discussed on pages 7-10 in the first section of this paper. The Partnership highlights how effective curriculum and instruction "teaches 21st century skills discretely in the context of key subjects and 21st century interdisciplinary themes; Focuses on providing opportunities for applying 21st century skills across content areas and for a competency-based approach to learning; Enables innovative learning methods that integrate the use of supportive technologies, inquiry- and problem-based approaches and higher order thinking skills; and Encourages the integration of community resources beyond school walls."

To illustrate just what 21st century learning looks like, the Partnership has identified schools that excel in teaching 21st century skills in a variety of ways. They highlight five key characteristics evident across exceptional schools:

- STUDENT AGENCY: "School supports student aspirations and provides opportunities for building agency; Learning and achievement are valued and expected by students; Goal setting and other intra-personal skills, e.g., metacognition, persistence, grit; **Students build awareness of opportunities, role models and exposure to college, careers and citizenship**; Autonomy is paired with responsibility; Respect for others and other inter-personal skills, e.g., collaboration, communication."

- DISTRIBUTED LEADERSHIP: "**Principal owns and communicates vision; Superintendent and district support vision; Contribution to the vision, execution and ownership are distributed through faculty, students and community** and is evident in their interactions; Continuous engagement and assessment of community needs; Systemic coherence across the school and schools in the district."

- CLIMATE OF ACHIEVEMENT: "Creation of a palpable school climate of success, recognition and high expectations; Training and supporting effective teachers; **Recognition for positive results; Respectful and safe interactions and attention to conflict resolution as a learning opportunity**; Aligning programs and assessments to 21st Century themes and framework, thereby underscoring their importance while strengthening performance."

- ENGAGED COMMUNITY: "Agreement of the school board on the vision for the school; Use of evaluation and performance evidence to sustain resources and to promote conversation with stakeholders; **Active and frequent engagement with local businesses and other partners in activities such as internships, service learning, job-site visits, project/problem based learning**, etc; Engagement with higher education and other partners in activities like investigating research-based interventions and programs, participation in dual credit community college courses and so on; Teachers with professional backgrounds and experience often gained in the local community."

- APPLICATION OF EVIDENCE AND RESEARCH: "while the approaches across exemplar schools are diverse, **within a given school, coherence is the watchword; to the mission, practice and in everything they do**."

One can search the exemplary schools the Partnership has identified to learn in much more detail at http://www.p21.org/exemplar-program-case-studies. Schools can be searched by level (e.g., high schools, middle schools), location (i.e., state), and particular areas of excellence (e.g., collaboration, communication, creativity, critical thinking).

The Partnership also provides a roadmap for developing a plan to strengthen your school at http://www.roadmap21.org/ and numerous other tools for implementing new learning environments at http://www.p21.org/our-work/resources/for-educators#LearningEnvironments. This and much more can be learned about the Partnership's research, outlook, and exemplars on their website, at www.p21.org.

Turning to additional centers and organizations that serve to strengthen students' soft skills, a research center at Stanford University—**Project for Education Research That Scales (PERTS)—"partners with schools, colleges, and other organizations to improve student motivation and achievement** on a large scale. In the process, we conduct research that enables us to improve our programs and to expand what is known about academic motivation" (www.perts.net). Relevant to college students, PERTS offers brief online programs to help students think about school and learning in more adaptive ways; PERTS's "College Transition Collaborative" works to reduce demographic gaps in college (https://www.perts.net/ctc); and another program specifically works to motivate students in online learning environments (https://www.perts.net/challenge).

The Hewlett Foundation is also supporting the development of soft skills with its **Deeper Learning Initiative**, **which strives to teach students to apply their learning in the real world**. Alongside strong content learning—from reading to writing to math to science—students are simultaneously taught to "think critically, collaborate, communicate effectively, direct their own learning, and believe in themselves." Examples from over 500 schools across the country are provided on the website http://www.hewlett.org/programs/education/deeper-learning/more-resources.

Another program supporting students in strengthening their soft skills is **EdLeader21, "a national network of school and district leaders focused on integrating the 4Cs (critical thinking, communication, collaboration and creativity) into education**" (http://www.edleader21.com/). They offer educators tools and resources for strengthening

4C learning, opportunities to network and collaborate, and webinars and reading materials to support professional development.

Specific to community colleges, the **Washington state community colleges offer a program for adults returning to school called the I-BEST**—Integrated Basic Education and Skills Training. "These adults have "typically been out of school for a significant amount of time. They often don't have a high school diploma or GED coming into the program, they have lower levels of literacy and math skills, and they're poor…I-BEST began in Washington about 10 years ago when the community college system realized it had too many students who weren't ready for college work and too many students were graduating not ready for the workforce. I-BEST was designed to change that and so far the results are encouraging" (Cardoza 2014).

One of the things I-BEST emphasizes is soft skills, "such as sociability, conscientiousness, and perseverance" (ibid). This can include **talking with students about things like "professional dress (no sweatpants or low-cut blouses, they say), perfume (don't wear too much), and deodorant. They role play common work situations for their students**" (ibid). For example, they'll talk about things like "Keeping your home stuff private and not sharing too much information with people that you work with" or "We tell them when you go on a job interview, you don't tell you boss that you didn't like your previous boss or talk bad about your past job. No one's ever bothered to have that conversation with them," and **talking about the "importance of being punctual, calling in when you're sick, and asking permission if you need to leave early**" (ibid).

Another program specific to community colleges is called **Year Up**. In a recent piece in the *New York Times*, Joe Nocera (2012) wrote that "A man named Gerald Chertavian [who runs Year Up] came by my office not long ago, and, by the time he left, I was filled with renewed appreciation for the potential of community colleges to help stem the decline of the middle class. There are few more urgent tasks." Gerald Chertavian "runs a program, Year Up, which he founded, that makes it possible for poor high school

graduates to land good jobs." Year Up includes 1,400 students across nine cities each year, for whom it teaches marketable skills for middle-skill jobs like computer support: jobs that don't require a bachelor's degree, but for which high school is also not enough (Nocera 2012). It develops "soft skills that the upper-middle-class take for granted, like **how to interact with colleagues in an office setting**" (Nocera 2012). And it requires that students simultaneously enroll at a local community college (ibid). Chertavian has also begun formal affiliation with some community colleges, which will reach many more students than the program can as a standalone (Nocera 2012).

YouthBuild is another program to consider. It "runs 260 programs in 46 states for about 10,000 16- to 24-year-olds. Nearly all of them high school dropouts and poor; 31 percent have a criminal record; and 29 percent are parents" (Kirp 2015). Participants are accepted by lottery, as there are many more applications than available slots, which provides a perfect control group to study the program's effects (i.e., those students who applied but did not participate). The program includes academics, on-the-job-training including summer internships, and around the clock access to teachers and counselors for both schoolwork and personal needs (e.g., accompanying students to court, to get a driver's license, or to write college applications). **The job component of the program is particularly focused on teaching students "the skills that spell success" dependability, perseverance, being a team player, understanding when to walk away from conflict"** (ibid). Among participants, researchers found improved attendance, lower rates of imprisonment, and lower likelihood of death– and "because homicide accounted for fully half of the deaths in their peer group, it's possible that the 'soft skills' they acquired enabled them to avoid possibly deadly situations" (ibid).

Some research also suggests that **historically Black colleges** are boosting minority representation in STEM fields, in part by training students in soft skills, which can make a big difference. Black, Hispanic, and Native American students fill just 10 percent of STEM positions though they comprise 26 percent of the American workforce, so increasing minority representation is an important goal. For example, "at Howard University, introductory engineering courses **emphasize professionalism, focusing on**

the way students present themselves via social media and other places online—ensuring that students don't use email addresses 'like sexylady@gmail.com'" (Ossola 2014). And "like many other institutions these historically black schools place a strong **focus on communication, teaching students that they must be able to articulately present and write about their work in order to be successful** in STEM fields. HBCUs [Historically Black Colleges and Universities] start this training early, sending students to present their research at events such as the Annual Biomedical Research Conference for Minority Students and the meeting of the National Society of Black Engineers" (ibid).

Finally, the **Opportunity Network** aims to increase all students' potential to graduate from college ready for careers by **helping students to build valuable networks by providing access to classroom career speakers, internship hosts, networking leaders, college application tutors, and advisors**. Jessica Pliska, founder and executive director of the Opportunity Network, made the case for supporting disadvantaged students in developing their soft skills in a letter to the *New York Times* editor (2013). Her words drive home just how vital this endeavor is to increasing opportunity and creating equality in our economy. In closing:

> "If getting a dream job requires networks, then we need to teach skills to build those relationships alongside courses in engineering, finance and marketing.
>
> High schools and colleges should **equip students with the tools for creating connections:** how to write a proper thank-you note; how to ask for an informational interview (or even know what one is); and how to pay it forward by giving back to others in their network.
>
> If whom you know is as important as what you know, then we need to **help young people of all backgrounds meet people who can help them in their careers**. And all students need access to internships, even those who can't afford to take an unpaid job.

Many upper-and middle-class children learn these 'soft skills' around the family dinner table. Many start professional networks through their families and friends. But other bright, ambitious students, especially those from low-income homes or first-generation Americans, miss out on essential career opportunities because of their backgrounds.

It is unfair to them. And in an increasingly competitive global economy, we can't afford to lose high-potential employees simply because we don't know them yet" (Pliska 2013).

With these strategies to strengthen soft skills broadly applied, the academic and employment futures of all students may flourish.

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