

## Soft Skills and Productivity in France

Maria Guadalupe et Bryan Ng<sup>(\*)</sup>

Soft skills, or non-cognitive/social-behavioral skills, are characterized by the World Economic Forum to encompass the following traits: complex problem solving, critical thinking, creativity, people management, coordination, emotional intelligence, judgement and decision making, service orientation, negotiation, and cognitive flexibility (Desjardins, 2019). Measures of soft skills also often include the Big Five personality traits, which consist of: Openness to Experience, Conscientiousness, Extraversion, Agreeableness, and Neuroticism.

The importance of, and focus on soft skills has been increasing in recent years, to the point that 60% of employers in France stated that social-behavioral competencies (ability to work in teams, capacity to organize, and adaptability) are more important than technical competencies (Pôle Emploi, 2018). Education specialists have also long argued that soft skills are key to allow student learning and development of hard/analytical skills, and that both sets of skills are key to leading successful lives. Yet, France is behind other developed economies in its stock of soft skills both among children and adults. France has also seen a marked slowdown in its productivity growth in the last two decades. Establishing the link between soft skills endowments and aggregate productivity is difficult because of the lack of good data on soft skills that can be tracked over time. This Focus brings together existing work and new data analyses to assess how much France could benefit from a concerted effort to improve the soft skills of its population, by providing the necessary inputs that the economy of the future requires.

We begin by showing the extent of the soft skills gap between France and other countries (section 1). Then, we provide new evidence on the growing importance of soft skills (and in particular, social skills) in the French economy since 1982: we show that the share of jobs that require high social skills has been increasing over time, while those that require low social skills have been stagnating or declining (section 2). We then show that within France, while aggregate productivity stagnated or declined on average, sectors that utilised social skills and math skills heavily saw a significant increase in productivity (section 3). We also report recent micro-level evidence on firms that shows that soft skills training causally leads to higher firm productivity and performance. Next, we turn to micro-level data on French employees (section 4): since wages should reflect the marginal product of labor and hence, its contribution to productivity, we estimate the returns to soft skills in France and find that they are as large as those for numeracy skills.

---

*This Focus is published under the responsibility of its authors under their sole responsibility.*

(\*) INSEAD, Member of the CAE; INSEAD.

The collected evidence shows the importance of soft skills for individual wages, firm productivity, and aggregate productivity. Given this, it renders the French soft skills gap even more alarming. Section 5 concludes with a discussion of selected interventions that have been shown to work for children and adults, and a call to seriously consider a significant reform of pedagogical practices in French schools, so that they adopt practices that foster teamwork, personalization of education, and focus on non-cognitive dimensions of human development. These have been shown to work and to be essential to prepare children for the future. We end with a call to measure systematically soft skills in schools so that France can track and accelerate their progress in developing soft skills, and become a pioneer in developing the necessary skills that will make its citizens, companies and the aggregate economy thrive.

## 1. The supply of soft skills in France

The lack of soft skills for both school age children and adults in France relative to other OECD countries has been documented in several different surveys and analyses. The OECD PISA<sup>(1)</sup> survey finds that French students are less persevering, less efficient in problem solving, and exhibit lower levels of internal locus of control relative to U.S., Germany, and Northern Europe. Algan *et al.* (2018) establishes that the French education system fails to develop collectiveness and collaboration amongst students, where indicators assessing the extent of collaborative problem-solving show that France lies 6 points below the OECD average, whereas U.S. and Germany lie 20 and 25 points above the OECD average, respectively.

This deficit in soft skills is concerning as it has negative implications on the accumulation of human capital, as attributes such as conscientiousness and intellectual curiosity have been found to be strong predictors of academic success (Heckman & Kautz, 2012).

In relation to adults, the OECD Skills for Jobs database highlights that France has a skills deficit vis-à-vis the U.S. in the following sub-dimensions of soft skills: instructing, coordination, social perceptiveness, negotiation, complex problem solving, judgement and decision making, and resource management (OECD, 2017). The World Values Survey shows that, relative to U.S., Germany, and Northern European countries, French adults have a higher level of distrust, are less optimistic, and more likely to believe that events that happen to them are beyond their control (Algan *et al.*, 2018).

Here, we complement the existing evidence by estimating the soft skills gap of France relative to other countries with available soft skills measures using the OECD Programme for the International Assessment of Adult Competencies (PIAAC) data.<sup>(2)</sup> The proxy for soft skills using PIAAC is constructed as the normalized composite factor of the following traits: planning, influencing, problem solving, task discretion (self-efficacy) and readiness to learn.<sup>(3)</sup> The advantage of this dataset is that it aims to be representative across countries and hence, we can compare the outcomes. The downside is that some of these variables conflate the way tasks are designed at work with the actual innate soft skills of a person. Figure 1 shows that the average level of soft skills in France based on this measure, is among the lowest of all countries, just ahead of Germany and Japan, and well below the U.S., U.K, or Denmark who rank among the highest. In addition, this gap relative to other countries is present for the less educated as much as for the highly educated. Furthermore, this gap in soft skills in France between those who are tertiary educated and those with less than tertiary education, is among the largest in France relative to other countries.

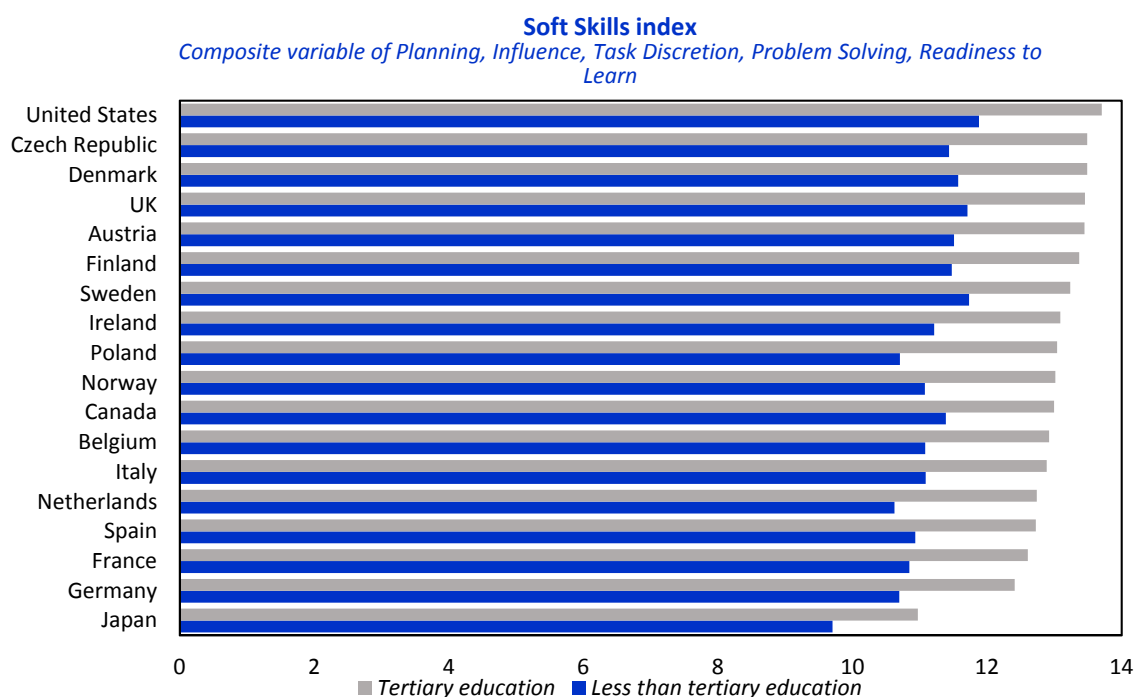
---

(1) Programme for International Student Assessment.

(2) PIAAC measures adults' proficiency in literacy, numeracy, and problem-solving skills, providing data across 40 countries on how adults use their skills at home, at work and in the wider community.

(3) Social skills is the principal component factor of: task discretion (extent that one is able to choose the sequence of tasks in the job, how one does their work, the speed of work, and working hours in the job); influencing (whether the job involves teaching people, making presentations, advising people, influencing, and negotiating); planning (the extent that the jobs requires planning own activities, planning the activities of others, organizing own time); problem solving (how frequent one faces problems at work that requires more than 30 minutes to solve); and readiness to learn (extent to which one is able to relate new ideas into life, likes learning new things, likes to get to the bottom of difficult things, figure out how different idea fit together, and look for additional information).

**Figure 1. Average level of soft skills by country and level of education**



*Reading:* Country aggregate is the weighted mean of individual responses, weighted by the population weight (SPFWT0).

*Source:* Survey of Adult Skills (PIAAC), OECD.

In conclusion, all evidence points to the fact that France has a significant comparative soft skills deficit, across a range of measures, relative to other developed economies. This is true for children as well as adults, and across all levels of education, implying that the lack of soft skills is not limited to certain education groups, but rather, a pervasive feature of the French education system and skill endowments across generations.<sup>(4)</sup>

## 2. The growing importance of social skills and math/analytical skills in the French economy

In this section, we document the growing importance of soft skills in France since the 1980s, their relationship to mathematical/analytical skill requirements by the French economy, and their link to productivity growth. For data availability reasons, we focus on one dimension of soft skills, namely “social skills”. Social skills are defined by the American Psychological Association as a set of learned abilities enabling an individual to interact appropriately in a given social context, where commonly identified social skills include assertiveness, coping, communication, interpersonal problem solving, and the ability to regulate one’s cognitions, feelings, and behavior.

To analyse the evolution of social skills used in the labor force from 1982 to 2020, we use employment stock data from the French labor force surveys (LFS) and data from the Occupational Information Network (O\*NET),<sup>(5)</sup> which measures the skill content of occupations in the U.S. economy. The occupational classifications adopted in LFS and O\*NET differ, where the LFS uses the French “Professions et Catégories Socioprofessionnelles” (PCS), while O\*NET adopts the Standard Occupational Classification (SOC). To harmonize the occupational classification across both datasets, we apply the International Standard Classification of Occupations (ISCO) as the unifying occupational classification, adopting a crosswalk

(4) For a discussion of the deficiencies of the formal educational system in providing these skills in France see Algan *et al.* (2018).

(5) The O\*NET survey is administered by the U.S. Department of Labor to a random sample of U.S. workers in each occupation, asking questions relating to the abilities, skills, knowledge, and work activities required in an occupation.

developed by Hardy *et al.* (2018) to map occupational data from SOC to ISCO, and a conversion table developed by Falcon (2015) to map PCS to ISCO. Following the procedure adopted by Autor *et al.* (2003) and Deming (2017), we compute the task content of each occupation from the O\*NET database, whereby occupations are assigned three scores ranging from 0 to 10, reflecting the extent of: job routineness (measured as the degree of automation and repetitiveness); social skills (relates to social perceptiveness, coordination, persuasion, and negotiation); and nonroutine analytical (mathematical) skills used in the occupation.<sup>(6)</sup> A correspondence is made to map each occupation in the LFS to its corresponding task content ascribed in O\*NET, with the resulting LFS dataset containing a list of 90 occupations classified at the 3-digit ISCO-88 level, and their associated task measures. Occupations are grouped into one of four mutually exclusive task categories: High Social-High Math (HSHM), High Social-Low Math (HSLM), Low Social-High Math (LSHM), and Low Social-Low Math (LSLM), following the classification adopted in Deming (2017) to allow us to make a comparative assessment with the U.S.<sup>(7)</sup> Table 1 provides an overview of selected occupations within each of the four task categories.

**Table 1. Examples of occupations within each of the four task categories**

Task category	Examples of occupations
High Social – High Mathematics	Production and operations managers, architects, engineers, computing and finance professionals, doctors, teachers, scientists and social scientists, trade brokers
High Social – Low Mathematics	Nurses and personal care workers, lawyers, social workers
Low Social – High Mathematics	Physical and engineering science technicians, cashiers, clerks, precision metal workers, life science technicians, blacksmith, tool makers
Low Social – Low Mathematics	Housekeeping and restaurant service workers, miners, potters, wood treaters, agricultural and manufacturing laborers, mechanics, machine operators

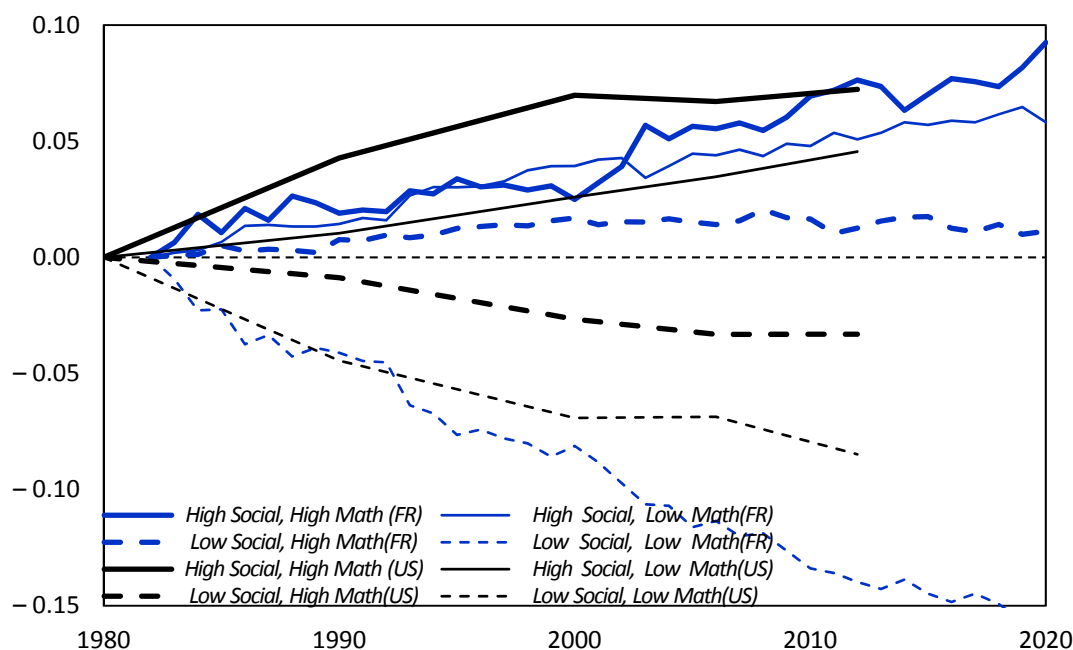
Sources: Deming (2017); Authors; ISCO.

Figure 2 shows the change in employment share over time across the four task categories, relative to a base year (1980 for U.S. and 1982 for France). In both countries, there has been a rise in occupations that require social skills, and a slowdown in the growth of occupations with lower social skill intensity. Between 1982 and 2012, HSHM and HSLM occupations in France have risen by 7.6 and 5.1 percentage points respectively, which is driven by a rise in occupations such as production and operations managers, engineers, architects, computing professionals, healthcare workers, personal care workers, nursing professionals, and teachers. In contrast, LSHM occupations have increased by a mere 1.3 percentage points, while LSLM occupations have shrunk by 13.9 percentage points, which is primarily attributable to the decline of occupations with routine task content, such as assemblers, agricultural laborers, machinery operators, secretaries, and clerks.

(6) Social skills consist of the average of four variables: social perceptiveness, coordination, persuasion, and negotiation. Nonroutine analytical skills is the average of three variables: mathematical reasoning ability (ability to organize a problem and select a mathematical method to solve it), mathematics knowledge (knowledge of numbers, operations, and their applications), and mathematics skill (using math to solve problems). Job routineness measures the average of two variables: degree of automation of the job, and importance of repeating the same tasks.

(7) Deming (2017) classifies occupations into the four task categories depending on whether they lie above or below the median in mathematics and social skill task intensity.

**Figure 2. Cumulative changes in employment share by occupation task intensity**



*Reading:* Each line plots the change in employment share – relative to a base year (1980 for U.S. and 1982 for France), for occupations that are above or below the median in mathematics and social skill task intensity; Occupational Task intensities based on O\*NET.

*Sources:* French Labour Force Survey (INSEE); U.S. Censuses and American Community Survey.

Comparatively, in the U.S., over the same period, HSHM and HSLM occupations have grown by 7.2 and 4.6 percentage points respectively, while LSHM and LSLM occupations have declined by 3.3 and 8.5 percentage points, respectively. While the evolution across the four categories follows a similar trajectory for France and U.S., it must be noted that in levels, France still has a lower share of occupations that use high social skills than the U.S. In 2012, high social skill occupations constitute 52.3% of total employment in France, compared to 57.8% in the U.S.<sup>(8)</sup>

In sum, this analysis shows the increasing importance of occupations with strong social skills requirements in France, whether paired with high or low mathematics/analytical skills. In particular, there has been very strong growth of occupations with high social and high math/analytical skill requirements. Occupations that use those skills are growing significantly, while those that do not are shrinking, and this trend is even more marked in France than what has happened in the U.S. (Deming, 2017).

### 3. Productivity growth and soft skills

#### 3.1. Soft skills, industry skill needs and aggregate productivity

Establishing the link between soft skills and productivity at the aggregate level convincingly is non-trivial because of the lack of high-quality data on soft skills across countries/sectors and over time. One typically only has imperfect cross-sectional data at one point in time. Here we provide suggestive evidence using the data described earlier linking soft skills to productivity.

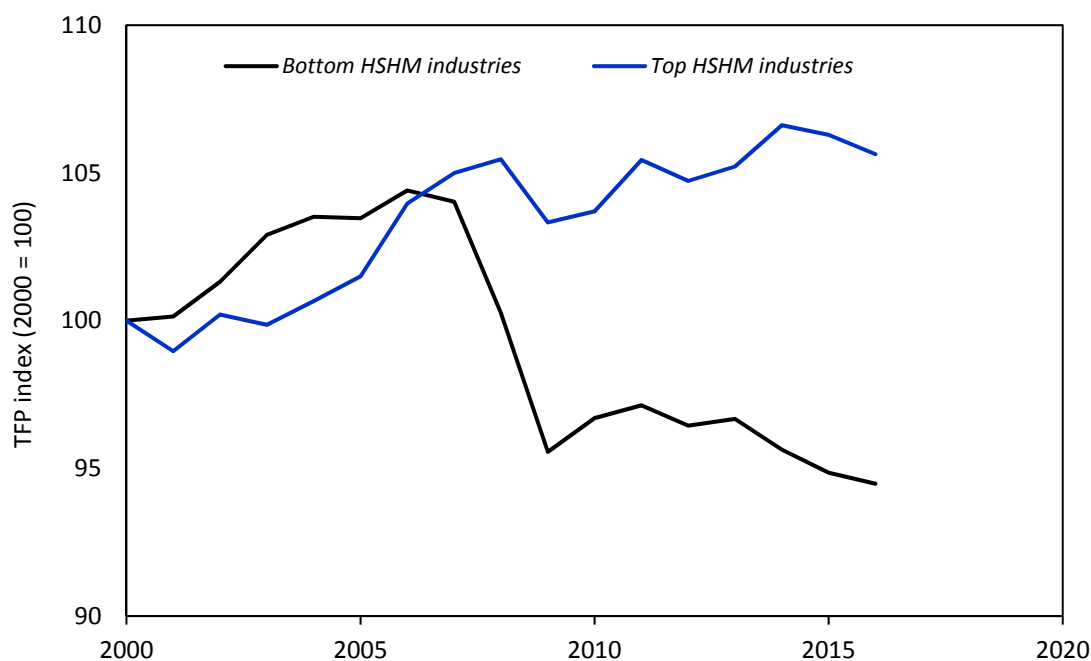
(8) High social occupations consist of the sum of employment shares within the High Social-High Math and High Social-Low Math occupation groups.

To start, we explore whether industries that employ a higher stock of HSHM workers (as defined in Section 2) exhibit higher productivity trends over time in France. We conduct a comparative assessment of this relationship using the EU KLEMS Productivity and Growth Accounts (EU KLEMS), which contains data on total factor productivity (TFP), output, value added, capital, employment, and intermediate inputs at the industry level from 2000 to 2016 for France, Germany, and the U.S. The EU KLEMS data adopts the ISIC Rev. 4<sup>(9)</sup> industry classification, containing a TFP index for each of the 27 industries at the division (2-digit) level. Based on the French LFS in the base year (2000), we segregate the 27 EU KLEMS industries into two groups: Top HSHM and Bottom HSHM, where the former relates to industries that utilize a higher percentage of HSHM workers relative to the median industry, while the latter utilizes fewer HSHM workers relative to the median industry (Table 2).

**Table 2. Industry classification – Top HSHM and bottom HSHM**

Group	Industries
Top HSHM industries	Electrical and optical equipment; Accommodation and food service activities; Arts, entertainment and recreation; Real estate activities; Information and communication; Wholesale and retail trade; Repair of motor vehicles and motorcycles; Other manufacturing; Repair and installation of machinery and equipment; Financial and insurance activities; Chemicals and chemical products; Professional, scientific, technical, administrative and support service activities; Public administration and defense, social security; Agriculture, forestry and fishing
Bottom HSHM industries	Other service activities; Textiles, wearing apparel, leather and related products; Construction; Basic metals and fabricated metal products; Food products, beverages and tobacco; Transport equipment; Wood and paper products; Printing and reproduction of recorded media; Mining and quarrying; Machinery and equipment; Education; Transportation and Storage; Health and social work; Rubber and plastics products, and other non-metallic mineral products; Electricity, gas, and water supply

**Figure 3. Total factor productivity (France)**

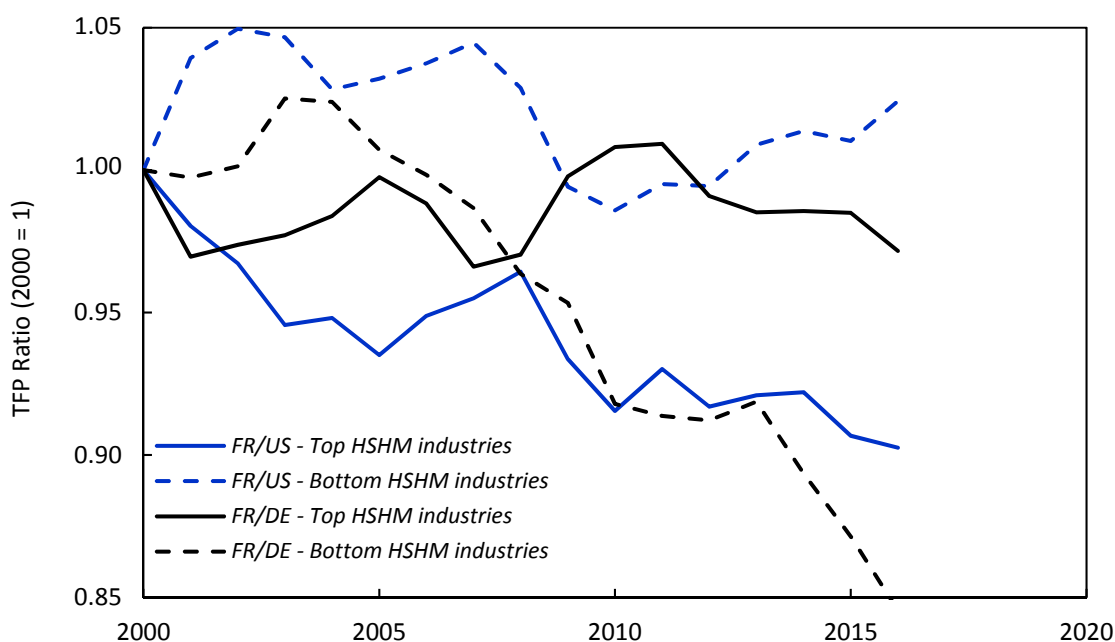


Note: Top HSHM industries use more high skilled occupations, bottom HSHM use less high skilled occupations. Group TFP = weighted mean of industry TFP, using gross output as weights.

Source: 2019 EU KLEMS.

(9) International Standard Industrial Classification of All Economic Activities.

**Figure 4. Relative Total factor productivity – France / Germany / US**



Source: 2019 EU KLEMS, France LFS.

Note: Top HSHM industries use more high skilled occupations, bottom HSHM use less high skilled occupations. Group TFP = weighted mean of industry TFP, using gross output as weights.

Figure 3 plots the evolution of TFP in France for the two groups of industries over time, and shows that on average, industries that employ more HSHM workers experienced stronger TFP growth over time. This means that it is top HSHM industries that have driven TFP growth over time, and one can plausibly predict they will continue to do so.

Figure 4 shows the TFP ratio of France relative to the U.S. and Germany for those two groups of industries: while the top HSHM industries have driven aggregate TFP growth in France, Figure 4 shows that the same set of industries in Germany and U.S. have experienced even greater TFP growth, resulting in the TFP ratio of France relative to the other two countries lying below 1 for most of the period. The gap is particularly stark with respect to the U.S., which as we saw in section 1, U.S. has a much higher soft skills rating than France, while Germany is slightly below France in terms of soft skills endowments.

Another way to assess the contribution of analytical and soft skills to productivity with the available data can be found in the Focus of Martin, Renault and Roux (2022). It runs regressions of country-sector level productivity on human capital using PIAAC data on adult skills and shows that labor productivity in the 2012 cross-section is correlated with numeracy skills as well as soft skills. A one standard deviation increase in the soft skill measure is associated with a 20% increase in sector level labor productivity, although it is not statistically significant at conventional levels. The equivalent for numeracy skills is 34%.

The evidence in this section suggests that not only productivity has grown in industries that utilize a lot of soft skills and math/analytical skills, while it has stagnated or declined at the aggregate level. Furthermore, in sectors-countries where adults have higher levels of numeracy and soft skills, there is higher labor productivity, after controlling for a host of factors.

### 3.2. Firm-level evidence on soft skills and productivity

While hard to establish at the aggregate level, recent firm-level research provides evidence that social skills have a causal effect on increasing productivity. For example, a randomized controlled trial in India evaluated the returns to social skills training provided to employees of the largest garment export firm in the country (Adhvaryu *et al.*, 2018). The training was provided over 11 months, covering a range of topics such as: time management, effective communication, problem solving, and financial literacy. Consequently, there was a 10% increase in garment production, a 12% increase in efficiency, and workers were able to perform more complex tasks. Another field experiment evaluated the impact of an intervention that imparted leadership and communication skills to managers and salespersons within a retail firm in Chile (Prada *et al.*, 2019). The sessions introduced topics such as complaint handling, advising customers, and developing management skills. As a result of the intervention, store-level productivity and individual labor productivity (measured by total sales and number of transactions) increased. These findings conclude that social skills are malleable and on-the-job training programs can increase the stock of social skills in adulthood.

### 3.3. Soft skills and management practices

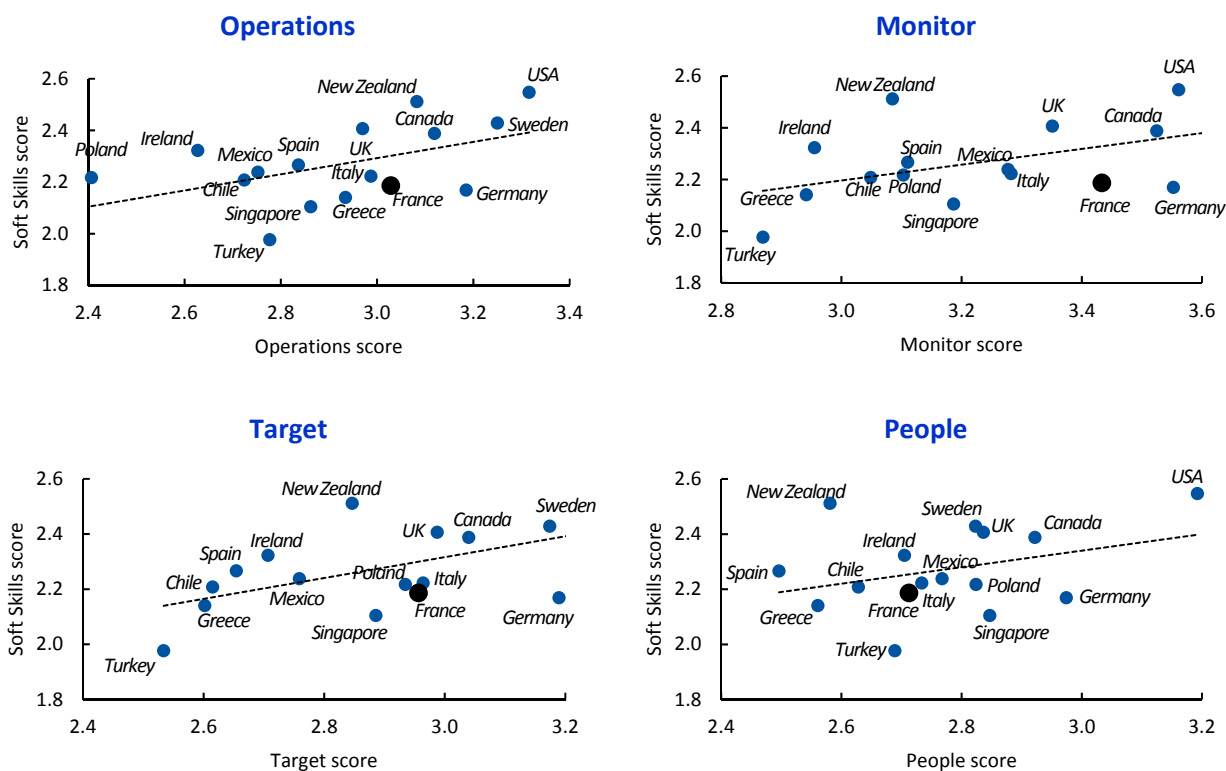
Management practices differ extensively across countries, industries, and firms. Within the manufacturing industry, Bloom & van Reenen (2010) establishes that firms in the U.S., Germany, Sweden, and Japan are typically better managed, followed by a block of European countries in the middle, which includes France, and emerging economies such as Brazil, China, and India having the lowest management scores. The implications of good management practices are extensive: better managed firms are on average larger, more profitable, have higher labor productivity, experience faster growth, and have higher survival rates than firms that are less well managed (Bloom & van Reenen, 2010). The fact that France lies in the middle of the ranking of management practices, and below many developed economies has been pointed out as a cause for concern for productivity in the past (Martin *et al.*, 2019).

Differences in management practices arise from a myriad of factors such as: ownership structure; product market competition; number of markets that a firm operates in; extent of labor market regulation; and quality of human capital (Bloom & van Reenen, 2010). Delving into the role of human capital, there is a growing literature examining the relationship between the stock of interpersonal skills that managers and CEOs possess, and its effect on employee outcomes and adoption of good management practices (Bandiera *et al.*, 2020; Hoffman & Tadelis, 2021; Zařková & Poláček, 2015). The Mintzberg model suggests that managers are engaged in three inter-related roles: informational, decisional, and interpersonal. Interpersonal skills play the most critical role for middle managers who spend most of their time interacting and communicating with peers, subordinates, and their managers (Abraham *et al.*, 2001; Rubin & Dierdorff, 2009).

In Figure 5, we evaluate the extent to which management practices and soft skills derived from PIAAC correlate across countries at the aggregate level. To measure management practices, we use data from the World Management Survey, comprising 11,300 manufacturing firms across 34 countries. The survey evaluates firms across 18 distinct manufacturing practices on a scale of 1 to 5, with higher scores reflecting better management practices being adopted. Manufacturing practices are categorized around four central pillars: *operations* – the extent to which a firm uses lean manufacturing techniques; *monitoring* – how well a firm monitors its processes and uses this for continuous improvement; *target setting* – assesses if the firm sets the right targets and tracks the right outcomes; and *people* – assesses whether firms are promoting and rewarding employees based on their performance, and putting in effort to retain their best employees. Notably, France exceeds the mean country in terms of monitoring, whereas it is close to the mean in terms of operations and target setting, while lying below the mean in terms of people.



**Figure 5. Correlation between soft skills and management traits**



Source: Survey of Adult Skills (PIAAC), World Management Survey.

We find a positive association between soft skills and management practices, with a correlation coefficient of 0.51 that is significant at the 5% significance level. To the extent the soft skills and management practices seem to evolve hand in hand, this points to a further concern of the low level of soft skills in France as it may hamper the modernization of management practices inside firms.

#### 4. Returns to soft skills in France (PIAAC data)

Another way to assess the link between skills and productivity is by estimating wage regressions, since wages should reflect the marginal product of labor, and hence its contribution to productivity. In France, results from the Génération 2010 survey show that traits such as perseverance, self-esteem, and communication skills affect wages, with soft skills being more important at the top quantiles of the wage distribution (Albandea & Giret, 2018).

In what follows, we estimate the returns to soft skills in France, in particular, relative to numeracy skills. To assess the returns to soft skills using the PIAAC dataset, we introduce a standard Mincerian equation, regressing the log of hourly wages on soft skills, education, experience, numeracy skills, a battery of controls and occupation, industry, and firm size fixed effects (Table 3).

**Table 3. Returns to education, soft and numeracy skills  
(Mincer equation results on PIAAC data)**

**Dependent variable: French hourly wages including bonuses, PPP corrected \$US (log)**

Variables	(1) Baseline	(2) Baseline	(3) Less than tertiary educated	(4) Tertiary educated
Soft Skills	0.042 <sup>(***)</sup> (0.009)	0.036 <sup>(***)</sup> (0.009)	0.033 <sup>(***)</sup> (0.010)	0.052 <sup>(***)</sup> (0.018)
Education (years)		0.023 <sup>(***)</sup> (0.003)	0.014 <sup>(***)</sup> (0.004)	0.046 <sup>(***)</sup> (0.008)
Work Experience (years)	0.027 <sup>(***)</sup> (0.002)	0.027 <sup>(***)</sup> (0.002)	0.022 <sup>(***)</sup> (0.003)	0.031 <sup>(***)</sup> (0.003)
Numeracy Skills	0.044 <sup>(***)</sup> (0.012)	0.019 (0.012)	0.028 <sup>(**)</sup> (0.014)	0.014 (0.021)
R-squared	0.423	0.436	0.392	0.453
Observations	2,693	2,687	1,557	1,111
Controls	yes	yes	yes	yes
Industry FE	yes	yes	yes	yes
Occupation FE	yes	yes	yes	yes
Firm Size FE	yes	yes	yes	yes

Note: Robust standard errors in parentheses. Standard errors clustered by industry. Soft skills is a composite variable, constructed as the principal component factor of: task discretion, influencing, planning, problem solving, and readiness to learn. Soft skills and numeracy variables have been normalized to mean 0 and standard deviation 1. Control variables: female dummy, healthy dummy, manager dummy, private sector dummy, part-time dummy, parental education dummy, and immigrant dummy.

(\*\*\*)  $p < 0.01$ ; (\*\*)  $p < 0.05$ , (\*)  $p < 0.1$

Sources: PIAAC (OECD) ; Author's computations.

In column 1, we regress wages on soft skills, experience, numeracy skills, and the control variables, excluding education as an explanatory variable to begin, as education and skills are potentially correlated. The results show that, without controlling for years of education, a one standard deviation increase in soft skills is associated with a 4.2% increase in hourly wages, and a one standard deviation increase in numeracy skills is associated with a 4.4% increase in hourly wages. This is consistent with the literature establishing that soft skills are at least as important as numeracy skills (Kautz *et al.*, 2014; Weinberger, 2014). In column 2, we replicate the same regression controlling for years of education, and find that the soft skills coefficient is smaller than that in column 1 (suggesting that some but not all of the soft skills effect is correlated with years of education) but remains large and significant (0.036). This is in line with a meta-analysis conducted by the European Commission (Cabus *et al.*, 2021). In turn, the effect of numeracy skills on wages in column 2 is explained away by years of education.

Next, we evaluate if these average effects differ by education level. We divide the sample into two categories: individuals with less than tertiary education (column 3), and those who possess tertiary qualifications (column 4). We find that the returns to soft skills are positive and significant for both groups, and they are slightly higher for tertiary educated individuals (0.052 vs. 0.033).<sup>(10)</sup> The returns to numeracy skills, while significant on average, remain low for both groups once we control for years of education, suggesting again that the gains in (and returns to) numeracy skills are related to years of education. Noticeably, the returns to years of education and experience are larger for the more educated group.

So, the PIAAC dataset for France confirms the high returns to soft skills among adults in terms of wages, and their importance across levels of education. This fact is also true in cross-country data, and particularly so in

(10) Aghion *et al.* (2019) propose and show that soft skills are particularly important for low skill workers as a way to foster social mobility.

digital intensive industries, which are exhibiting strong growth and are projected to continue to do so. In fact, an OECD study reveals that specific soft skills are rewarded in digital intensive industries: self-organization, management, and communication skills are particularly relevant and in fact complementary to numeracy skills necessary to thrive in the digital era (Grundke *et al.*, 2018).

Given the trends documented above, and as the economy evolves towards automation and digitalization, it is particularly relevant to shift policy towards increasing the stock of soft skills, which are complementary to technological progress and given tasks requiring soft skills are difficult to automate (Autor, 2015).

## 5. Improving soft skills in France

### 5.1. Soft skills and children: school programs and school reform

There is a large body of work evaluating how to improve soft skills in schools and a number of projects have shown that much of the effect of early childhood and school interventions improved later life outcomes through non-cognitive skills (e.g. the early Perry Preschool, STAR or Head Start projects in the U.S.). Recent work has shown promising effects of interventions in the short to medium term (on grades and crime) of a range of programs: on growth mindset and goal setting (Alan *et al.*, 2019; Dobronyi *et al.*, 2019; Yeager *et al.*, 2019), emotional and social competence (Bierman *et al.*, 2010; Domitrovich *et al.*, 2007), pro-sociality (Kosse *et al.*, 2020), automaticity during high school (Heller *et al.*, 2017), or patience in early adulthood (Blattman *et al.*, 2017).

In France, Huillery *et al.* (2021) provide experimental evidence on the effect of instilling a growth mindset and developing a stronger internal locus of control amongst 23,000 students in 97 French middle schools, finding improved academic performance at school and a rise in aspirations resulting from a simple intervention.

Showing the long-term effects of such interventions has remained elusive, however a recent paper shows that that these targeted early interventions can have long-term effects on adult outcomes (Algan *et al.*, 2022). Using an RCT methodology, they test the effect of a two-year social skills and self-control training program among 7 to 9-year at-risk boys in Montreal. The intervention successfully increased self-control and trust in those boys, while it had no impact on verbal IQ, initial grades or school performance. Successful outcomes emerged in the longer run: it increased grades in the late adolescent period, reduced grade repetition, and reduced special education class assignment. Importantly, the paper also shows that individual labor market returns increased by 20% and the treatment group is less likely to receive social transfers, less likely to engage in criminal behavior, and more likely to marry.

This body of evidence shows quite convincingly avenues to increase the soft skill endowment of the children population, with very large positive impacts in the long run and high returns on investment.

In the context of France, it has further been argued that the current structure and philosophy of the schooling system is not conducive to a healthy development of these crucial skills among children. Algan *et al.* (2018) contains a detailed discussion of the direction of school reform and need for changes in pedagogical methods in France, since current methods and systems do not leave space for personalization of education and teamwork. And the evidence suggests that French teachers receive less training in new pedagogical methods than their counterparts in other countries. A fundamental rethinking of the school system and support for teacher training is necessary if France wants to develop the crucial skills that will increase individual's careers and, as this Focus shows, aggregate productivity.

### 5.2. Soft skills and adults

While the evidence of malleability of soft skills among children is well established, there was less systematic evidence until recently of the malleability of soft skills in adulthood. A number of recent papers however

point to the effectiveness of programs that have aimed at increasing soft skills among adult employees and the unemployed. Experimental studies evaluating the effect of leadership and communication training within the retail and manufacturing sectors in Chile and India have shown a positive impact of those on soft skills (Adhvaryu *et al.*, 2018; Prada *et al.*, 2019). Among the unemployed, Schlosser & Shanan (2022) show how the soft skills of the unemployed increase following an active labor market program, with positive impacts in their employment prospects and wages. In France, Pôle Emploi has introduced a program (Valoriser son Image Pro) explicitly aiming at increasing the soft skills of the unemployed, following the feedback from employers that this is a weakness of the candidates they face and a much-needed set of skills.

### 5.3. Improved measurement

One of the challenges of the analysis above, and existing work on the topic trying to link soft skills to productivity at the aggregate level, is the lack and poor quality of systematic measurement of soft skills and their evolution.

Given the recognized importance of this topic, and its increasing relevance in the years to come, countries are beginning to adopt systematic measurements of soft skills. In France, DEPP (2019) introduced a measure of the soft skills endowments of its school age children. We suggest that this measurement is made systemic and extended to all schools. This would have several benefits: 1) It would allow stakeholders to track the level and evolution of these crucial skills 2) It would facilitate the evaluation of eventual policies and reforms at large scale 3) It would signal the commitment of France to prioritize the soft skills agenda and possibly nudge schools to focus more on this 4) If done widely, it would present France as one of the pioneers in taking the question of soft skills and skill development for the future seriously at large scale.

Appendix Table A1 lists existing efforts in other countries on measuring soft skills as well as a set of papers on best practices to guide this effort.

## 6. Conclusion

This Focus described the transformation of the French economy over the last four decades towards one that places greater emphasis on soft skills, but where the soft skill endowment lags that of other developed economies. All the evidence suggests that investing in soft skills will result in higher productivity and higher wages, and given the recent experience, will enable the growth of sectors that are projected to see TFP growth in the years to come. Given the economic challenges ahead, and the size of the returns to investing in soft skills, it is imperative that France takes this on as a core challenge if it wants to generate resources that will help to navigate and thrive given the changes in the economy ahead of us.

## Bibliography

- Abraham S.E., L.A. Karns, K. Shaw and M.A. Mena (2001): “Managerial Competencies and the Managerial Performance Appraisal Process”, *Journal of Management Development*, vol. 20, no 10, pp. 842-852.
- Adhvaryu A., N. Kala and A. Nyshadham (2018): “The Skills to Pay the Bills: Returns to on-the-Job Soft Skills Training”, *National Bureau of Economic Research*, no 24313.
- Aghion P., A. Bergeaud, R.W. Blundell and R. Griffith (2019): “The Innovation Premium to Soft Skills in Low-Skilled Occupations”, *Banque de France Working Paper*, no 739.
- Alan S., T. Boneva and S. Ertac (2019): “Ever Failed, try Again, Succeed Better: Results from a Randomized Educational Intervention on Grit », *The Quarterly Journal of Economics*, vol. 134, no 3, pp. 1121-1162.
- Albandea I. and J-F. Giret (2018): “The Effect of Soft Skills on French Post-Secondary Graduates’ Earnings”, *International Journal of Manpower*, vol. 39, no 6, pp. 782-799.
- Algan Y., E. Beasley, S. Côté, J. Park, J.E. Tremblay and F. Vitaro (2022): “The Impact of Childhood Social Skills and Self-Control Training on Economic and Noneconomic Outcomes: Evidence from a Randomized Experiment Using Administrative Data”, *American Economic Review*, vol. 112, no 8, pp. 2553-2579.
- Algan Y., É. Huillery and C. Prost (2018): “Trust, Cooperation and Autonomy: Towards a 21<sup>st</sup> Century School”, *Notes du Conseil d’analyse économique*, no 48, October.
- Autor D.H. (2015): “Why Are There Still so Many Jobs? The History and Future of Workplace Automation”, *Journal of Economic Perspectives*, vol. 29, no 3, pp. 3-30.
- Autor D.H., F. Levy and R.J. Murnane (2003): “The Skill Content of Recent Technological Change: An Empirical Exploration”, *The Quarterly Journal of Economics*, vol. 118, no 4, pp. 1279-1333.
- Bierman K.L., J.D. Coie, K.A. Dodge, M.T. Greenberg, J.E. Lochman, R.J. McMahon and E. Pinderhughes (2010): “The Effects of a Multiyear Universal Social-Emotional Learning Program: The Role of Student and School Characteristics”, *Journal of Consulting and Clinical Psychology*, vol. 78, no 2.
- Blattman C., J.C. Jamison and M. Sheridan (2017): “Reducing Crime and Violence: Experimental Evidence from Cognitive Behavioral Therapy in Liberia”, *American Economic Review*, vol. 107, no 4, pp. 1165-1206.
- Bloom N. and J. van Reenen (2010): “Why do Management Practices Differ Across Firms and Countries?”, *Journal of Economic Perspectives*, vol. 24, no 1, pp. 203-224.
- Cabus S., J. Napierala and S. Carretero (2021): “The Returns to Non-Cognitive Skills: A Meta-Analysis”, *JRC Working Papers Series on Labour, Education and Technology*, no 2021/06.
- Deming D.J. (2017): “The Growing Importance of Social Skills in the Labor Market”, *The Quarterly Journal of Economics*, vol. 132, no 4, pp. 1593-1640.
- DEPP (2019): “La motivation et le sentiment d’efficacité des élèves baissent de façon socialement différenciée au cours du collège”, *Direction de l’évaluation, de la prospective et de la performance, Note d’information*, no 19.02.
- Desjardins J. (2018): *Skills You’ll Need to Survive the Rise of Automation*, World Economic Forum, July.
- Dobronyi C.R., P. Oreopoulos and U. Petronijevic (2019): “Goal Setting, Academic Reminders, and College Success: A Large-Scale Field Experiment”, *Journal of Research on Educational Effectiveness*, vol. 12, no 1, pp. 38-66.
- Domitrovich C.E., R.C. Cortes and M.T. Greenberg (2007): “Improving Young Children’s Social and Emotional Competence: A Randomized Trial of the Preschool ‘PATHS’ Curriculum”, *The Journal of Primary Prevention*, vol. 28, no 2, pp. 67-91.

- Falcon J. (2015): *Social Position: Social Position Indicators Construction Toolbox*, R package, version 1.0.1.
- Grundke R., L. Marcolin and M. Squicciarini (2018): “Which Skills for the Digital Era?: Returns to Skills Analysis”, *Document de Travail de l’OCDE sur la science, la technologie et l’industrie*, no 2018/09.
- Hardy W., R. Keister and P. Lewandowski (2018): “Educational Upgrading, Structural Change and the Task Composition of Jobs in Europe”, *Economics of Transition*, vol. 26, no 2, pp. 201-231.
- Heckman J.J. and T. Kautz (2012): “Hard Evidence on Soft Skills”, *Labour Economics*, vol. 19, no 4, pp. 451-464.
- Heller S.B., A.K. Shah, J. Guryan, J. Ludwig, S. Mullainathan and H.A. Pollack (2017): “Thinking, Fast and Slow? Some Field Experiments to Reduce Crime and Dropout in Chicago”, *The Quarterly Journal of Economics*, vol. 132, no 1, pp. 1-54.
- Huillery E., A. Bouguen, A. Charpentier, Y. Algan and C. Chevallier (2021): “The Role of Mindset in Education: A Large-Scale Field Experiment in Disadvantaged Schools”, Centre for Open Science, SocArXiv.
- Kautz T., J.J. Heckman, R. Diris, B. ter Weel and L. Borghans (2014): “Fostering and Measuring Skills: Improving Cognitive and Non-Cognitive Skills to Promote Lifetime Success”, *National Bureau of Economic Research Working Paper*, no 20749.
- Kosse F., T. Deckers, P. Pinger, H. Schildberg-Hörisch and A. Falk (2020): “The Formation of Prosociality: Causal Evidence on the Role of Social Environment », *Journal of Political Economy*, vol. 128, no 2, pp. 434-467.
- Martin P., A. Bénassy-Quéré, O.J. Blanchard, L. Boone, G. Cette, C. Criscuolo, A. Epaulard, S. Jean, M. Kyle, X. Ragot, A. Roulet and D. Thesmar (2019): *Productivity and Competitiveness: Where Does France Stand in the Euro Zone?*, Premier rapport du Conseil national de productivité.
- Martin R., T. Renault and B. Roux (2022): “Baisse de la productivité en France: échec en ‘maths’ ?”, *Focus du CAE*, no 091-2022, September.
- OECD (2017): *Skills for Jobs Indicators*, OECD. Paris.
- Pôle Emploi (2018): “Diplômes, compétences techniques ou comportementales. Quelles sont les principales attentes des entreprises? ”, *Éclairages et Synthèses*, no 42.
- Prada M.F., G. Rucciand S. Urzúa (2019): “Training, Soft Skills and Productivity: Evidence from a Field Experiment in Retail”, *IDB Working Paper Series*, no 1015.
- Rubin R.S. and E.C. Dierdorff (2009): “How Relevant is the MBA? Assessing the Alignment of Required Curricula and Required Managerial Competencies », *Academy of Management Learning & Education*, vol. 8, no 2, pp. 208-224.
- Schlosser A. and Y. Shanan (2022): “Fostering Soft Skills in Active Labor Market Programs: Evidence from a Large-Scale RCT”, *CEPR Discussion Paper*, no 17055.
- Weinberger C.J. (2014): “The Increasing Complementarity Between Cognitive and Social Skills”, *Review of Economics and Statistics*, vol. 95, no 5, pp. 849-861.
- Yeager D.S., P. Hanselman, G.M. Walton, J.S. Murray, R. Crosnoe, C. Muller, E. Tipton, B. Schneider, C.S. Hulleman and C.P. Hinojosa (2019): “A National Experiment Reveals Where a Growth Mindset Improves Achievement”, *Nature*, vol. 573, no 7774, pp. 364-369.
- Zařková T.Š. and M. Poláček (2015): “Social Skills As an Important Pillar of Managerial Success », *Procedia Economics and Finance*, vol. 34, pp. 587-593.

## APPENDIX TABLE A1

### Large scale (country/state level) soft skills surveys and assessments

Program	Coverage and period	Program details
California Healthy Kids Survey (CHKS), implemented by California's Department of Education	Over 2019 to 2021, CHKS was administered in over 66% of school districts and over 4,800 schools to 1.11 million students aged 10-19	<ul style="list-style-type: none"> <li>– Questions centred on 5 competences that Collaborative for Academic, Social, and Emotional Learning (CASEL) has identified for success –self-awareness, self-management, social awareness, relationship skills, responsible decision making</li> <li>– CHKS measures 6 personal strengths: cooperation and communication, empathy, self-efficacy, self-awareness, and goals, problem solving, and aspirations in 21 questions</li> <li>– Questionnaires segregated and profiled according to age group; response options are on a 4 point Likert scale <ul style="list-style-type: none"> <li>• Middle &amp; High School</li> <li>• Elementary School</li> </ul> </li> </ul>
SENNA inventory for assessment of social and emotional skills, developed with funding from the Ayrton Senna Institute	SENNA 2.0 released in 2016, Survey administered to 50,209 Brazilian students enrolled in 501 public schools, ranging from grades 6 to 12 (age 11 to 18), spread across 234 cities in Sao Paolo	<ul style="list-style-type: none"> <li>– Assesses 18 skills, each operationalized by 9 items that represent 3 types of items: 3 positively keyed trait-identity items, 3 negatively keyed identity items, and 3 self-efficacy items → totaling a set of 162 items</li> <li>– Survey requires 50 minutes to administer (survey questions in page 6 &amp; 7 of the PDF), responses on a 5-point Likert scale</li> <li>– 18 skills are grouped accordingly across 5 buckets resembling Big-Five: <ul style="list-style-type: none"> <li>• Open-mindedness (curiosity to learn, creativity imagination, artistic interest)</li> <li>• Self-management (organization, determination, focus, persistence, responsibility)</li> <li>• Engaging with others (social initiative, assertiveness, enthusiasm)</li> <li>• Amity (empathy, respect for others, trust, gratitude)</li> <li>• Negative emotion regulation (stress modulation, self-confidence, tolerance of frustration)</li> </ul> </li> </ul>

## Initiatives conducted by specific institutes of higher learning to enhance soft skills

Program	Coverage and period	Program details
Skills4Employability – Enhancing the presence of Soft Skills in Higher Education Curricula EU Erasmus+ Programme	<p>October 2019 to October 2021</p> <p>Partner organizations</p> <ul style="list-style-type: none"> <li>– Conexx-Europe ASBL (Belgium)</li> <li>– University Politehnica of Bucharest (Romania)</li> <li>– Sapienza University of Rome (Italy)</li> <li>– Belgium Agència per a la Qualitat del Sistema</li> <li>– Universitari de Catalunya (Spain)</li> <li>– Kaunas University of Technology (Lithuania)</li> </ul>	<ul style="list-style-type: none"> <li>– Soft skills defined as <ul style="list-style-type: none"> <li>• Intellectual skills (interdisciplinary skills, problem solving, creativity, learning from experience)</li> <li>• Self-management skills (planning, time management, change management, taking initiative)</li> <li>• Oral and writing skills (multicultural skills, networking, negotiation, teamwork)</li> </ul> </li> <li>– Advocate the adoption of different measures to assess different soft skills <ul style="list-style-type: none"> <li>• Direct assessment <ul style="list-style-type: none"> <li>▪ Storytelling</li> <li>▪ Projects</li> <li>▪ Portfolio</li> <li>▪ Interviews</li> <li>▪ Observations</li> <li>▪ Oral exams</li> <li>▪ Case studies</li> </ul> </li> <li>• Indirect assessment <ul style="list-style-type: none"> <li>▪ Essays/written tests/reports/scientific papers</li> <li>▪ Surveys</li> <li>▪ Self-assessment</li> </ul> </li> </ul> </li> </ul>
Knowledge is Power Program (KIPP)	Network of charter schools in US	<ul style="list-style-type: none"> <li>– KIPP Character report card measures teacher’s perception of character strength according to the following competencies: Curiosity, Gratitude, Grit, Optimism, Self-control (interpersonal), Self-control (schoolwork), Social intelligence, Zest</li> <li>– Students receive ratings for each character strength on a scale of 1-5 each quarter</li> </ul>
Grading Soft skills (GRASS) focused on representing soft skills of learners of various ages and at different levels of education in a quantitative, measurable way EU Erasmus+ Programme	<ul style="list-style-type: none"> <li>– 3-year EU research project (2014-2017)</li> <li>– 8 partner institutions (one post-primary college, two secondary-education high schools, one secondary-education VET school, and four universities)</li> <li>– 4 European countries (Serbia, Sweden, Ireland, Croatia)</li> </ul>	<ul style="list-style-type: none"> <li>– Project involves developing soft skills metrics for secondary and higher education, across different contextual and curricula settings: programming students, textile and fashion design students, math coaches, civic education, high school students, land-surveying students, post-primary students</li> <li>– A second project goal involves developing the necessary ICT and awarding open badges to individuals for their accumulation of soft skills</li> <li>– Skills evaluated: Communication, Problem solving, Critical thinking, Leadership, Collaboration, Time management, Self-regulation</li> </ul>
Valid Assessment of Learning in Undergraduate Education (VALUE) rubric development project	<ul style="list-style-type: none"> <li>– USA national initiative developed in 2009 to assess students’ progress in achieving essential learning outcomes</li> <li>– Adopted by Association of American Colleges and Universities</li> </ul>	<ul style="list-style-type: none"> <li>– Rubrics developed for 16 learning outcomes: Civic engagement, Creative thinking, Critical thinking, Ethical reasoning, Foundations and skills for lifelong learning, Global learning, Information literacy, Inquiry and analysis, Integrative and applied learning, Intercultural knowledge and competence, Oral communication, Problem solving, Quantitative literacy, Reading, Teamwork, Written communication</li> <li>– Technique for scoring soft skills is evidence and demonstration based</li> <li>– Each skill scored on a scale of 1 to 4</li> </ul>



## Literature review

Paper	Main points
<p>Brookings Soft Skills Report Card (BSRCC)</p>	<ul style="list-style-type: none"> <li>– To measure soft skills, evaluation needs to be specific, less abstract, contextual, and socially observable</li> <li>– BSRCC measures soft skills along 4 dimensions on a range from 1 to 5               <ul style="list-style-type: none"> <li>• Social skills                   <ul style="list-style-type: none"> <li>▪ Provides peers with positive feedback</li> <li>▪ Offers help or assistance to peers</li> <li>▪ Initiates interactions with peers</li> <li>▪ Participates in discussions with peers</li> <li>▪ Has sense of humor, shares amusement with peers</li> <li>▪ Has friends</li> <li>▪ Can carry out leadership activities</li> <li>▪ Engages in inappropriate social behavior</li> </ul> </li> <li>• Self-management                   <ul style="list-style-type: none"> <li>▪ Controls displays of temper when angry</li> <li>▪ Accepts legitimate rules</li> <li>▪ Compromises with others to avoid conflict</li> <li>▪ Responds in socially appropriate ways to criticism from others</li> <li>▪ Handles teasing and social provocations</li> <li>▪ Cooperates with others</li> <li>▪ Maintains attention to tasks</li> <li>▪ Is respectful to teachers and staff</li> </ul> </li> <li>• Academic soft skills (social and cognitive)                   <ul style="list-style-type: none"> <li>▪ Works independently</li> <li>▪ Completes assigned tasks</li> <li>▪ Listens to and carries out teacher directions</li> <li>▪ Produces work of acceptable quality for ability level</li> <li>▪ Brings required materials to school</li> <li>▪ Arrives at school on time and without undue absences</li> <li>▪ Asks for assistance as needed, asks questions</li> <li>▪ Uses appropriate study skills</li> </ul> </li> <li>• Learning                   <ul style="list-style-type: none"> <li>▪ Enjoys school</li> <li>▪ Takes on challenging tasks</li> <li>▪ Has confidence in abilities</li> <li>▪ Works hard</li> <li>▪ Is anxious and fearful</li> <li>▪ Is involved with extracurricular school activities</li> </ul> </li> </ul> </li> </ul>
<p>Best Practices in Soft skills assessment (Hanover Research, 2014)</p>	<p>Soft skills assessment practices implemented by these schools</p> <ul style="list-style-type: none"> <li>– Catalina Foothills School District (CFSD) in Arizona –8 schools with total enrolment of 5,100 students. Student skills assessed using standards-based report cards on a scale of 1-4 across 7 areas: critical and creative thinking, self-direction, communication, systems thinking, cultural competence, teamwork, and leadership</li> <li>– Plymouth High School (PHS) in Wisconsin –enrolment of 817 students. Adopts a four-point rubric to assess students in collaboration, respect, initiative, and work habits (metric reflected in page 17)</li> <li>– New Technology High School (NTHS) in California– enrolment of 380 students. Goal of imparting these 8 competencies: content standards, collaboration, critical thinking, oral communication, written communication, career preparation, citizenship and ethics, technology literacy. Embedded into class curriculum through project-based learning over 3-8 weeks</li> </ul>