



Preparing tomorrow's workforce for the Fourth Industrial Revolution

For business: A framework for action



Forward

Around the world, many employers who already are struggling to fill job vacancies cast a wary eye toward the future. The existing mismatch between youth skills and employer needs threatens to become even wider as Industry 4.0 transforms business and jobs faster than workers can adapt. Two-thirds of today's five-year-olds will, in about 15 years, find themselves in jobs that don't exist today. And the jobs that *do* exist won't necessarily be located where the job seekers live.

Technology has allowed us to connect the far reaches of the globe and enabled businesses to flourish. But if that technology cannot be harnessed to connect people to high-quality education and jobs, then the repercussions could be experienced broadly. Greater income inequality, increased unemployment, growing dependence on government, and more mass migrations are a few of the most pressing problems that failing to train the next generation of workers for the digitally driven economy will bring.

While that may sound dire, leaders and visionaries recognize it as an obligation—even an opportunity—to reconsider how jobs and skills should be aligned, and how potential employees can demonstrate these skills.

Now is the time for the business community to reposition itself as an influential driving force for change, and create new and more inclusive pipelines for the most-susceptible youth globally. It's time to invest in new ideas and approaches to skilling youth for the future of work—not in a vacuum, but in a coordinated, committed fashion. Improving the potential employment outcomes for global youth demands that business, governments and other key players cooperate to align educational initiatives, workforce-development programs and public policy.

The long-term effort will be demanding and imposing—but nowhere as difficult as achieving success in a world where people are not equipped for the work that needs to be done.

This report offers advice on the challenges, obligations and opportunities facing business leaders. It also outlines recommendations that, taken together - as coordinated action between industry, governments, young people and other stakeholders - create a strong framework for advancing the cause. But it's more than a collection of ideas. This report represents a bold vision to convene business around a movement to prepare youth for the Fourth Industrial Revolution. It's a call to action—to respond to critical challenges by committing to support and develop the workforce of tomorrow.

The journey starts now. We hope you join us.



Punit Renjen
Deloitte Global CEO



Sarah Brown
Executive Chair, Global Business
Coalition for Education
President, Theirworld

September, 2018

Contributors

This report is the result of a collaboration between Deloitte Global and the Global Business Coalition for Education in support of the Youth Skills and Innovation Initiative.

Deloitte Global

Katie Armstrong
Michele Parmelee
Stasha Santifort

The Global Business Coalition for Education

Jamira Burley
Justin W. van Fleet

Deloitte Global and the Global Business Coalition for Education would like to acknowledge the written contributions and support from the following colleagues in **Deloitte US:**

Maggie Koziol
Rebecca Greenberg

Jeff Schwartz
Renee Tetrick

With thanks to others who provided input (please see Appendix A for full list of acknowledgements).

The Global Business Coalition for Education would like to thank the Youth Skills and Innovation Commission and members and the Youth Skills Network for their support.



Overview

Millions of young people around the world are unemployed or underemployed, while employers have jobs they cannot fill. It is a challenge partially rooted in the growing mismatch between youths' skills and employer needs. If unaddressed, the problem will likely intensify as the Fourth Industrial Revolution (4IR)—characterized by the marriage of physical assets and digital technologies—transforms society, economies, jobs, and people's personal lives.

The outcomes of this revolution—which is occurring in an environment of unparalleled global connectivity and demographic change—are likely to perpetuate and worsen existing chasms between those who are prepared for 4IR and those who are not. For the 1.8 billion global youth who today are between the ages of 15 and 29, this revolution will significantly shape their roles as the future workers, consumers, and competitors.

This report highlights opportunities for the business community to contribute to the development and growth of the future workforce, focusing on suggested best practices to reach and support youth globally.

Many members of the business community are already contributing to the United Nations' Sustainable Development Goals (SDGs). Similar to the UN effort, the goals of this report are to support inclusive and quality education for all and promote lifelong learning (SDG 4), and help support inclusive and sustainable economic growth, employment and decent work for all (SDG 8). This report assesses *when* and *how* the employees of tomorrow are preparing for 4IR today, as well as *who* is responsible for their preparation. It also recognizes that the implications of 4IR vary by geography, gender, socioeconomic status, culture, and development status.

Using input from youth, representatives throughout the business community, and nonprofits, think tanks, and academia, the report's objective is to move past the narrow question of *which skills are needed* and pursue the broader issue of *how the business community can prepare today's youth for 4IR*.

Business leaders and other stakeholders should address **four primary challenges** within the larger context of youth workforce development:

1. **Reimagine 4IR as a unique opportunity to be welcomed,** not a *problem* to be confronted
2. **Reposition** discrete and disconnected programs as a **systemwide, unified set of approaches**
3. **Realign** toward achieving **both scale and impact**, rather than framing solutions as scale *versus* impact
4. **Reframe the possibilities for marginalized youth**, including those who historically have been difficult to reach, with particular attention to women and girls

Complementary to these challenges, the report provides **four recommendations** for the business community to commit to:

1. **Align stakeholders' objectives and approaches:** Work with the broader ecosystem to align goals and outcomes for impact.
2. **Engage in public policy:** Strategically engage in public policy through dialogue, advocacy, collaboration, and influence.
3. **Develop promising talent strategies:** Analyze current talent strategies—particularly those focused on youth or under-represented populations—and implement best practices to promote inclusivity and innovation, and drive economic return through differentiation.
4. **Invest strategically in workforce training approaches:** Evaluate, invest, and promote workforce training programs that align with your corporate social responsibility goals, talent practices, skill needs, and corporate culture.

The time to act is now. Preparing youth to excel in 4IR requires that the business community actively participates in an ecosystem aligned across education, workforce development programs, young people, and public policy. It must be a collective effort aimed at improving the potential employment outcomes for global youth.

We ask the business community to consider its unique position within a larger workforce ecosystem to determine where, how, and for whom they can make an impact today for the betterment of tomorrow.

“If [business is] not listening to the youth, they are not listening to their future competitors, employees, or customers.”

Wadia Ait Hamza, head of the Global Shapers at the World Economic Forum

Table of contents

Forward from Punit Renjen and Sarah Brown	3
Contributors	4
Overview	5
The Fourth Industrial Revolution is happening	8
The changing landscape of youth globally	8
The unheard youth voices	11
The search for the future-skilled youth employee	15
4IR complicates ¹ the challenge of the supply and demand of skills	16
What skills are needed for 4IR?	16
Assessing models to skill youth	19
Whose job is it to prepare youth?	20
Education-based models	22
<i>Apprenticeship models</i>	23
<i>Afterschool and out-of-school programs</i>	23
Nonprofit models	24
Government-sponsored models	24
<i>Career pathways</i>	24
<i>Qualifications frameworks</i>	24
Youth-led models	25
Business community models	25
<i>Community investment</i>	25
<i>Enterprise investments</i>	25
Other considerations for youth employment	26
4IR tools for 4IR	27
Innovative funding methods	28
Balancing impact and scale	29
Four challenges for the business community	32
Recommendations	34
Opportunities for future insights	39
Committing now to youths' success	39
Technical appendix	40
Technical appendix A: Three economies	40
Technical appendix B: Collaborating through local workforce ecosystems	42
Appendix	44
Appendix A: Acknowledgements	44
Appendix B: Workforce model examples	45
<i>Education-based models</i>	45
<i>Afterschool models</i>	45
<i>Nonprofit models</i>	46
<i>Government-sponsored models</i>	46
<i>Youth-led models</i>	47
<i>Business community models</i>	47
Appendix C: Research methodology	48
Appendix D: Summary of youth advisory council focus groups	49
References	52

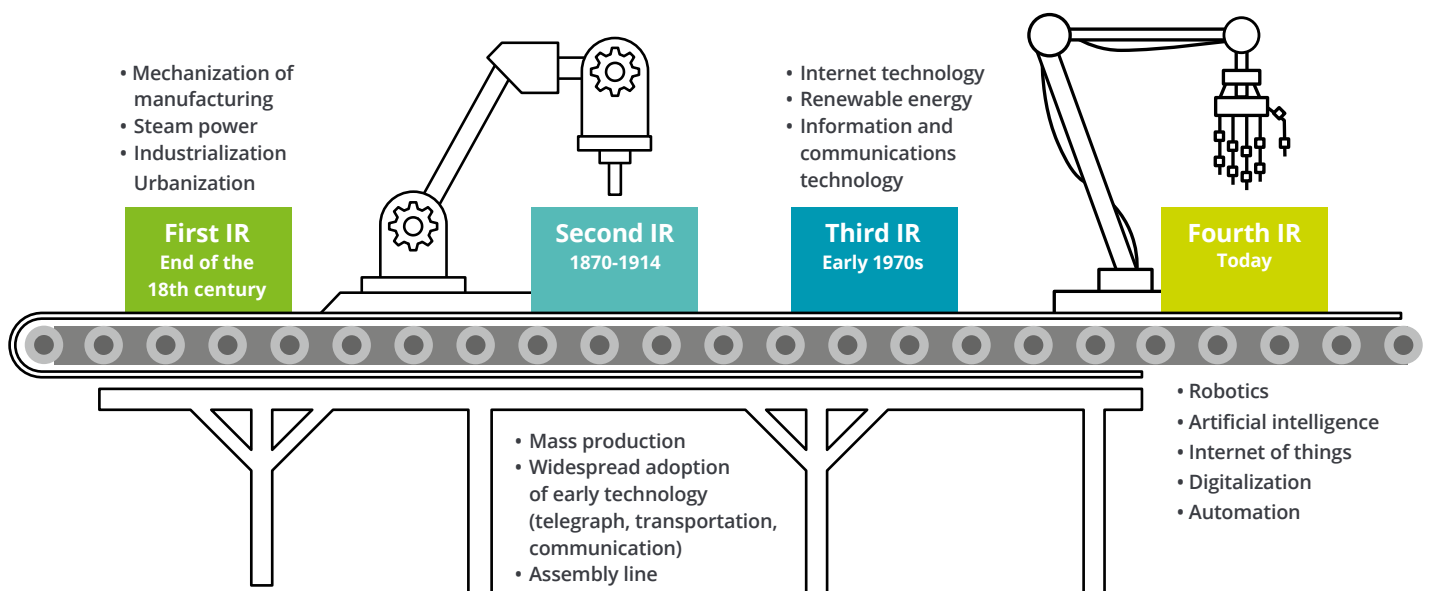
The Fourth Industrial Revolution is happening

The Fourth Industrial Revolution (4IR) is sometimes described as an incoming thunderstorm, a sweeping pattern of change visible in the distance, arriving at a pace that affords little time to prepare. While some people are ready to face the challenge, equipped with the tools to brave the change and take advantage of its effects, others do not even know a storm is brewing.

First coined by Klaus Schwab, founder and executive chairman of the World Economic Forum, 4IR is “a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres”; a progress defined by “velocity, scope, and systems impact” unlike ever seen before¹. 4IR will likely

have far-reaching implications on almost every aspect of daily life, affecting how individuals interact with technology, and transforming where and how work is done. Yet, this exponential progress is only visible to—and accessed by—some. Its effects vary by country and culture, necessitating different approaches to address issues of automation and digitalization (*recommendation 2d*).²

This unevenness leads to important questions for the business community, a sector that is preparing for the future of work while simultaneously acknowledging that its future workforce may not be prepared for 4IR—or know that the revolution is upon us.



The changing landscape of youth globally

As of 2018, there are 1.8 billion youth worldwide between the ages of 15 and 29.^{3,a} Yet, population and future growth rates are unevenly distributed. Once a driver of growth, Asia's youth population has largely stabilized.⁴ Meanwhile, the youth population in Africa is accelerating rapidly, and is expected to represent more than half of the youth population increase by 2050.⁵

Simultaneously, the areas with the greatest population increases are also those where education is falling behind, having long-term impacts on employment readiness.⁶ According to the Education Commission, it is predicted that by 2030, more than half of the nearly 2 billion youth worldwide will not have the skills or qualifications necessary to participate in the emerging global workforce.⁷ In practical terms, this translates to more than 50 percent of tomorrow's human capital being potentially unprepared to enter the workforce.

- **The world youth population is growing worldwide but the growth are uneven:**

- **1.8 billion:** World youth population between the ages of 15 and 29, accounting for more than **25 percent** of the total world population⁸
- **61 percent:** Global youth population currently living in Asia in 2015⁹
- **15 percent:** Expected increase of the youth population in Africa between 2017 and 2050¹⁰
- **>30 percent:** Working-age population between the ages of 15 to 29 in most Middle East & North Africa (MENA) in 2015¹¹

- **Global youth are migrating worldwide:**

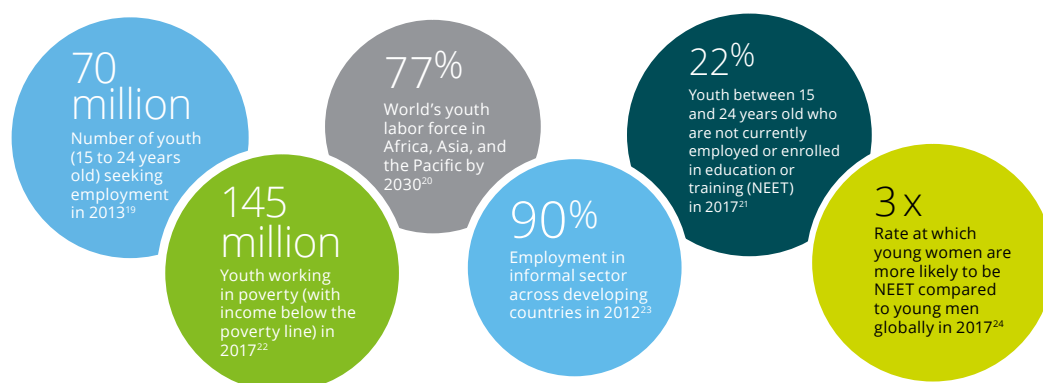
- **40 million:** Number of migrant youth ages 20 to 29 in 2013¹²
- **26 million:** Number of youth who migrated for work in 2013¹³

^aThe definition of youth varies across countries; there is no universally agreed upon definition. For this paper, the Global Business Coalition for Education's definition of youth as ages 15 to 29 (to account for global differences) is used.

The growing proportion of youth lacking the basic skills to participate in the workforce correlates to unprecedented rates of youth unemployment or underemployment. The unemployment rate for youth ages 15 to 24 was 13 percent in 2013, or approximately 73.4 million.^{14,15} While the unemployment rate is partly a result of the booming youth populations in certain geographical regions, other factors are

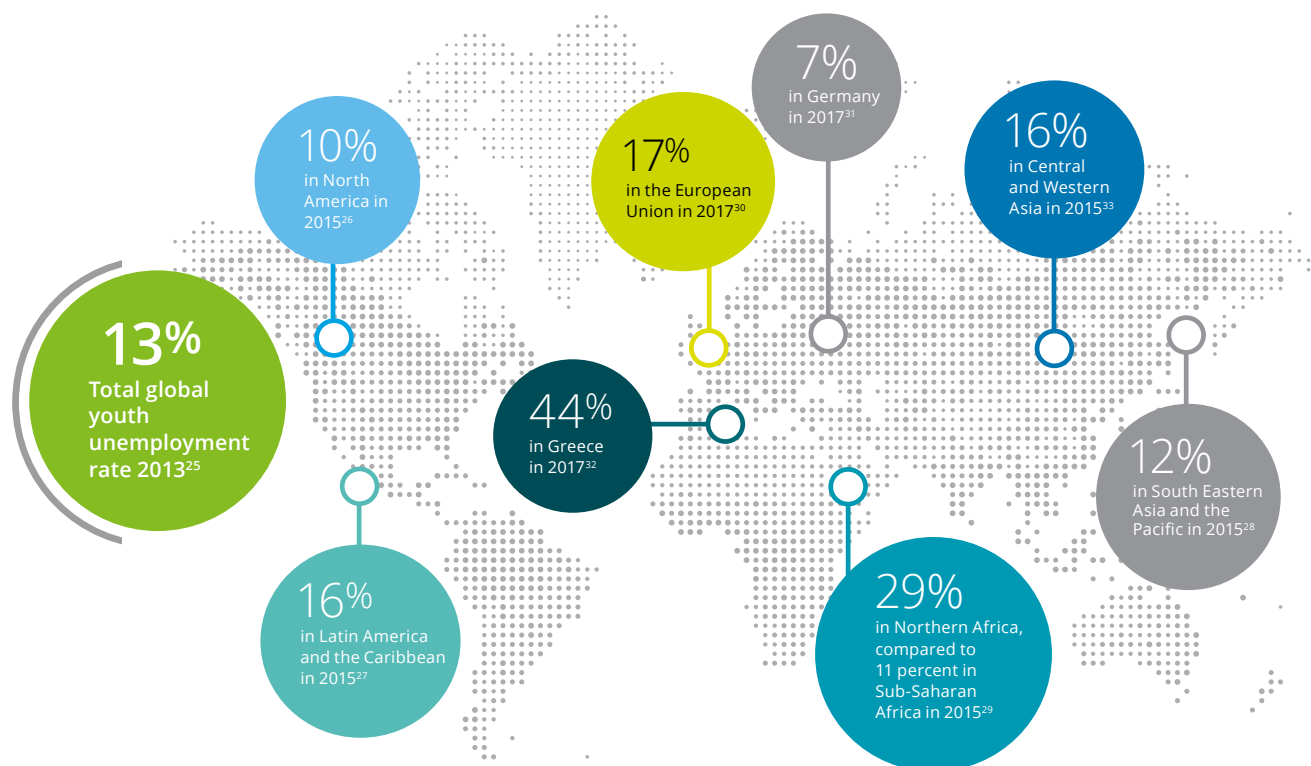
affecting this trend, such as international migration patterns, political instability, gender norms, and cultural values.^{16,17,18} As current demographic trends continue to influence this trajectory, the problem will only grow as unemployed youth continue aging, further exacerbating global inequalities.

Global youth employment overview



Where are youth unemployed?

Below is the youth unemployment rate in various regions and countries.



“We carry an exciting energy, enthusiasm, and creativity as youth in what we do, thus it is a waste of human capital when these gifts are not tapped in improving businesses, letting potentials lie idle, and putting the current and future world of work in jeopardy.”

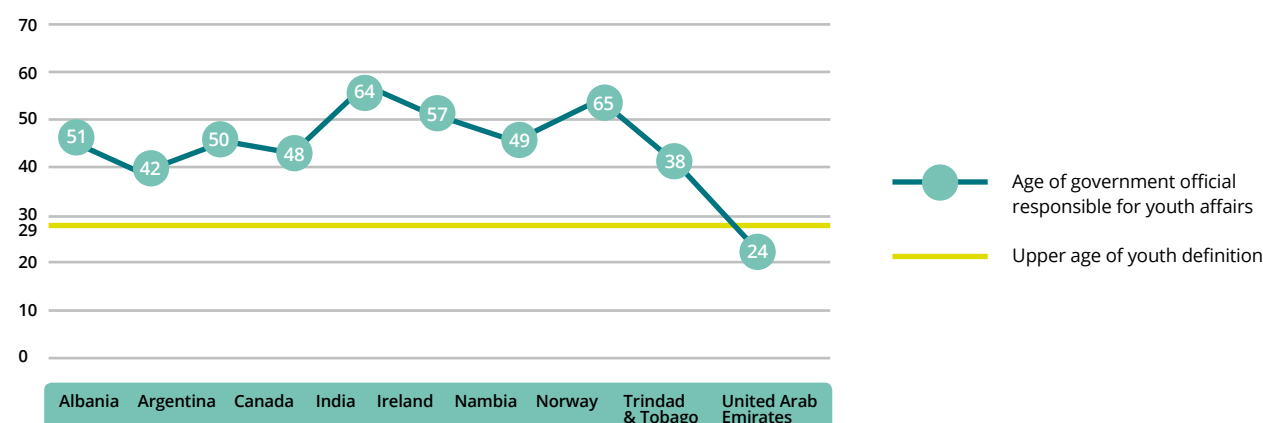
*Nina Mbah, Nigeria, GBC-Education
Youth Skills and Innovation Initiative:
Youth Network*

The unheard youth voices^b

As the business community's future employees, customers, and competitors, youth provide a powerful voice for contributing to and informing business strategies in terms of workplace needs and culture, and influencing consumer and employee engagement. Cultural expectations and norms around the role of youth often obscure the importance of including youth voices in the educational, political, and business communities' deliberations and actions.³⁴ A salient

example is the current age of many government officials in charge of youth affairs; despite their role of representing youth, many of these officials "aged out" of the definition of youth at least a decade ago.^{35,36} One solution is for the business community to engage youth in corporate strategy to leverage diverse perspectives that can drive innovation and creative problem-solving (*recommendation 3*).³⁷

Age of youth ministers versus maximum age of youth



Hearing directly from youth on the topic of workforce development

- The skills important for the future of work include work readiness skills, soft skills, technical skills, and entrepreneurial skills.
- Improvement is needed in the approach to youth skill development, such as making learning and training interactive, multicultural, engaging, constructive, and practical.
- Barriers to skill development and employment include lack of access to resources, lack of knowledge about careers and skills needed, lack of opportunities, tools and training, adult beliefs in youths' abilities (mindsets), and systemic issues.
- There is a misalignment in the skills that youth acquire and the demand for skills needed in the workforce.
- The responsibility to prepare youth for future jobs rests in part in the hands of government, nonprofits, the business community, schools, and civic society (*recommendation 1a*).
- Workforce development efforts should consider country specifics, incorporate up-to-date skill training methodologies, engage youth to solve problems, and see 4IR as an opportunity.

In terms of recommendations, youth suggest that the business community:

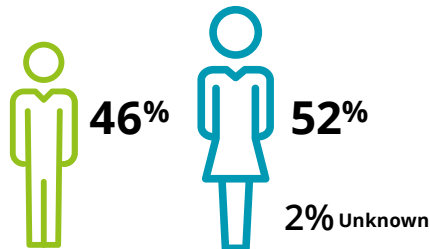
- Clearly communicate the skills it needs (*recommendation 3a*)
- Provide resources, opportunities, and flexible funds to support youth skill development (*recommendation 1e*)
- Engage with education and workforce development programs to advance their efforts (*recommendation 1b*)
- Create and support inclusive hiring and retention practices (*recommendation 3a, 3e*)
- Engage youth in workforce development initiatives (*recommendation 1a*)

^bWe use the term "youth voices" in the plural form to represent the multitude of cultures, geographies, and experiences encapsulated in the term. There is a wide range of developmental and age-appropriate needs, varying across country-specific definitions, cultural expectations, and societal norms. This can make singular representation difficult in terms of addressing the varied demands and preferences of youth. Given the culture-specificity of the term "youth," large global variations can complicate our understanding of how to engage, leverage, and utilize youth voices. By speaking of youth as a plurality of voices, we acknowledge the different opportunities and challenges that affect this population.

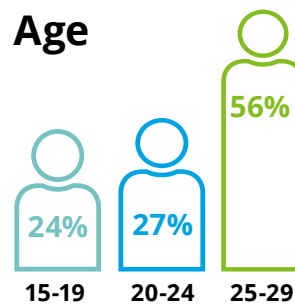
Youth Snapshot

The Global Youth Survey was conducted from June to July 2018 to understand the perspectives of youth from around the globe. Here is a snapshot of the 531 youth that participated in the survey:

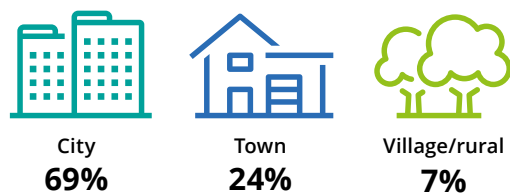
Gender



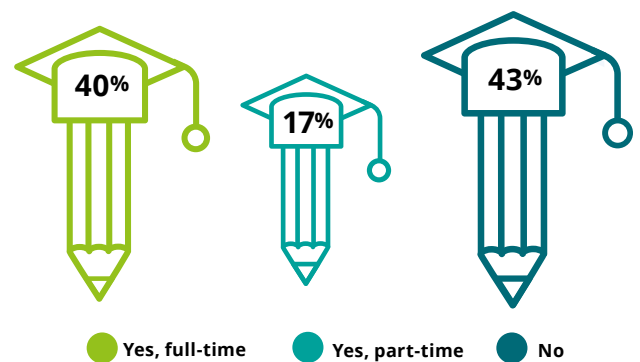
Age



The vast majority of youth respondents live in cities:

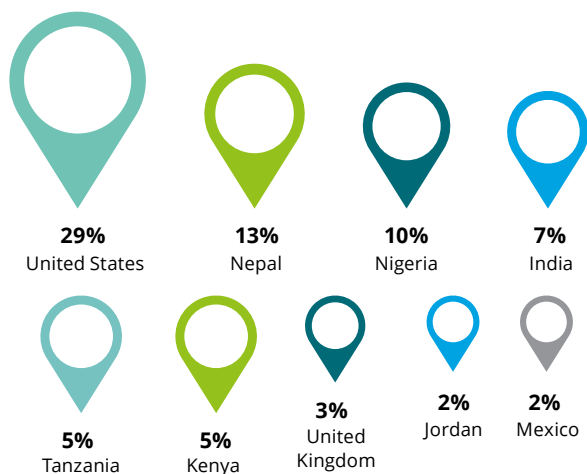


57% of youth are enrolled in school, either full- or part-time

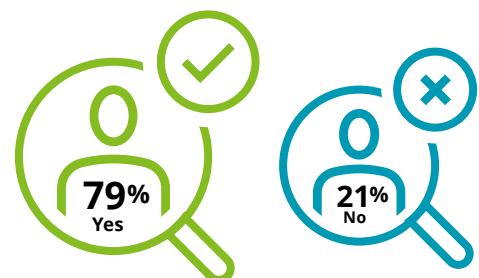


Location

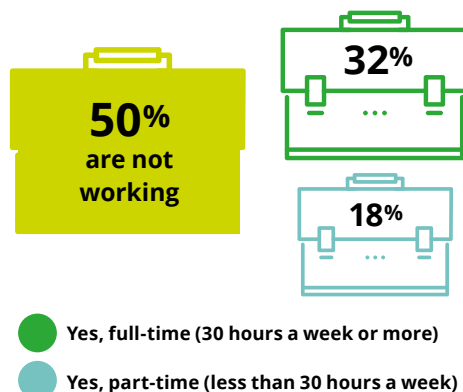
73% of youth respondents live in 9 locations:



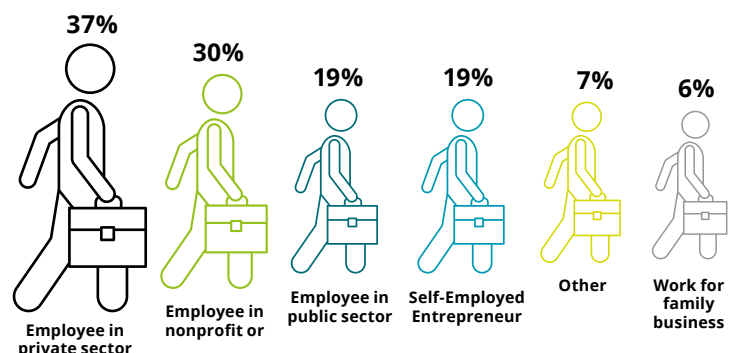
79% of unemployed youth respondents are looking for work



50% of youth are working

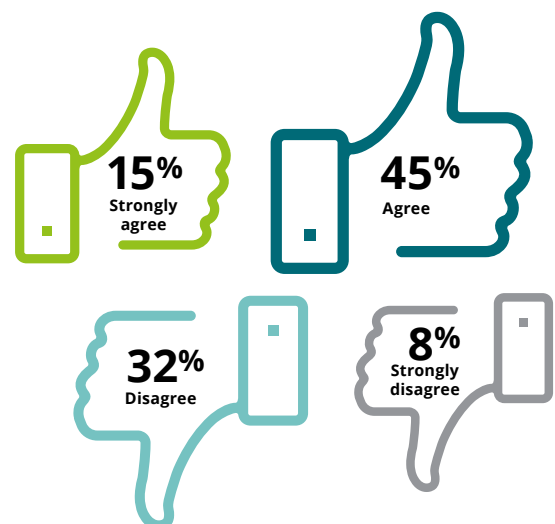
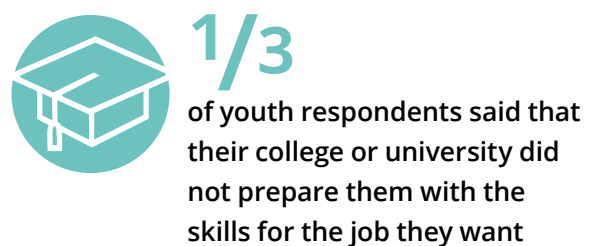
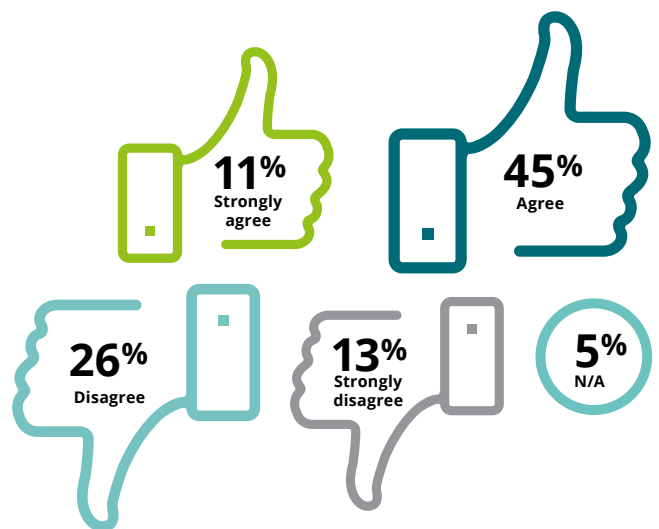
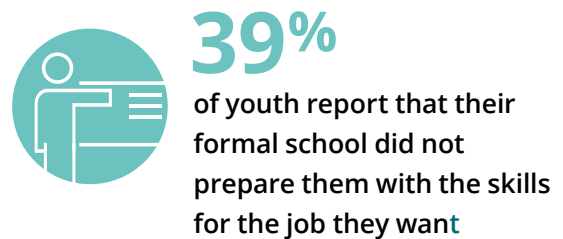
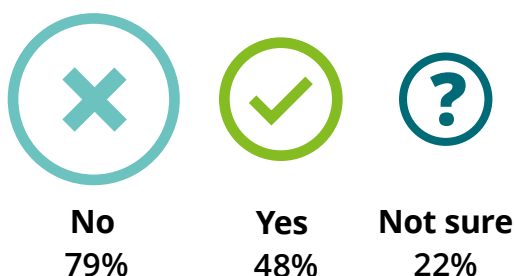
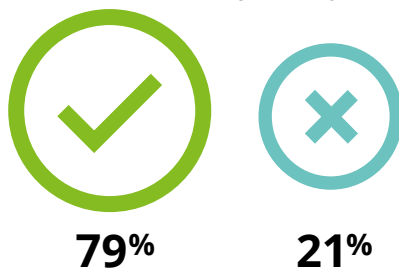
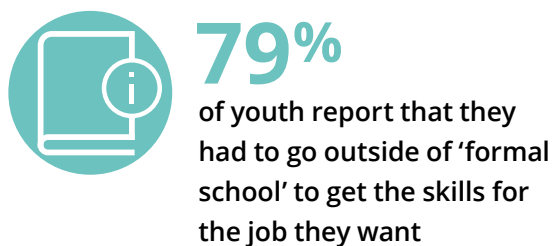
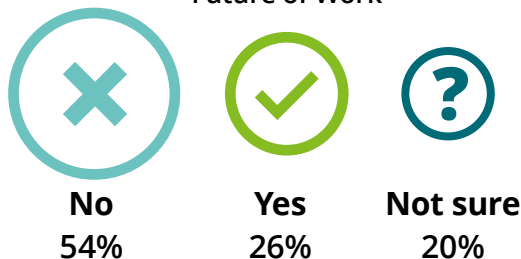
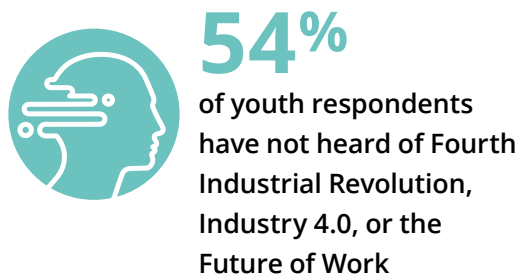


Youth are employed in a range of work types:



Summary of Key Findings

Youth shared their insights and perspectives on skill development and employment, the opportunities and the barriers.





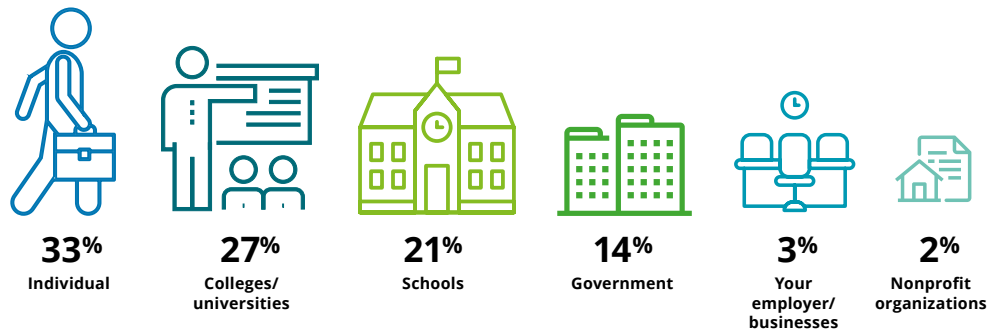
In addition, youth have participated in skills training in a variety of places. The majority outside of formal employment, opening a door of opportunity for the business community for skills development



Other responses include: private led training, exchange program, volunteering, therapy, self-learning, international training, study abroad, faith-based, research, boot camp, clubs, and conferences.



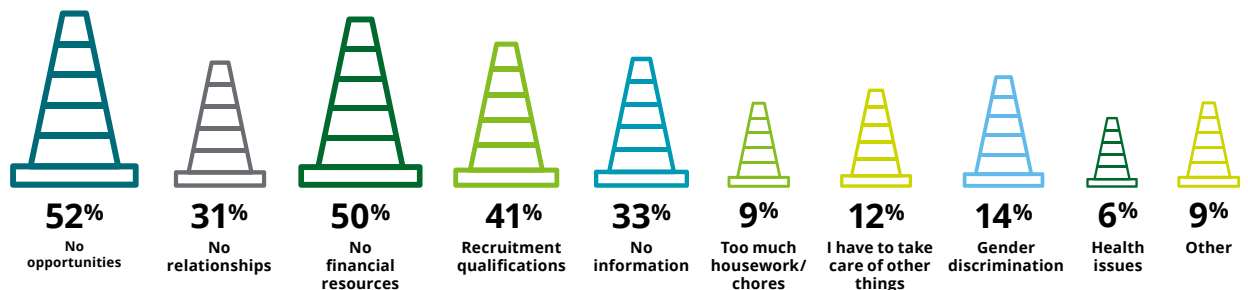
As a result, youth believe they are responsible for preparing themselves for future jobs



Other responses include: parents/guardians, combination of self/school/job, collective society, and shared responsibility.



Youth report barriers and challenges to getting the skills needed for the job they want



Other responses include: age discrimination, no practical resources, lack of time, too many choices, not enough information about where to start/focus, lack of connections, confusing/mixed guidance, fatalism system, immigration policy, transportation, corruption, unequal pay, disability, criminal background, transferring relevant skills to an industry, do not have the right training programs, and anxiety.

The search for the future-skilled youth employee

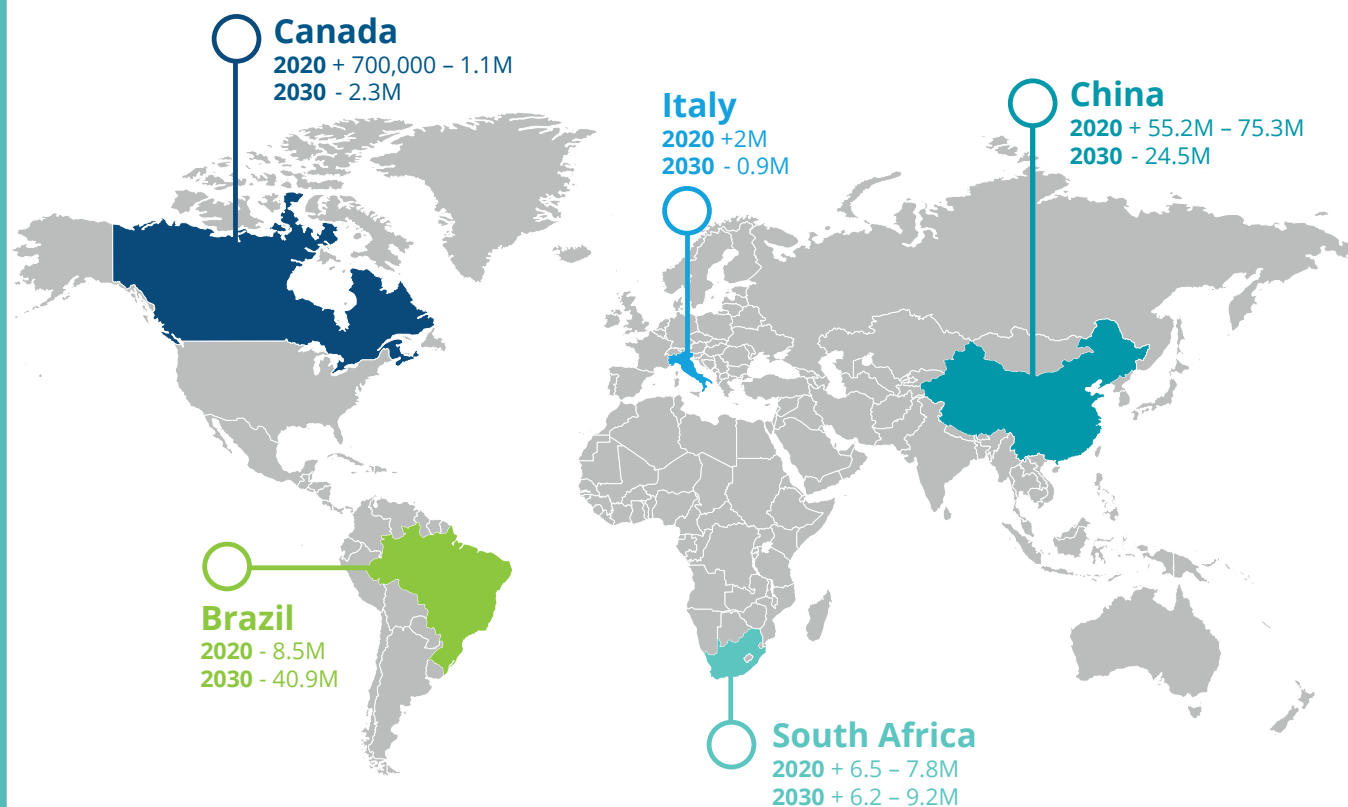
As high rates of youth unemployment persist, employers struggle with finding and retaining talent aligned to their human capital needs, creating resource shortages within increasingly complex and competitive landscapes. By 2020, the global economy will have a shortage of 40 million workers with a tertiary education, a shortage of 45 million workers with a secondary education, and a surplus of 95 million low-skilled workers.³⁸ These deficits and surpluses are, again, not equally distributed globally. For example, China is anticipated to have a deficit of 24.5 million workers while sub-Saharan Africa's workforce will double to 20 percent of the total global workforce, up 10 percent from today.^{39,40} This uneven distribution of population-driven talent and employment opportunities represents a potential global mismatch in supply and demand.

This potential skills mismatch could result in an overall environment where high-skill workers fulfill high-paying roles,

and low-skill workers fulfill lower-paying, task-based roles that could be replaced through automation. This dynamic could create a "hollowing of the middle," further exacerbating fiscal and social global inequalities, social unrest and migration, and causing intergenerational, systemic-level repercussions.⁴¹

If this trend continues, this burden could disproportionately impact women⁴²; the skills required of traditional "men's jobs" are twice as likely to be transferable to new employment opportunities as those of traditional "women's jobs."⁴² Not addressing the mismatch between supply and demand could leave the business community facing an increasing shortage of skilled labor, and the global community seeing further growth in informal sector participation. Youth are increasingly looking to business to provide the tools needed to address this new world of work as jobs change, evolve, and grow.⁴³

Predicted demand for employees in 2020... compared to predicted demand for employees in 2030



4IR complicates the challenge of the supply and demand of skills

This landscape is made even more complex by the tangible implications of 4IR, which holds significant promise for business as it relates to the rapidly expanding use of robots and process automation, big data to create smarter supply chains, and artificial intelligence (AI) for decision-making. These innovations have helped redefine the work week, created a new economy of gig-based independent contractors who are reshaping when and where work is done, and blurred the traditional definitions of formal and informal employment.

There are seemingly unlimited possibilities related to increased human connectivity and access to knowledge. These possibilities will likely be multiplied by emerging technology in AI, robotics, automation, 3-D printing, biotechnology, and quantum

computing that could potentially displace more than 5 million jobs by 2020, with most of this loss concentrated in low- and middle-skill jobs.^{44,45}

For businesses to remain competitive, they should rethink how and where work is done, thereby potentially reshaping their organizational structures, cultures, and processes to fit these changing developments. The speed of technological updates often surpasses the speed at which current and future talent can be upskilled and trained, leaving a gap between skills needed and skills available.

To learn more about changing economies, see Technical appendix A: Three economies.

What skills are needed for 4IR?

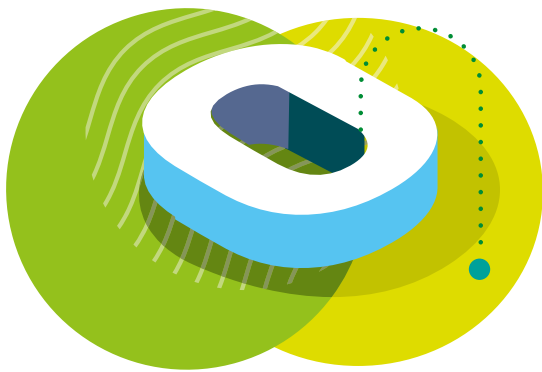
Building on foundational skills of literacy and numeracy, and aligning with the literature and conversations from youth focus groups, we frame these skills into four categories (*recommendation 3n*). With the majority of business executives

uncertain they have the right workforce and skill sets needed for the future, these categories provide a frame to prepare youth for a future in which jobs and required skills will change, and in which agility and continuous learning provide a foundation for growth.⁴⁶

Skill Categories	Definition	Purpose	Examples	Teaching & Training Methodology
Workforce Readiness	Foundational to individuals' entry and ongoing success in the workplace, ranging from initial job search to maintaining continuous employment	To support youth in finding and securing employment, and succeeding within the workplace	Literacy, numeracy, digital literacy, resume writing, self-presentation, time management, professionalism, etiquette, social norms	<ul style="list-style-type: none"> • Team-based • Project-based • Practical application • Experiential • Case simulation • Business exposure • Job shadowing • Mentorship • Coaching
Soft Skills	Personal attributes, social skills, and communication abilities that support interpersonal relationships and interactions with others	To support youth as they integrate and collaborate with internal and external workplace stakeholders, such as customers, co-workers, and management	Communication, critical thinking, creative thinking, collaboration, adaptability, initiative, leadership, social emotional learning, teamwork, self-confidence, empathy, growth mindset, cultural awareness	
Technical Skills	Knowledge and capabilities to perform specialized tasks	To give youth technical or domain expertise to perform job-specific tasks	Computer programming, coding, project management, financial management, mechanical functions, scientific tasks, technology-based skills, and other job-specific skills (e.g., nursing, farming, legal)	
Entrepreneurship	Knowledge and abilities that support success in creating and building a workplace opportunity or idea	To support youth in establishing their own business, supporting entry into freelance, contract work, or gig work, and/or developing as a self-starter within a work environment	Initiative, innovation, creativity, industriousness, resourcefulness, resilience, ingenuity, curiosity, optimism, risk-taking, courage, business acumen, business execution	

Lifelong Learning:

A continuous process of gaining new knowledge and skills as individuals progress through their professional and personal careers.



Workforce readiness has long been a cornerstone of traditional education systems and development programs, instilling foundational skills such as time management, personal presentation, and attendance. These basic skills are a first step on the path to employability.⁴⁷

Second, 4IR increases the need for “essential human skills” commonly referred to as “**soft skills**” that include creativity, complex problem solving, relationship building, communication, emotional intelligence, and critical thinking.^{48,49,50,51,52,53} In addition, youth also note the growing need for courage, resiliency, adaptability, and resourcefulness.⁵⁴ The importance of these qualities is confirmed through education research and, in fact, curricula is expanding to incorporate social and emotional learning (SEL) to enhance student intrapersonal, interpersonal, and cognitive competence.⁵ While our research focuses on youths between 15 and 29, it is critical to cultivate SEL in early childhood through the classroom, home, and community to enhance their ability to transition more successfully to adulthood and the workplace.⁵⁵ Recognizing our growing technological interconnectedness, the expansion of global markets, youths’ mobility and migration, and the diversity of workplaces, there is a growing emphasis on “global competence”: The ability to apply acquired soft skills in cross-cultural, multicultural, and global contexts.⁵⁶ A common thread across these soft skills, SEL competencies, and global competencies is that they are decidedly “human” traits that, for now, are irreplaceable by machines.

There are cultural implications, language implications, age considerations, and gender norms that influence how skills are understood, developed and demonstrated.^{57,58,59} In identifying the “soft skills” for success, we recognize that the definition and acquisition of these skills can be impacted by culturally specific constructs, parental influences, and environmental effects. This poses a challenge and an opportunity for the business community to rethink how these skills are advertised and framed to potential talent with diverse interpretations of these constructs.

Third, 4IR will likely mean the creation of new employment opportunities and renewed focus on jobs with employment

shortages. These opportunities require **technical skills** and targeted training. Unlike the previous two skill areas, understanding the industry-specific demands requires input from the industries themselves. Such input can create opportunities for industry-driven demand analysis, work-based learning, and talent-need projections to redefine the education to training to employment pipeline.

Fourth, 4IR could create new opportunities for **entrepreneurship**. Due to innovations in work—microloans, co-working spaces, global interconnectivity, and platforms to cover benefits previously tied to centralized employment—entrepreneurship will likely provide a unique opportunity for youth across the globe to bypass barriers to entry into traditional employment. It will also provide an opportunity to leverage local knowledge and resources.⁶⁰ Some young people will move between formal and informal work; entrepreneurial skills could help them better navigate these changes, and could better position them for future job opportunities.⁶¹ However, youth entrepreneurship could face potential limitations to success, such as country-specific policies and regulations, access to finance and business support, and mentorship (*recommendation 3b and 3j*).⁶²

In addition to the four skill categories, there is growing emphasis on continuous and lifelong learning^d to help youth adapt and participate in the changing landscape of work.^{63,64,65,66,67} Ensuring that youth are able to participate in the ever-changing landscape of work means supporting their lifelong learning.⁶⁸ Challenges, such as lack of motivation, time, and inadequate resources—as well as resistance to change, lack of awareness of knowledge deficit, and group mentality—can interfere with youths’ success in developing as independent, lifelong learners.⁶⁹ Thus, it is critical that education, workforce programs, and employers align efforts to support the development of youth in their journey as lifelong learners in 4IR world.

The four skill categories together can provide a foundation for lifelong learning and the skills needed for 4IR. However, the question remains: What roles can individuals, businesses, governments, and the nonprofit sector play in developing these skills for the future of our changing workforce?

^dAccording to the Collaborative for Academic, Social, and Emotional Learning (CASEL), social and emotional learning includes self-awareness, self-management, social awareness, relationship skills, and responsible decision-making.

^eThe Commission for a Nation of Lifelong Learners in a report, *A Nation of Learning: Vision for the 21st century*, defines lifelong learning as “a continuously supportive process which stimulates and empowers individuals ... to acquire all the knowledge, values, skills and understanding they will require throughout their lifetimes ... and to apply them with confidence, creativity, and enjoyment in all roles, circumstances, and environments.”

"People do not want to invest [in] nor work for a company [that is] not socially responsible. Investing in their current and future workforce by developing skilling, re-skilling, and life-long learning programs is therefore critical and essential."

*Shea Gopaul, founder & executive director,
Global Apprenticeship Network*

Assessing models to skill youth

The following elements and questions should be considered when determining whether and how to collaborate with others and invest in programs and initiatives. These program model

considerations can help the business community understand gaps and opportunities in the programs, interventions, and models in their local workforce ecosystem.

Model considerations	Questions to consider
<p>Geographic target: Indicates the geographical location of youth served; this will enable analysis of the needs in the geography and programming required (new or existing) to meet those needs.</p>	<ul style="list-style-type: none"> • What are the geographic boundaries of the identified problem and targeted youth? • Are you targeting a village, neighborhood, city, country, region of the world, etc.? • How many youths are there in your target geography? How many are enrolled in education, employed, and/or NEET? • How similar or different are these geographies, and how does that impact programming?
<p>Target beneficiaries: Indicates the coverage of programs serving youth and helps to identify populations that are potentially over- or under-targeted by programming.</p>	<ul style="list-style-type: none"> • What is the target demographic that this program or initiative serves? • How many are enrolled in education, employed, and/or NEET? • Are there specific gaps in skill development and outcomes by gender, ethnicity, geography, etc.?
<p>Key program features: Indicates the basic model of the program and helps to identify trends in terms of program structures and youth outcomes; this could also identify opportunities to collaborate or provide complementary programming.</p>	<ul style="list-style-type: none"> • What is the model for program design, key features, and delivery method? • Is the program model demand driven or skills driven? • What is the program duration? • How is quality monitored and assessed? • What wraparound services are included?^a
<p>Skills categories: Indicates which of the four key skills are taught and included within the training and delivery method.</p>	<ul style="list-style-type: none"> • What are the key skills taught (e.g. workforce readiness, soft skills, technical skills, entrepreneurial skills)? • Which skills are most in demand in your targeted geography and beneficiary group?
<p>Delivery methods: Indicates how skills are taught and delivered to youth; this could potentially identify trends, gaps, and opportunities for differentiated methods.</p>	<ul style="list-style-type: none"> • What is the delivery method for teaching and training skills (e.g. in person, virtual, blended, and autonomous learning)? • Which teaching methods are important for your target beneficiary group, and for the skills needed?
<p>Outcomes: Indicates the metrics used to measure program and system outcomes.</p>	<ul style="list-style-type: none"> • What are the metrics of success and impact? • What data is collected, how are results measured, and how is this information used to improve program and strategy design?
<p>Target employment opportunities: Indicates the potential employment opportunities for youth, and direct linkages to the employment marketplace.</p>	<ul style="list-style-type: none"> • What types of employment opportunities are available to youth upon program completion? • Does the program provide direct linkages to employment? • Which industries are growing within your targeted geography, and does the program support them?

See Appendix B for workforce model examples

^aWraparound services can include support for transportation, childcare needs, unexpected life events, substance abuse and mental health, trauma services, and legal expertise.

Whose job is it to prepare youth?

A growing number of workforce development models look to address the widening gap in skills needed to fulfill the business community's expectations. Through these models, we can better understand the opportunities and the barriers to establishing alignment across the multiple stakeholders supporting youths' success in 4IR. In reviewing these models, the business community should keep the following four challenges in mind:

- How to reimagine 4IR as a *unique opportunity* instead of a *problem*
- How to reposition approaches at a *unified, system level*
- How to realign to achieve both *scale and impact*
- How to reframe the possibilities for *marginalized youth*[†]

The models are categorized by the stakeholder responsible for implementing, operating or managing the program or initiative. This categorization removes the focus from the funding source. Five stakeholder models are explored: education-based, nonprofit, government-sponsored, youth-led, and the business community.

To learn more about workforce ecosystems, see Technical appendix B: Collaborating through local workforce ecosystems.



[†]Marginalized youth are defined by the Office of the United Nations Secretary-General's Envoy on Youth as youth who face discrimination and exclusion based on membership in demographic groups including: women, indigenous, disabled, LGBTQI, refugee, ethnic minority, migrant, economically impoverished, and age.

“Without quality education,
little can be achieved when
connecting education and
labor force.”

*Eduardo Velez Bustillo, former World Bank
Education sector manager and leader for
LAC and EAP, current adjunct professor at
Georgetown University and Kobe University*

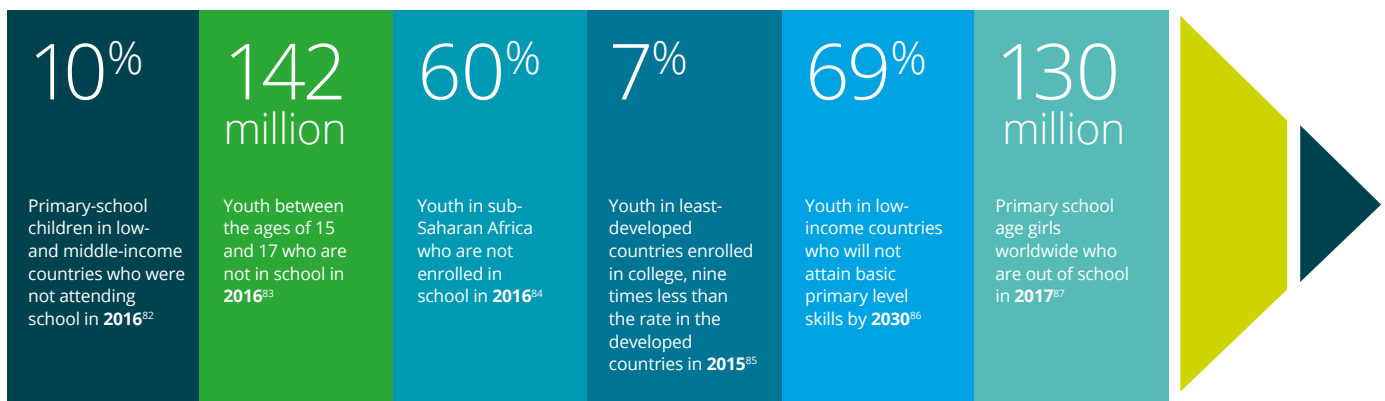
Education-based models

Traditionally, education systems across the globe were the primary preparers of young people for the workforce. However, there is an increasing disconnect between the content-driven education model largely developed in the 19th century and today's rapidly evolving, skills-based world of work. This disconnect leaves a potential misalignment between the world of education and the workforce hiring for these changing skills.^{70,71,72,73,74,75}

Such educational disparities are often perpetuated because many of these systems—built over a century ago—are based on youth-development theories and education models that may be inadequately serving students' current and future needs; models that do not emphasize team-based projects and problem solving.^{76,77} Many education systems are chronically underfunded and understaffed. Underinvestment in school-based technology means graduating students may lack basic computational literacy. And even when technology

investments have been made, other problems such as inadequately trained teachers or a lack of infrastructure, such as inconsistent electricity or Internet connectivity, may limit the ability to integrate technology into the education process (*recommendation 1c*).⁷⁸ Outcomes may also be limited by inadequate teacher support or poor integration of technological education and digital literacy into the larger educational ecosystem.^{79,80} To create truly sustainable impact through technology enabled learning, it is important to consider context-specific challenges—for example, inconsistent electricity or Internet connectivity—as well as deliver hands-on, immersive, personalized learning and teacher training to meaningfully empower both teachers and students.⁸¹ Educational disparities and understanding misalignment around metrics of success are foundational to solving for both short-term employability and long-term preparedness for the workforce (*recommendation 1a.iv*).

Gap in formal education systems around the world



New education models seek to address these concerns by diversifying educational opportunities, such as South Korea's Meister schools. These schools partner with industry to deliver curricula that provide hands-on training and direct employment.⁸⁸ Other systems, such as the Philippines' K-to-12 Program, have redesigned their secondary education systems to encourage specialization in skills development, and align formal education with technical and vocational education and training (TVET). These reforms recognize the potential stigma

of technical education, and attempt to address the bias by incorporating the voice of industry directly into the frameworks and curricula of the models.

Alternative education pathways can also provide entry points into the workforce through programs, including retraining, TVET, career and technical education (CTE), and apprenticeships.

Apprenticeship models: Dual-education apprenticeship models seek to ease the transition between education and the workforce by providing students with on-the-job skills training while they complete their formal education. These models are a platform that businesses can use for direct pipeline hiring with the opportunity to prescreen candidates, lower the cost of recruiting and training without entering a formal employment process, and promote their corporate social responsibility objectives in the marketplace.

Such programs allow opportunities for employees to improve coaching, mentoring, and management skills that can help boost engagement and job satisfaction. They also provide students with on-the-job training to start resumes, improve opportunities for lifelong learning and long-term earning potential, and make professional connections while continuing their formal educations.

However, they assume a level of autonomy from a traditional school-day schedule. Depending on country-specific requirements (mandatory in-school hours and testing standards), flexibility to deviate from this schedule can impact an education system's ability to adopt this model. The model also requires the business community to provide upfront investments in training, skilling, and resources without a commitment of future employment from the student (*recommendation 1b.ii*).

There are critics who highlight the limited mobility caused by the apprenticeship model. While it may provide early benefits to youth employment, it can lead to limited employment mobility later, and limited access to alternative opportunities outside the apprenticeship's professional focus area.⁸⁹ From a cultural perspective, the success of the apprenticeship model relies on cultural contexts, societal norms of appropriate opportunities for youth employment, and changing the perception of TVET credentials in some emerging markets.^{90,91,92} Apprenticeship models also rely on a level of cultural acceptance and equity of access; the opportunity cost of an apprenticeship as opposed to a traditional employment opportunity could discriminate against already marginalized youth by hindering their long-term earning potential.

The standardized credentialing for non-school-based (secondary or tertiary) educational achievement through apprenticeships—both in terms of necessary requirements for completion and recognition of a central credentialing unit—can create misalignment across systems. The inability

to demonstrate educational attainment poses a significant barrier to employment for many youths, due to employers' reliance on educational credentials as an automatic mechanism for narrowing down their list of potential job seekers.^{93,94}

For many youths, a certification of a skill or trade can potentially circumvent this barrier, and is often the motivation for completing a recognized TVET or workforce training program. While new forms of digital credentials and online badges aim to address issues of geographical mobility, continued variation between both credentialing bodies and hiring employers limit their widespread applicability and access (*recommendation 2c*).^{95,96}

Examples: Germany/Dual-Education System, Korea/Working-Learning Dual System

Afterschool and out-of-school programs: As a workforce development strategy, and to improve opportunities for youth skill building, many communities are turning to innovative programming that is offered during non-school hours in venues that parallel traditional education. Afterschool programs often target the most vulnerable and disconnected youth—those who may be disenfranchised by, or who mistrust, institutions—and provide them with access to experiential learning and development. In many cases, these programs also offer wraparound services, social and emotional learning, positive youth development, college and career exposure activities, hands-on learning, real-world experiences, and mentoring to support skill development.⁹⁷ The success of these afterschool programs largely depends on access and sustained participation, quality programming, staff, wrap-around services, and strong alignment between learning partners, including schools, home, and community institutions.⁹⁸ There is a clear need to support youth as they move through school and into the labor market, and after school and summer learning programs provide experience that employers desire (*recommendation 1b.i*).⁹⁹

Examples: Singapore/Student Care Centres and Co-Curricular Activities, United States/21st Century Learning Centers

Nonprofit models

Workforce development programs run by nonprofit organizations can play a key role in the workforce development ecosystem, with technical expertise and in-depth experience coupled with on-the-ground institutional knowledge for dynamic programming. Nonprofits can leverage their relationships with the local community to build trust and respond to local needs while allowing for agile responsiveness to employers' skill needs. While many programs partner with education systems to provide in-school training, others target youth who are unconnected to formal education. Recently, such programs have emphasized demand-driven frameworks that partner with employers to prepare youth

for direct employment. While nonprofits can provide an agile linkage between youth and employers, they often face several limitations, such as continuity of funding and grant priorities, staffing capacity, and a reliance on local community channels for attracting participants and communicating impact (*recommendation 1b.iii, 1d*).

Examples: Educate!, EFE-Maroc, Harambee Youth Employment Accelerator, JA Worldwide, Jobs for America's Graduates' Out of School Program, Save the Children's Youth Employment Programs, Sistema de Aprendizaje Tutorial

Government-sponsored models

Leveraging their size and resources, governments can position themselves as a bridge between education, employers, and youth. This positioning varies in terms of engagement. Some governments, for example, provide information platforms and establish standards qualifications frameworks, while others have implemented mandatory requirements for employee training (such the South Africa Skills Development Levy).

Career pathways: Several governments around the world recognize the need to outline career pathways for young people, providing online information platforms and subsidies for interested youth. These models incorporate input from the business community to help identify the skills needed for their specific industries, and provide varying levels of opportunity for employment. This means leveraging government's role to provide distribution channels for the business community to communicate its industry-specific needs.

The success of these programs relies on several factors. Government sponsorship allows for perceived legitimacy and coordination, but such models may face a range of bureaucratic issues and threatened financial support if the governing body prioritizes other initiatives, or faces budget constraints or leadership changes. These initiatives also rely on participation in training programs, which face competing mandates due to funding streams, and which may require upskilling of their own educators to fulfill the training need requirements. These initiatives also rely on acceptance by the business community.

While these programs tend to integrate employers' needs from the beginning, and even provide incentives for business community actors to become partners, the overall success of the initiatives relies on youth attaining employment and the availability of jobs upon graduation. Without closing

the employment gap, the momentum and credibility of such programs may diminish, making the case for deeper collaboration with the business community.

Examples: European Union Youth Guarantee, South Africa/ National Career Advice Portal, Skill India Mission Operation (SIMO), SkillsFuture Singapore, United States Department of Labor Career Pathways Toolkit

Qualifications frameworks: These frameworks outline specific tasks and assessments that demonstrate competence in specific fields recognized by the business community. Currently, more than 100 countries have—or are in the process of developing and socializing—forms of national qualification frameworks.¹⁰⁰ These frameworks provide a comprehensive pathway for nontraditional students to gain and demonstrate skills. These frameworks are not without challenges, however, and face obstacles in establishing global equivalents that allow for international mobility, equity of access in terms of training, and recognition by the business community, both within and across regional boundaries. A lack of funding for training programs to keep abreast of changing industry needs can depress the framework's applicability and credibility within the business community. Qualification frameworks rely on participation and input from the business community to ensure they reflect industry needs, as well as a system of training and skilling programs which are agile and responsive to the changing world of work (*recommendation 2a*).

Examples: European Qualifications Framework, India's National Skills Qualifications Framework, Skills Initiative for Africa

Youth-led models

Youth themselves are, and will be, most directly affected by the decisions related to workforce training and future employment. Many youth-led groups and initiatives—including the Global Business Coalition for Education Youth Advisory Council, World Economic Forum Global Shapers Community, Their world Global Youth Ambassadors, and the Commonwealth Student Association are taking on the issues of workforce development and informing the field.

Youth will be affected by the decisions that educators, workforce leaders, policy-makers, and businesses make today, and their voices are critical in the growing crisis of

the youth skills gap. Youth-led models often lack perceived legitimacy, access to resources, and continuity of stakeholders that supports implementation of action. However, youths' voices can significantly help inform and shape current and future skills-development models, establishing informed feedback loops and driving the interaction between youth and the business community through advocacy and marketplace signaling.

Examples: Commonwealth Youth Council, ReGeneration, Soliya, Sustain Solutions

Business community models

In recognition of the skills gaps and the need to attract new talent in the changing world of work, the business community is proactively investing in different models of youth workforce development.

Community investment: Community investment is the business community's external financial investment in community development programs, traditionally under the purview of an organization's corporate social responsibility division or an associated foundation. As such, community investments predominately focus on supporting local communities where business' can leverage their financial resources or expertise. Such initiatives rely on an organization's ability to complement its in-house tools and resources with its knowledge of local economies and industry landscapes.

Enterprise investments: Enterprise investments are internal, company-specific actions that impact the sourcing, hiring, and retention of employees. For example, some companies are implementing a practice of blind hiring by removing names from applications to deter implicit racial and gender bias.¹⁰¹ By lengthening the applications window before extending formal offers, for example, businesses are helping to address gender imbalance in incoming classes by recognizing that women often take longer to accept a job offer, as compared to men.¹⁰² By addressing internal practices that potentially create barriers to entry and retention, the business community can evaluate the potential human capital implications of hiring a broad range of diverse candidates to drive innovation and create more balanced and varied teams (*recommendation 3a, 3c, 3d, 3e, 3f, 3i, 3m*).

Traditionally, community investment and enterprise investment have been siloed within organizations. There is ample argument for maintaining such separation; if companies only invest in community issues that directly support their talent pipelines, many vulnerable populations would be overlooked. However, there has been a recent shift toward reframing these two types of investments: Instead of separating community and enterprise investments, some businesses are blending the two, extending their investments in different points along the youth education and employment cycle to support the next generation of employees. This creates opportunities for nontraditional hires while also establishing a direct pipeline of trained employees who are already familiar with company culture, and who can be prescreened by hiring managers during their training.

These programs have their limitations. Many are limited in scale due to their financial and resource-intensive nature. The business community may face limitations based on whether they are publicly or privately held. Depending on how such programs are financed, they may be subject to financial constraints dependent on the stability of the supporting organization. In a time of financial belt tightening, the extent to which such programs are funded depends on the priorities of shareholders (in public organizations) or owners (in private organizations).

Examples: CORE @ Deloitte, Gap Inc. This Way Ahead, Hilton's Open Doors and Passport to Success Program, HP's National Education Technology Assessment (NETA), Intel Future Skills Program, Pathways in Technology Early College High Schools (P-TECH), Salesforce Pathfinder Training Program

Other considerations for youth employment

Other factors affect youths' ability to gain skills and employment in the current global labor market:

International labor market: The growth of an international labor market—coupled with the increasing ease of transnational movement or “skill mobility”—redefines the target employment market for workforce initiatives. Workforce development programs can focus either on connecting local people to local jobs, or local people to international jobs. Defining the target country of employment supported by the workforce training program is imperative given the geographic differences in youth unemployment rates, and the host countries of employers seeking youth workers.¹⁰³ Aligning the geographical needs of employers with the geographical locations of available youth means assessing skills-development programs for their ability to either target a specific industry, or create trainings that focus on generally applicable skills for agile responses to shifting market demands. This also means accounting for the expectations of the target youth population, and the ability of a program to fulfill those expectations, including post-completion employment opportunities (*recommendation 3a*).

Internet access: With the growing emphasis on digital literacy, and the shift toward digital labor platforms and online training, the ability to access and use the Internet is increasingly important for youth seeking to enter and succeed in the workforce. Currently, more than 50 percent of the global population has Internet access, but variation exists: 81 percent of individuals in developed countries have Internet access compared to 14 percent in the least-developed countries.¹⁰⁴ In addition, this wide variation hides differences in broadband accessibility, limited by system infrastructure and income elasticity to purchase data (*recommendation 1c*).

Digital accessibility and literacy: Youths' ability to navigate the digital world factors into their ability to access digital labor platforms, to participate in the Internet-powered gig economy, and to gain the skills to collaborate on geographically disperse, virtual teams. Given business' integration and dependence on technology in everyday processes, employers' expectations for youth digital

literacy means workforce programs should address this skill, accounting for cultural differences in digital uses and social norms (*recommendation 3n*).

Gender: Workforce models should consider the personal and cultural roles and expectations of female youth. Considerations should include expectations for employment, their roles in the family, their geographic mobility, and their previous educational opportunities. In tandem, workforce programs should account for employers' skill expectations, wage differentials, and viable career pathways made available to young women (*recommendation 3i.i*).

Social networks: These initiatives should also address issues of access equity. This not only refers to basic resource equity, such as access to a mobile telephone and consistent Internet, but to intangible assets that drive the skill- and job-acquisition processes. In communities that lack links to viable jobs and career pathways, these initiatives should help young people expand their social networks, and provide a catalyst to build a network of peer groups and linkages to the job market. These networks and employment opportunities should also support social and economic mobility, potentially resulting in positive individual and intergenerational outcomes in terms of education, physical health, mental health, and economic growth (*recommendation 3h*).^{105,106,107}

Other factors: Other country and culturally specific factors impact youths' ability to progress in the workforce. Factors such as frequent natural disasters, domestic violence, indigenous people's rights, refugee rights, statelessness, environmental concerns, crime rates, epidemics, and overall well-being all impact youths' ability to learn, develop skills, and gain employment.

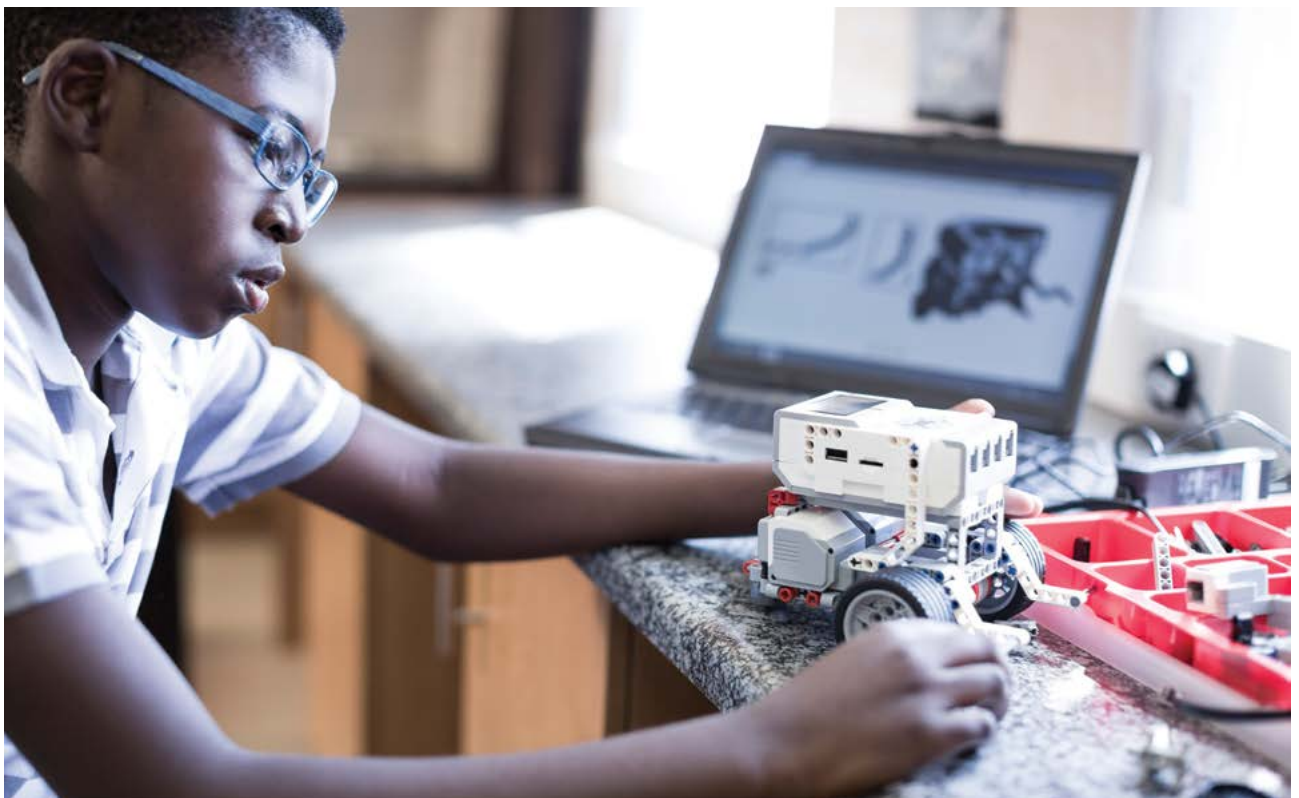
4IR tools for 4IR

This revolution is happening to people, causing disruptions in work, and creating opportunities to use technology for advancement. Technology is being integrated along the entire employee lifecycle, from recruiting to onboarding and ongoing training.¹⁰⁸ Key barriers still exist, including the cost of infrastructure, varying levels of global interconnectivity, and variable costs of data accessibility.¹⁰⁹ This comes, however, with the responsibility to pair technological integration with the teaching of values and ethics, specifically around Artificial Intelligence. Nonetheless, there is widespread agreement that there is space for investment, and for leveraging scalable technology across geographies and industries.¹¹⁰

Digital job platforms: While online platforms support localized versions of the transactional gig economy, several initiatives have recognized the need for skills-matching platforms that support low-skill jobs or resource needs in geographically disperse communities. Some platforms target workers in informal or low-paid sectors, and allow workers to post digital CVs and receive real-time job listings via SMS, creating a gig-economy platform for traditionally disconnected labor markets.¹¹¹ These platforms also allow automatic matching of available opportunities and available workers based on posted skills and location data. There is widespread agreement on the benefits of the digital labor platforms due to their ability to address labor market inefficiencies on a global scale, facilitate job matching in local markets, reduce recruiting time, and create opportunities for workers to reach new markets and audiences (*recommendation 3c*).

There are potential obstacles that could hinder long-term global adoption, such as youths' access to mobile phone data and affordability, understanding the target population's literacy level, local use of multiple languages or dialects, potential for geographical and age discrimination in the absence of globally standardized signaling and credentialing, and the need to gain a critical mass of youth users to gain credibility.¹¹²

Online open courseware: Many private-sector companies have the unique value proposition of housing online training courses aimed at supporting the workforce development needs of current employees. With the understanding that these trainings are proprietary, and often tailored to the specific customer and employee needs of the company, open-source online courses also exist and can be leveraged for the specific business needs of the future. These could be particularly effective if accompanied by mentorship, coaching, and hands-on learning. Working with already established mobile-enabled platforms, such courseware could be leveraged to promote cross-cultural education and global connectivity, further supporting companies' development of fractured work cultures (*recommendation 1c.i*).



Innovative funding methods

Many government-based and nonprofit-based programs leverage a variety of approaches to support long-term fiscal sustainability, while others are funded through national budgets. Some government-leveraged and private-investor models, such as **income-contingent loans, tax-based reform, and human-capital contracts**, provide incentives for investment in education and skills training through tax incentives or loan guarantees. These models depend on successful job entry and long-term employability, linking the return on the investment to career performance outcomes.¹¹³ These loans avert the issue of leveraging qualifying assets of low-income or unemployed youth who may not qualify for a traditional loan. They also raise the stakes for long-term employment for the training program; such loans would only be repaid if the trainee earns gainful employment, an added incentive for training programs to have available employment opportunities upon completion (*recommendation 2b*).¹¹⁴

Other programs, such as **India's Skill Vouchers**, are coupled with cultural components. Leveraging the slogan "Learn, Earn, and Pay," the program is promoted with a campaign stating that payment should not limit any citizen's ability to acquire skills, but that such investments necessitate a "pay-it-forward" system.¹¹⁵ While both types of investments are globally recognized as non-extractive forms of financing, they do face barriers in terms of scale. For example, such loan repayment structures are established based on job availability at the end of training. Therefore, the sustainability of the reinvestment system could potentially lose credibility if there is a lack of employment opportunity. Further research into the viability of contingent loans and pay-for-success (PFS) programs to drive investment in youth workforce development is needed.

Another form of funding gaining popularity is **outcomes-based funding (OBF)**. Historically, publicly funded universities were compensated based on enrollment numbers.¹¹⁶ However, the US has begun formally recognizing that there is a lack of incentive to encourage and support students as they progress through

their coursework; universities are funded based on enrollment, not on student completion, thereby potentially discouraging universities from investing in needed services to support at-risk students through graduation. These older models have resulted in at-risk students struggling to graduate at the same rate as other students.¹¹⁷ OBF expands incentives to universities to include such factors as student retention and completion in the measured incentive outcomes.¹¹⁸ Unlike performance-based funding, OBF is framed as part of institutional budgets and includes recognition of the higher cost of at-risk students, year-over-year improvements, and can be tailored to the overall mission of institutions.¹¹⁹

But there is still legislative hesitation to enacting OBF. In midyear 2017, 34 bills were introduced to enact OBF across 14 states, but only five bills passed.¹²⁰ As increasing evidence on the effects of OBF emerge, supporters say that OBF will significantly support at-risk students to not only enroll, but also complete higher education, while also encouraging universities to seriously consider their system level approaches to supporting students overall.¹²¹

On an international scale, the **International Finance Facility for Education (IFFEd)**, introduced in the Education Commission's Learning Generation report, will leverage new financing through guarantees provided by contributing countries in cooperation with the Multilateral Development Banks (MDBs) to make new and additional financing available for education.

By using grant aid contributed to the IFFEd alongside the newly leveraged finance, approximately four additional dollars will be mobilized for every dollar invested. The financing will be used to support the more than 700 million girls and boys in lower and middle-income countries. The overall purpose of the Facility is to ensure greater prioritization and better distribution of resources to achieve the SDG's educational goals, aligned with the "Billions to Trillions" SDG financing strategy resulting from the Addis Ababa Financing for Development conference.¹²²

Balancing impact and scale

A fundamental challenge in youth skills training is the perceived trade-off between impact and scale. Too often, the trade-off is presented as a choice: Do you invest in low-touch and highly replicable models (low impact, high scale)? Or, do you invest in high-touch, resource-intensive models that are difficult to replicate (high impact, low scale)? Measuring the impact, and then determining what and how to scale, cannot be presented in a prescriptive model. Rather, it is an iterative process in which businesses must determine their overall mission, their role in the overall workforce ecosystem, and their ability to sustain an investment over time.

What is the impact?

In designing models for skilling, investments should be considered in terms of the impact desired; impact is defined here as the direct or indirect positive change that addresses a challenge, and is measured by defined outcomes.¹²³ These outcomes can be at the youth level, employer level, and/or the system level. Impact can be measured in actual value, employment outcomes (hiring and retention), educational achievement, certifications, etc.

Some questions to consider:

- What is the **marginal cost of providing resources and support** for one youth versus the marginal return (to the individual, the firm, and society) of the youth's long-term employment?
- What is the **monetary value of the investment** within a country-specific context?
- Does the **return flow directly back to the investing firm or does it support larger community outcomes** or both?
- Does the investment result in **direct hiring** and, if so, **what is the level of retention**?
- What are the **outcomes and how are they measured**?
- What **strategies and partnerships** are needed to engage other stakeholders in the ecosystem?
- What **feedback loop mechanisms** are needed to understand impact, and drive toward continuous improvement?

It is important to remember that not all investment outcomes will flow directly back to the investing company. Not all youth that participate in a training program will be employed by the business that financially supports or operates the program. Rather, the investment in youth skills preparation will support overall community building and the global market talent—an investment in the “public good” of youth workforce development. The investment in youth skills can be further amplified and sustained through participation in

coalitions and networks within the ecosystem. This can help to address the systemic barriers that affect youth employment, create platforms for action and policy dialogue, and support coordination and alignment across ecosystem stakeholders.

What to scale?

In thinking about *what to scale*—what activities and strategies can be expanded or replicated in new contexts or geographies—the business community should consider what inputs and activities are effective at driving the desired impact.¹²⁴ For example, investing in technological platforms may be low-cost and reach a large number of youth; however, platforms may not provide the ongoing dynamic interactions that support development of workforce readiness and soft skills. Such platforms present an opportunity for business to leverage existing infrastructures and content to drive program development. But, they are limited in their ability to create lasting change without Internet connectivity, equity of access, language support, literacy, and in-person training. On the other hand, reaching scale through teacher trainings, for example, typically requires a large investment in time and resources, and can be limited by geography, politics, government policies, and financial constraints. Such trainings could be bolstered by technology—when technological access exists—but still need human interaction to achieve success.

How to scale?

Having decided to scale based on measured positive impact and demonstrated need, there are a number of scaling models that businesses can consider. By independently investing, designing, and/or operating a training program, a business can own the content and structure of the program but should have substantial capital and the required subject knowledge. If using a franchise model—investing in scale by replicating best practices in new locations—access to local resources and knowledge becomes more affordable, but could affect the fidelity or reputation of the model. By adopting a partnership-based approach—jointly developing a training program in a specific industry or geography—businesses can gain local knowledge and longer-term sustainability through dependent investments, but this also increases exposure to potential misalignment of mission or expectations, and added transactional costs.

To achieve scale, regardless of what approach used, businesses must remember their role and position within the larger ecosystem of the community they are trying to impact.

Benefits and constraints of different ways to scale

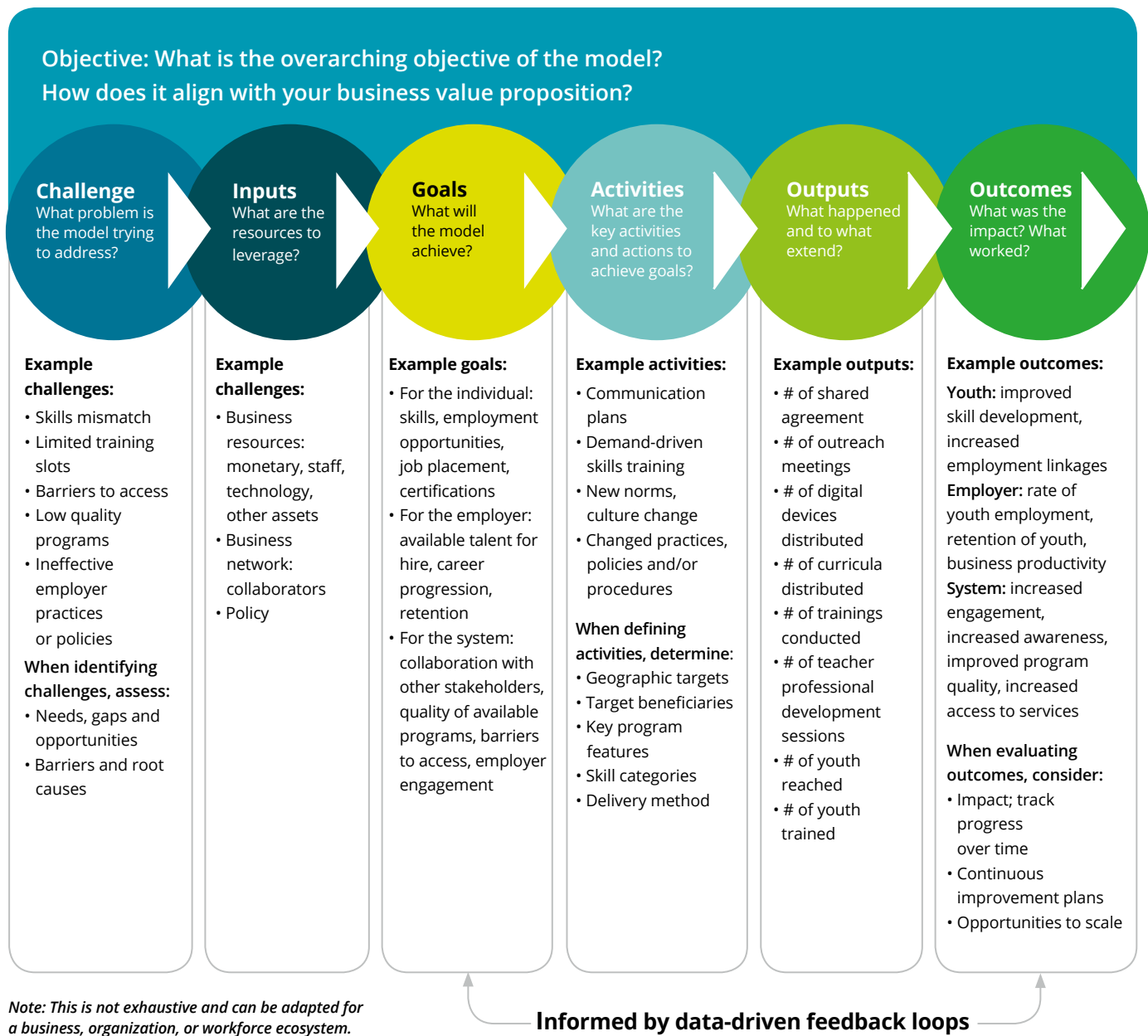
	Benefits	Constraints
Independently invest, design, and/or operate	<ul style="list-style-type: none"> • Flexibility to design programming specific to local needs • Agile responsiveness with changing needs • If successful, build reputation in the geography and industry 	<ul style="list-style-type: none"> • Limited by available knowledge and capacity • Responsible for upfront and continued operating costs • Reliant on available internal and/or external human capital • Sustainability risks • Pace of expansion limited by resources and capabilities
Franchise	<ul style="list-style-type: none"> • Replicate with access to knowledge of local resources and regulations • Generate returns for organizing stakeholder • Opportunities for rapid expansion 	<ul style="list-style-type: none"> • Necessitates oversight to ensure identity to the model and general management • Possibility of affecting reputation and brand, if lack of fidelity or other extenuating circumstances
Partnership	<ul style="list-style-type: none"> • Provides access to knowledge of local resources and regulations • Provides opportunities for long-term sustainability given multiple independent funders • Increases diversity of funding and available resources/capabilities 	<ul style="list-style-type: none"> • Requires alignment and agreement of vision and/or model • Increased transactional costs due to multitude of stakeholders • Necessitates balanced investment of expertise or resources



Business model canvas

Ultimately, the business needs to determine its theory of change, its business model canvas. A business model canvas outlines a business' value proposition, goals, available resources, target stakeholders, potential outcomes, and the potential trade-offs of an investment. Based on the "questions to consider" in the model considerations chart, businesses can build a business model canvas. The answers

to the model considerations create a robust framework for what to invest in or design and will help determine the impact in order to scale. Using such a model can help balance a business' workforce investment with a holistic understanding of its internal goals, its target impacts, and the feasible scalability.



The four challenges for the business community

With the onset of 4IR, businesses worldwide have an opportunity to shape youth workforce development and employment overall. As the business community continues to consider the broad impact it wants to make in youth workforce development and employment, and as individual companies begin to consider their return on investment in this arena, we offer four challenges to focus business community efforts:

1. Reimagine 4IR as a *unique opportunity to be welcomed, not a problem to be confronted*. While 4IR is often framed as a problem, it actually offers great opportunity. With rapidly advancing technology and evolving changes to work, there is an opportunity to reconsider how skills are aligned to jobs, how potential employees can demonstrate these skills, and how to create new and more inclusive pipelines for the most marginalized youth globally. The business community can reposition itself as an influencing and driving force for change, creating jobs and opportunities for our youth, our workplaces, and our world. By seizing these 4IR opportunities, the business community can help youth gain employment and promote individual economic mobility.

2. Reposition discrete and disconnected programs as a *systemwide, unified set of approaches*. While investments and strategic planning are needed, dollars and programs alone will not employ 1.8 billion youth. The business community, the education systems, workforce development programs, governments, communities, parents, and youth all have perspectives, skills, solutions, roles, and capacity to work together in an interconnected and forward-looking direction. By addressing root causes and aligning along a vision for the future, these distinct stakeholders can address not only the programmatic needs, but also the system barriers.

3. Realign toward achieving both *scale and impact*, rather than framing solutions as *scale versus impact*. Consider the unique position of the business community in defining and driving scale and impact in workforce development programs:

- Is scale considered in terms of an idea, a program, or a policy?
- Is scaling measured by increasing participation or expanding to a new geography?
- How is impact measured?
- How is scale best achieved given available resources?
- How are digital platforms and technology being developed and leveraged in light of barriers in terms of access and equity?

There is room to improve how the business community plans, builds, iterates, prototypes, and communicates best practices, including how and where to scale models and the opportunities to build and cooperate on a range of learning and skill platforms. Together, through its influence, the business community can position itself as the “rising tide” that lifts youth, especially the most marginalized, into the world of work.

4. Reframe the possibilities for marginalized youth, including those who historically have been difficult to reach, with particular attention to women and girls. It is not enough to reach youth from historic pipelines or the most accessible channels. The business community should move beyond traditional paths and support the hardest-to-reach youth who are the most marginalized, and who most need the technology and opportunity that 4IR can offer. Collaborators in the ecosystem know them, work with them, and can help bridge the gap to leverage their talent to the benefit of the entire ecosystem.

With these four challenges, and the proceeding recommendations in mind, the business community should consider how to leverage its existing resources and knowledge to best support youth in 4IR.

Recommendations

The business community is one of many essential elements in a larger ecosystem working toward improving youth employment outcomes. These recommendations come with a recognition that the entire ecosystem can improve its efficiency and productivity when there is alignment across education, workforce development programs, youth and public policy. Achieving this level of alignment requires a shared value mindset, effective implementation of strategies, and a mechanism for systemic integration and iteration.

Within the definition of the business community, there exist obvious distinctions between multinational corporations and small family-owned businesses. With the understanding that additional variation exists across geographies, cultures, and environments in terms of youth profile, we propose the

following as tangible and actionable recommendations to support the goal of improving the employment outcomes for the 1.8 billion global youth.

These recommendations are not meant to be considered individually, but rather taken as steps forward as a collective whole. They are a springboard to consider your role in the larger ecosystem of youth employment, irrespective of size, industry, and geography. Informed by current literature and in-depth stakeholder interviews, we frame these recommendations with the four challenges in mind.

Given our intention to speak directly to the business community and to provide actionable recommendations for consideration, we employ the second person narrative in the recommendations below.

Recommendation one: Align stakeholders' objectives and approaches

To achieve scale, business should work with the broader ecosystem to align goals and outcomes for impact.

The business community's investments and actions can be amplified through coordination with stakeholders using an integrated approach that leverages each one's strengths and capabilities. To limit potential resource duplication, and to leverage efficiency of resources, the business community can work with other stakeholders to support youth employment. This can potentially be achieved by coordinating opportunities, identifying gaps in training programs, finding opportunities for co-investment, and sharing information about future talent pipeline needs to elevate the collective impact for the benefit of all.

a. Bring together diverse perspectives to develop a shared agenda to align the vision, goals, and strategies for youth skill and workforce development. This includes:

i. Identify the underlying drivers of the skills mismatch, which often vary by industry, and design and implement strategies to remove youth employment barriers, and improve upstream and downstream practices.

This could include a landscape analysis of your current employment needs compared to available employee skills training programs offered through local workforce programs or traditional education systems.

ii. Collaborate with other businesses to align investments around shared goals.

Find opportunities to co-invest in local workforce development programs, and to collectively communicate regarding best practices for effective strategies and scaling models, skills needs, available talent from training programs, and opportunities for cooperation.

iii. Develop a common language, prioritizing policy and investment decisions, and assessing resource allocation.

When working with other ecosystem actors, establish a shared language from the outset to avoid confusion and ensure alignment.

iv. Commit to—and implement—policies, programs, and practices to drive faster, measurable, and more sustainable progress for youth.

This could include developing metrics of success for programs, outlining definitions of "success," and establishing benchmarks from day one.

v. Develop metrics to demonstrate acquisition of soft skills at different stages of youth development.

Align the vocabulary and key indicators of soft-skill acquisition to demonstrate competency and proficiency in education, and in the workplace.

b. Empower workforce development programs to be your business ambassadors, and connection to the community.

Establish your value proposition and communicate youth company culture, talent needs, skills definitions, and hiring and advancement pathways for program participants.

i. Engage with education systems and afterschool programs to encourage integration of the four skills (workforce readiness, soft skills, technical, and entrepreneurship) in program design. This could mean investing directly in local programs, or providing opportunities for job shadowing and mentoring.

ii. Provide technical expertise and communicate employment needs to local CTE/TVET/training programs. Supporting local CTE/TVET/training programs through financial resources and/or technical expertise can help strengthen alternative education programs while building a talent base with the skills needed for industry.

iii. Consider opportunities to collaborate with local workforce programs to establish demand-driven linkages. With an understanding of your company's criteria for collaborating with—and investing in—programs, speak with workforce programs to better understand how to develop demand-driven approaches, providing direct guidance for training and links to employment.

c. Invest in technological infrastructure to promote digital literacy, accompanied by instructor training and upskilling in associated skills. This can include directly supporting the purchase of computers and digital devices accompanied by support for Internet accessibility and instructor education.

i. Promote and share open-source online courses tailored to the business needs of 4IR. Create accessible, technology-based learning opportunities that can be used by workforce training programs. This could provide nonprofits with the tools to train youth to enter the private sector, as well as resources for youth pursuing self-employment.

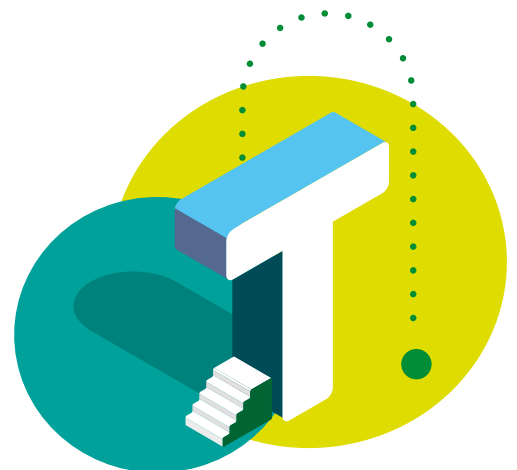
d. Provide and advocate for flexible funding to workforce programs to support operating costs, and provide leverage from other funders.

Operating costs are not often covered by government or institutional grants that support program costs. Therefore, it is possible to gain leverage by focusing support on operating requirements, such as staff, technology, leadership development and training, rather than on just program costs that come through more traditional support from other funders.

e. Partner with organizations that work within the informal sector. Leverage local partners' knowledge and outreach to the informal sector, finding opportunities to provide resources and services, as appropriate. This can include resources to support informal sector apprenticeships.

Questions to consider:

- What are the systemic and societal conditions impacting our success in terms of collaborating with other stakeholders, and in supporting youth overall?
- What are the root causes to youth unemployment or underemployment that our business can impact?
- What are our metrics or benchmarks for success to support improvement in workforce development programs and initiatives?
- What best practices from the business community can be leveraged in supporting education and workforce development programs to best serve youth?
- Does our business have resources that can be offered or leveraged by programs or initiatives to strengthen programming, staffing, or leadership capabilities?
- Does our organization have strong relationships with workforce development program hiring managers/ representatives, and do we all speak a common language to discuss skills needed?



Recommendation two: Engage in public policy

Strategically engage in public policy through dialogue, advocacy, collaboration, and influence.

The business community is uniquely positioned to help governments—both locally and nationally—prepare and implement policies, rules, and regulations to pave the way for youth as the future of our workforce. Work with governments while leveraging business channels, networks, and platforms to engage youth in policy and advocacy.

a. Support public policy efforts that have downstream, long-term goals like the development of cross-border qualification frameworks. This could include providing public support for such policies, collaborating with policymakers by sharing information and data, or partnering with policymakers to build and design complementary policies, and provide private sector credibility and buy-in.

b. Collaborate with like-minded employers to work directly with government on initiatives that can help prepare youth—especially those from low-income, high-risk populations. This could include joining organizations like the Global Business Coalition for Education that are focused on such initiatives, and that can collectively leverage the voice of the business community.

c. Share employment data and skills needs with governments to inform programs, improve regulations, and align rules with employer realities. This could include sharing information around future talent pipeline needs, or providing insight into skills needs and requirements for credentialing to build hiring frameworks and employment, and promotional pathways.

d. Participate in globally-focused discussions on the repercussions of 4IR for developing countries. This could include active participation in policy and research that questions how automation and digitalization will impact developing countries' economies, with attention to establishing automation-resistant sectors.

Questions to consider:

- Are there government hiring incentives available that would support our direct or indirect talent needs?
- Are there tax efforts in our jurisdiction(s) we can publicly support that are designed to be responsive to youth workforce needs?
- Are labor-related policies adequate to promote skills development, apprenticeship opportunities, and flexible work environments that are responsive to the needs of youth and the future workforce?

Recommendation three: Develop promising talent strategies

Analyze current talent strategies—particularly those focused on “youth” or under-represented populations—and implement best practices to promote inclusivity and innovation, and drive economic return through differentiation.

To meet both the goal of building a diverse talent pool and helping youth obtain access to employment opportunities, companies can develop a broadly integrated strategy to attract, recruit, and develop employees from nontraditional pipelines. To promote an integrated employee experience, support for youth should be integrated and coordinated, creating an end-to-end proposition of alignment for current and future employees.

Attract

a. Articulate the skills needed using language that speaks to your target audiences when writing job descriptions.

This means removing vague wording, incorporating specific skill requirements, and using inclusive language that avoids implicit bias and be understood by diverse applicants.⁸ Job descriptions should avoid speaking to a homogenous audience given the great diversity of youth talent.

b. Look for talent in sectors that promote entrepreneurship and self-employment, such as the informal and gig economies, to attract new talent pipelines with transferable skills. This means broadening where and how employment opportunities attract youths demonstrating entrepreneurial skills.

⁸“Inclusive language” accounts for ways that language makes assumptions about individuals, and implicitly establishes bias in terms of gender, race, sexual orientation, class, age, etc. For example, non-inclusive language uses binary gender pronouns (he or she); inclusive language uses non-gendered language to account for individuals who do not ascribe to binary gender pronouns.

Recruit

c. Broaden the base of talent sourcing to include community-based workforce programs that support the skills you need, targeting a diverse pool of community colleges, universities and vocational programs, and advertising on a range of platforms that reach diverse talent. Perform due diligence to assess where, and how, broadened target pipelines access employment information, and then leverage these talent platforms to recruit.

d. Assess current recruiting strategies to validate that the process and practices do not exclude or bias against youth from nontraditional backgrounds, regardless of race, ethnicity, gender, disability, etc. This can mean widening the criteria for hiring to include an evaluation beyond a potential applicant's education credentials, instead hiring based on their potential. For example, companies can use blind hiring or withhold university credentialing from interviewers to limit the potential of bias.

e. Evaluate current language and questions used throughout the hiring process, including those used on the job application and during job interviews.

This includes continuous competency training for hiring managers, including unconscious bias training and youth employee interviews to gauge diversity and inclusion practices. Consider broadening how "work experience" is framed, and allow room for youth to discuss their experiences outside of the formal employment setting (such as through community service, extracurriculars, or informal work).

f. Support human resources departments to track and measure data about applicants to better inform targeted outreach and recruitment processes. This could include tracking their offer rate, doing onboarding interviews, maintaining ongoing touchpoints to assess progress, and performing exit interviews to better hone practices.

Onboard

g. Train onboarding managers to bridge youth entrance into the workforce through inclusive language and support. In doing so, help promote productivity and retention.

h. Pair youth with peer mentors—employees close in level—who can provide insights and advice. Mentorship in this manner can help increase retention, improve performance, and be rewarding for both the mentors and the mentees.

Develop and retain

i. Create and market a company culture that attracts target youth populations by supporting youth voices and ownership of career pathways. In addition, support youth retention and advancement through promotion of physical and mental health, paid family leave, and well-being.

j. Pay attention to structures and culture that encourage women and girls' success. This can include caregiving policies, flexible working hours, the physical work environment, management structures, and the overall culture of inclusivity.

k. Encourage youth to hone and strengthen their entrepreneurial skills. Support and sponsor professional development opportunities, and give youth autonomy to build their own brand and expertise.

k. Promote youth as your brand ambassadors. Integrate youth in your hiring, recruiting, and selection process. They can speak to their experience, and your brand will connect well at a peer level.

l. Develop retention strategies to support youth skill development and training. Promote and build a culture of learning that recognizes and rewards the need for upskilling and lifelong learning through supported learning opportunities and mentors.

m. Track and monitor nontraditional hires. Leverage your employee management system to ensure non-traditional hires are receiving the appropriate levels of support, and to evaluate whether your investment in youth talent is providing positive returns.

n. Create and encourage education and training platforms that promote the four skills categories (work readiness, soft skills, technical skills, and entrepreneurship), and lifelong learning.

Questions to consider:

- How can our organization support high-potential youth who have either decided to continue their education, or who have outgrown our company's current talent needs?
- How can our organization better include youth voices at the executive level?
- How can our organization reassess our current hiring practice to attract and retain new talent pipelines?
- How can our organization create a culture of inclusivity that promotes and supports diverse talent?



Recommendation four: Invest strategically in workforce training approaches

Evaluate, invest, and promote workforce training programs that align with your corporate social responsibility goals, talent practices, skill needs, and corporate culture.

Once there is recognition that investment in workforce development programs is prudent, then companies should do so thoughtfully and strategically. In some cases, self-styled training may make sense while, in others, funding what is already working in practice may be better.

a. Evaluate investment in workforce training programs in terms of your enterprise talent strategies and corporate social responsibility goals. Determine your investment strategy based on future requirements, available resources, and capacity.

b. As a core business investment, evaluate opportunities while considering three inputs:

- **Capability:** Consider your competitive advantage and align your strategic objectives to determine your role in the overall ecosystem. This will help determine whether to build new programming or support existing programming.
- **Time horizon:** Given the large amount of upfront capital potentially required without a guaranteed return, consider your short- and long-term goals for investing in workforce-training programs. Use these goals to determine your investment strategy.

- **Model for scale:** Consider long-term vision for scale, and which model is appropriate should you choose to scale programming.

c. Publicize a standardized disclosure mechanism of workforce development investments in collaboration with other business community leaders

Questions to consider:

Capabilities:

- Do we have the capital and resources to develop the capabilities needed to support workforce initiatives by investing directly downstream (in education and workforce programming), or should we outsource our talent needs to a third party?
- Are there complementary or competing initiatives in the local community that address the issue and in which we can invest or collaborate? Is there space in the market for us to build, or do we need to do both to fully cover the skills needed?

Time horizon:

- Does this investment align with our company's long-term training approach?
- Is there a mechanism for continuity in the case of shifting priorities or changing leadership?
- Will our investment strategy result in positive public benefits and, if so, where will the impact resonate?

Opportunities for future insights

Both the research limitations and discussion of recommendations present important opportunities for further research and consideration by the business community, and the workforce development ecosystem. As with any research with global reach, it is important to consider these issues through the lens of regional differences, industry considerations, and cultural constructs.

A growing number of models around the world look to address the widening skills gap. As businesses evaluate their opportunities to “build or buy” youth workforce initiatives, more effort is needed to compare and assess the cost of training and skill development in these arenas, and to consider the value of youth talent through the employee lifecycle. It is essential to collect and analyze data to understand the impact of such programs in relation to their ROI by weighing factors such as opportunity cost, costs of social benefits used to support unemployed youth, intergenerational impacts, and intangible impacts of employment on social and mental health and well-being, as well as the benefits, challenges, and risks of scaling.

With the rise of 4IR and the changing demographics of youth, there is a need for greater understanding of the growing informal economy and youths’ skills needed, as well as the business community’s role within this space. Further exploration can be done in the space of youth entrepreneurship, and how business community investment impacts employment opportunities and career pathways within the entrepreneurial landscape. This is particularly important given the increasing rate at which young people move between the formal and informal economy, and as 4IR redefines where and how work is done.

As cross-sector efforts progress to address the youth skills gap and improve youth employment, more research is needed to understand system alignment, learning outcomes, and youth workforce readiness and success in 4IR. The importance of including diverse youth voices in future research, particularly from the most marginalized youth, cannot be overstated.

Committing now to youths’ success

The recommendations outlined in this report represent a starting point. Transforming an entire youth workforce development ecosystem—one that encompasses critical transitions, touches billions of youth, and impacts the future of work—is both promising and complicated. Yet, as the workforce, workplace, and world evolve, today’s efforts will provide future returns.

The reality remains that 4IR is happening. The business community is well-positioned to seize this opportunity and prepare the youth workforce for the changes of the future. While assessing and, ultimately, pursuing opportunities for intervention, collaboration, and innovation, businesses should consider the four challenges and four recommendations presented.

We have the opportunity now—at a moment of inflection to address the possibility of growing “unevenness” in access and opportunity. Addressing this unevenness by leveraging the resources and capabilities of the business community means increasing the pool of talent available for hire, widening your customer base, increasing your client list, and

strengthening your overall business model. It means promoting entrepreneurship and innovation in your business, and your community. It means improving the skills of youth not only in your backyard, but also globally. These recommendations are aimed at not only helping you improve your company’s social responsibility footprint but, potentially, your bottom line, widening your talent pool, and creating a company culture that promotes youth prepared for 4IR.

As youth become your future employees, consumers, and competitors, we encourage you to respond to these bold challenges and make renewed commitments to support youth as a business community and ecosystem of collaborators.

The time to prepare youth for 4IR is now.

Technical appendix

Technical appendix A: Three economies

Three economies

Prior to the mid-2000s, employment arrangements in the field of economic development were divided into two categories: the formal and the informal economy. The late 2000s saw the rise of the so-called “gig economy,” representing a blending of the formal and informal. Those employed in this gig economy fall generally into three categories: those who hold gig jobs for social reasons, such as retirees looking to meet new people; those who supplement full-time employment with gig work (“side hustles”); and those who leverage one or more gig jobs as their full-time employment.¹²⁵

Using a “three economies” framework, we outline synergies across the three economies—formal, informal, and gig—and highlight where youth can leverage skills learned in one economy to either transition to, or excel in, another. Further, we consider where an investment of resources in skills preparation can have ripple effects, multiplying the scale and impact of the investment across economies. The model demonstrates how workers and the types of work they perform are not static, but rather, can flow between economies as the future of work changes.

A triangulated flow of skills across economies

Informal economy/formal economy: In many developing countries, the informal economy provides opportunities for skill-building, training and apprenticeships, as well as self-employment and mobility that may not be available to all youth, either due to limited resources or limited opportunities. The skills needed for success in the informal economy are often similar to the skills needed in the formal economy—initiative, entrepreneurial spirit, time management—but some informal economy workers may lack either technical training or formal recognition of skills.

Given the breadth and influence of the informal economy in developing countries, opportunities exist to upskill informal economy workers through existing structures. It is also necessary to rethink how skills acquired in the informal economy are recognized and respected, how youth can talk about skills gained, and how hiring managers can broaden their understanding of “work experience” (recommendation 3e). While the informal economy is often thought to comprise “low-skill” work, workforce development programs often recognize the opportunity to complement informal training and apprenticeships with government-regulated training and certifications (*recommendation 2a*).

The business acumen, network, recognizable credentialing, and technical skills that youth gain within the formal sector can also play a role in supporting peoples’ success if they transition to the informal economy. This is especially important for women who may leave the formal sector due to familial responsibilities. The business community can play a key role in supporting this transition to the informal economy by providing tangible credentialing, references, and supporting skill development early in women’s careers to leverage the benefits of formal economy training.

Formal economy/gig economy: Companies are increasingly hiring gig workers and addressing the multiple issues that hiring off-balance-sheet workers present: how to create a company culture with a mix of employees, how to modify IT systems to account for different employment statuses, and how to rethink what skills and roles should be brought in-house versus contracted. Gig workers can provide needed skills to the formal sector, bringing outside knowledge and expertise, and can help supplement the current workforce during periods of transition.

While the formal economy is increasingly absorbing gig workers, many individuals in the gig economy also have full-time, formal employment.¹²⁶ Gig work allows individuals to earn additional income and provides an outlet to acquire or use different skills. Skills learned through formal employment can be applied and honed, creating a bidirectional signaling mechanism. Take, for example, where consultants can post their resumes featuring their previous employment and educational achievements; thus, their formal economy work becomes a signaler for gig work. Conversely, other forms of gig work—from showing artwork online to working on a construction site—can be directly leveraged into obtaining full-time employment, allowing individuals to demonstrate skills before formalizing their employment arrangement. With recognition of the growing importance of gig work, the gig economy can provide youth with alternative ways to gain or demonstrate skills, reframing what a career looks like, and providing new spaces to fulfill employment goals (*recommendation 3b*).

Gig economy/informal economy: Given the acceptance and breadth of the informal economy in developing countries, the shift from informal work to gig work is less of a shift in the *type of work* than a shift in the *way in which work is obtained*. According to the Brookings Institute, a shift toward the gig economy would be a “digitization of informality.”¹²⁷ The opportunities created through 4IR mean new opportunities to formalize work previously considered informal with emerging best practices from the gig economy.

For example, with expansions in low-cost mobile connectivity and Internet accessibility, digital labor platforms can provide informal, low-skilled workers access to gig work. Many of these platforms have built-in skills training and certifications, providing signaling and credibility to employers. For many informal economy workers, the transition from informal work to gig work holds a lower opportunity cost compared to transitioning from formal work to gig work; it can be a more structured way of connecting non-formalized jobs, reducing slack in the overall workforce, and improving skills matching.

Participation in the gig economy can provide formalized recognition of skills and credibility to workers who transition back to the informal economy. Individuals can leverage formalized networks and technical expertise, thereby using skills gained in the gig economy to improve work in the informal economy.

The role of the business community

By framing the formal, informal and gig economies as three separate yet overlapping and interconnected economies, we can develop a greater understanding of how the best practices and skills acquired in one economy can be applied in another, thereby creating opportunities to support all workers to leverage their economic contribution and skills. In recognizing the strengths of employment in each of the three economies, employers can rethink how they can best support youth to demonstrate and leverage the skills acquired. In doing so, the business community can begin to reshape how skills translate between roles and contexts, supporting youth to succeed across all three economies. (*recommendation 3b*).



Technical appendix B: Collaborating through local workforce ecosystems

What is a workforce ecosystem?

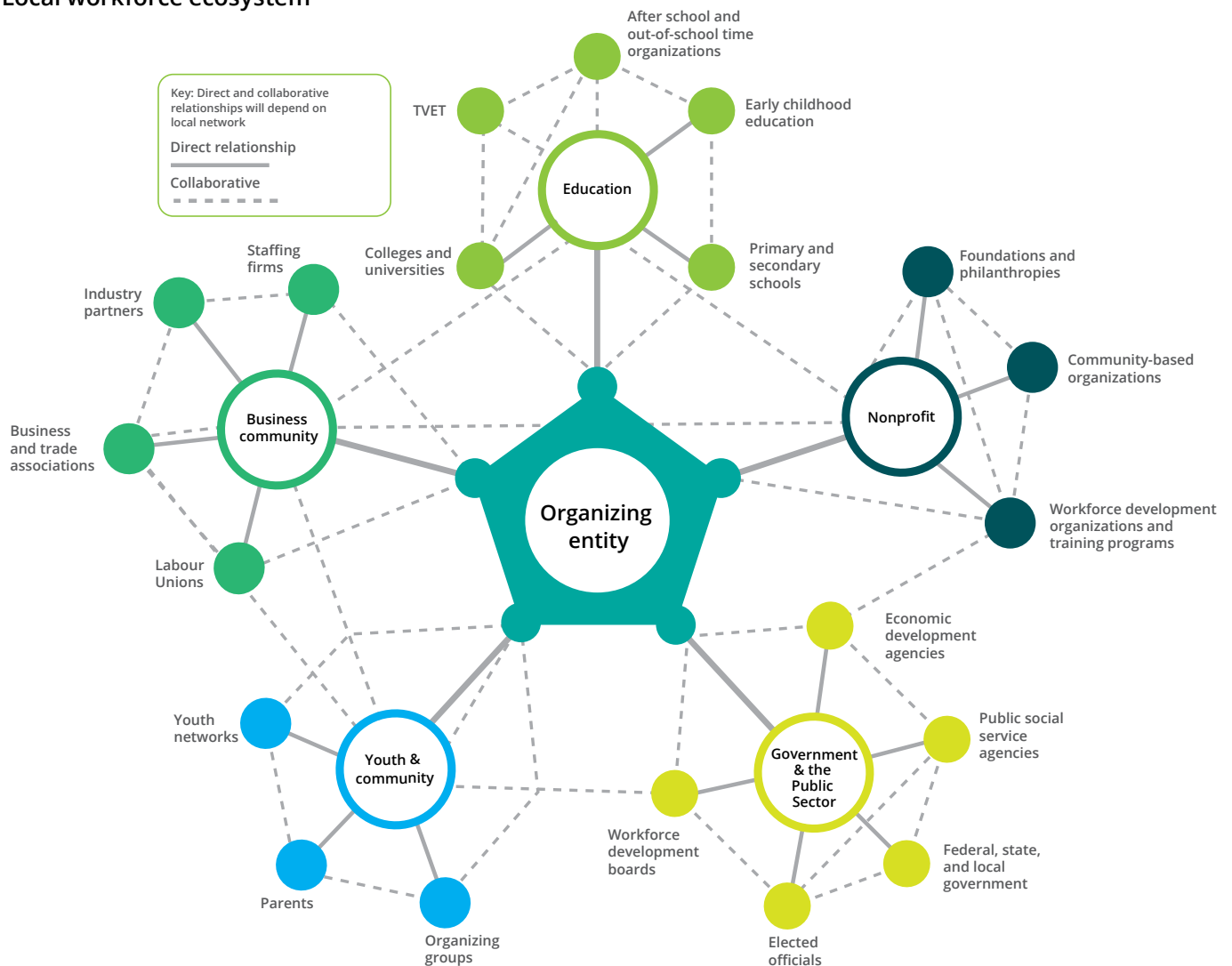
To support youth in 4IR, the business community should collaborate within a larger ecosystem of workforce development. The workforce ecosystem is a set of interacting and connected parts that have a shared purpose and function to prepare people for work, help workers advance careers, and ensure a skilled workforce exists to support local industries and local economies.¹²⁸ These interconnected actors include training providers and education institutions, nonprofit organizations, employers and industry, government, philanthropy, youth, and community.

Effectively aligning and coordinating the system parts and interactions can help to improve programs, policies, and practice, thus creating deeper and longer lasting outcomes for

the youth workforce, employers, and society.¹²⁹ The business community can work toward: fostering greater collaboration; developing quality and accessible programming; deepening business and industry engagement; improving data-driven decision making; and strategizing for scale, impact, and sustainability within the workforce.¹³⁰

To better understand how the business community can support and benefit from an ecosystem approach to workforce development, we highlight an example from the ACG Cares Foundation. It works with the Indian government, local education institutions, private sector groups, and youth to promote differentiated trainings, and to implement strategies to improve youth skills and market linkages to employment.¹³¹

Local workforce ecosystem



Note: Each collaborator within the ecosystem will support various strategies and functions, and will have its own set of knowledge, expertise, and resources, including: research, data, tools, technology, funding, and networks, among others.

ACG Cares Foundation Skills Development Project

Founded in 1964 in Mumbai, India, ACG Worldwide is a supplier of end-to-end manufacturing for the pharmaceutical industry.¹³² In October 2015, ACG founded ACG Cares Foundation (ACF), aimed at improving lives of youth, women, farmers, local athletes, and government bodies.^{133,134} One such initiative supports training of rural youth, urban youth, and communities that live near their manufacturing plants in six locations around India, specifically targeting marginalized populations.¹³⁵

In alignment with the national and sustainable development goals of the Indian government and the United Nations—in collaboration with MITCON Consultancy & Engineering Services Ltd (MITCON)—ACF launched the **Skill Development Project** in 2016.¹³⁶ Targeting the regions of Shirwal and Talegaon—both catchment areas that are facing rapid industrial growth alongside high youth unemployment and large influxes of potential employer demands—the project addresses the lack of skill development opportunities following basic education.¹³⁷ The project was developed to provide unemployed youth with skills training and connections to the workforce through entrepreneurship support and employment opportunities.¹³⁸

ACF collaborates for greater impact

ACF utilizes a holistic approach to skills development, and believes that all projects in the community need to “talk to each other and work together.”¹³⁹ Below is an outline of how ACF works with its ecosystem of collaborators:

ACF to government: ACF leverages its local communities to promote skills training offered by the Indian government. In support, the government provides direct financial resources for ACF to build and operate its training centers. By supporting each other's efforts, ACF and the government provide complementary programs that promote one another to provide a wide range of training programs that align with employer demands and youth interests (*recommendation 1a.iii, 1a.iv, 2b*).¹⁴⁰

ACF to youth: The Skill Development Centres are deeply entrenched in local communities, and are focused on building lasting relationships with village youth.¹⁴¹ During the planning of the centers, more than 100 diverse stakeholders were involved in the diagnostic study and participatory rural appraisal to understand the unique needs, interests, and available resources within each community (*recommendation 1a, 1a.i, 1a.iii, 1a.iv*). Youth were directly engaged to understand what types of training would support their employment goals. According to Mukta Dhavale, head of ACG Cares Foundation, “Youth are choosing their own professions and express their own interest in solar paneling, goat and poultry farming, or nursing, for example.”¹⁴²

ACF to industry: To support youths' business development plans, ACF links with local banks to assist with the process of loan documentation. Additionally, the ACG Skill Development Project directly connects youth to available employment opportunities. For example, MITCON—the project's implementing partner—also provides wages and self-employment opportunities in the solar energy sector (*recommendation 1a.ii, 1b, 1e, 2b*).¹⁴³

ACF to education: ACF's work with schools is largely to support infrastructure improvement and equality improvements through teacher training (recommendation 1b, 1c). These are separate yet integrated efforts with the Skill Development Centres. In addition, ACF directly connects youth from schools to the centers for further vocational or business development training.¹⁴⁴

Sustaining impact through strong systems

To ensure sustainability, ACF is working with the Indian government to share best practices from the Skill Development Project, with an overall goal for the government to establish funding streams and build capacity.

They engage village members through “community cadre,” or agreements between banks, businesses, and master trainers to share and build knowledge and expertise with communities. ACF has also developed a toll-free number for youth and community members to inquire about training availability and links to skill development initiatives. ACF aims to expand programming by handing off the Skills Development Centres to the government and communities, as each local community builds the resources to maintain capacity, freeing ACF resources to build new centers in other catchment areas (*recommendation 1a.iv*).¹⁴⁵

Benefits to building strong, local workforce ecosystems

The benefits of aligned and coordinated local workforce ecosystems are tangible and impactful. ACF Skill Development Project eliminates the duplication of services that the Indian government already provides (i.e., funding for business development), while also filling an important gap in skills development that had not been met (i.e., connection to government subsidies, skills training, links to bank loans and/or private sector employment).¹⁴⁶ The project demonstrates an investment in community cohesion and advancement. In the past two years, 1,018 youth have been trained at the three centers; 336 are wage employed (33 percent), and 529 are self-employed (52 percent).¹⁴⁷ As a result, participants developed new skills, built confidence and ability, accrued loans, started their own farming or service businesses, hired other skilled workers, and secured employment at local hospitals and a housekeeping company.¹⁴⁸

Adopting an ecosystem approach

The ecosystem approach demonstrates the value of collaborating and understanding systemic problems that inhibit system-level outcomes.¹⁴⁹ Understanding the local ecosystem means having perspective on when and how to invest in new or complementary programs or initiatives to align resources, eliminate duplication, support existing initiatives, and fill needed gaps. The business community needs to engage diverse perspectives, understand community needs and assets, and design strategies that effectively address systemic problems through a collaborative approach. As businesses consider their unique position in the ecosystem, as well as their own value proposition and skill and employment needs, ACF offers these lessons learned from their Skills Development Project for other businesses:¹⁵⁰

- **Develop linkages** to connect youth back to the market after their training is complete. For example, create direct channels to support bank loans for youth businesses and conduct market research to understand needs, and bridge training to employment. If the program does not connect to tangible work or employment, skills development training programs may lose their credibility for business and youth.
- **Develop skills training based on youth interests and needs** to drive participation and direct market linkages.
- **Develop incentives** to drive youth participation and employer acceptance. For example, the local business community may recognize and respect the certificate upon completion of the skills training program.
- **Create a clear and impactful approach and process**, and focus on fidelity in an effort to achieve outcomes.
- **Work with the government** to better sustain outcomes through the government's capacity and funding. Share best practices with government and other collaborators in the ecosystem.
- **Sustain initiatives and outcomes** by recognizing local champions to carry the work forward. For example, a train-the-trainer model and peer networks can be used to develop youth skills and to support entrepreneurial efforts.¹⁵¹

Data and measurement are key to understanding how workforce ecosystems are working, and how key system-change activities are improving outcomes.¹⁵² Frameworks and tools are available to assist the business community and its collaborators in identifying key goals, activities, stakeholders, and resources, as well as how best to measure system-change activities and outcomes (see *business model canvas*).¹⁵³

The ACF's ecosystem example shows how collaborators—each with unique expertise and resources—can come together to improve systems.¹⁵⁴ Systems change efforts go beyond “providing direct services to individual job seekers and aim to transform how organizations effectively support employers and the workforce.”¹⁵⁵ Business can, and should, play a role of bringing stakeholders together for greater and more sustainable impact (see *challenge 2, recommendation 1*).

Appendix

Appendix A: Acknowledgements

We would like to thank the following people for contributing their time, knowledge, and insights to this research and report. Their collective perspectives, energy, and dedication hold promise for youths' success in 4IR.

Deloitte US

The report has benefited from the comments and useful input from Daniel Ben-Zadok, Divya Jyoti Behl, Elise Le, and Nadia Ahmed.

Research insights

- Alexis Menten, executive director, Program Development, Center for Global Education at Asia Society
- Amy Bellinger, lead consultant, Education Workforce Initiative, International Commission on Financing Global Education Opportunity
- Ariam Mogos, learning lead, UNICEF Innovation
- Ariel Fiszbein, senior fellow and education program director, the Inter-American Dialogue
- Christy Olenik, vice president technical services, Making Cents International
- Dhushyanth Raju, lead economist, South Asia Region, World Bank
- Eduardo Velez Bustillo, former World Bank Education sector manager and leader for LAC and EAP, current adjunct

- professor at Georgetown University and Kobe University
- Erica Kochi, co-founder, UNICEF Innovation
- Felipe Dib, founder and CEO, Você Aprende Agora
- Gemma Wilson-Clark, senior education advisor, UNICEF
- Ingrid Sanchez Tapia, education specialist, Gender Equality in Education
- Juan Pablo Giraldo Ospino, education specialist, UNICEF Innovation
- Jumana Haj-Ahmed, adolescent development and participation specialist, UNICEF
- Katie Godwin, consultant, Education Workforce Initiative, International Commission on Financing Global Education Opportunity
- Kidus Asfaw, partnerships lead, UNICEF Innovation
- Mohammed Ali Khan, senior education specialist, IFC
- Morgan Strecker, education specialist, Advocacy and Partnerships
- Nicholas Burnett, senior fellow, Results for Development
- Nicholas Rees, policy specialist, Division of Data Research and Policy, UNICEF
- Sarah Sladen, director, Youth Economic Opportunities Network, Making Cents International
- Tim Nourse, president, Making Cents International
- Wendy Kopp, CEO, Teach For All

Workforce program insight

- Asheesh Advani, CEO, JA Worldwide
- Boris Bulayev, co-founder & executive director, Educate!
- Dina Buchbinder, founder and president, Education for Sharing
- Hamza Debbarh, board member, EFE-Maroc
- Jihane Lahbabi-Berrada, CEO, EFE-Maroc
- Nancy Sumari, founder, The Jenga Hub
- Rob Burnet, CEO, Well Told Story
- Rob Urquhart, executive knowledge and impact, Harambee Youth Employment Accelerator
- Raymond Obeid, director of projects and head of entrepreneurship, INJAZ Qatar/JA Worldwide
- Shea Gopaul, founder & executive director, Global Apprenticeship Network
- Simi Fajemirokun, founder, Read2Succeed
- Thembisio Magajana, founder, Social Coding
- Victoria Chen, co-founder, BridgeYear
- Zandile Keebine, chairwoman, GirlCode
- Zineb Mouhyi, policy and partnership development officer, WISE, Qatar Foundation

Business community insights

- Allie Barwise, manager, Gap Foundation
- Chris Otundo, senior manager talent, Acquisition & Capability, Safaricom
- Clare Rowe, senior manager, Deloitte United Kingdom
- Daniella Foster, senior director, Global Corporate Responsibility, Hilton
- Debabrat (Debu) Mishra, partner, Deloitte India
- Francesca Campalani, head of candidate attraction, Deloitte United Kingdom
- Georgia Greer, head of student recruitment, Deloitte

United Kingdom

- Grace Suh, director of education, IBM Corporation
- Hardy Simes, office of the future, HP
- Jade Moffat, corporate citizenship manager, IBM Australia
- Joanitha Rwegasira Mrengo, head of HR Center of Expertise, NMB Bank
- Joanna Preston, head of young talent, First National Bank
- Kelly G. Wojda, global learning and development director, Caterpillar
- Madonna Jarrett, director, Global Risk and Regulatory Group, Deloitte Belgium
- Martina A. Roth, sr. director global strategic partnerships, Corporate Affairs Group, Intel Corporation
- Michele Malejki, global head of strategic programs, Sustainability & Social Innovation, HP
- Mohammad Mustafa, chairman & managing director, SIDBI (Small Industries Development Bank of India)
- Mukta Dhavale, head, ACG Cares Foundation, ACG Worldwide
- Nate Hurst, chief sustainability & social impact officer, HP
- Ned McCulloch, global issue manager for skill development & education, IBM Corporation
- Tracie Neuhaus, senior manager, Monitor Institute by Deloitte
- Vanessa Carstens, early career leads, Absa Group Limited

Youth voice

- Adeyemi Babington-Ashaye, president, United People Global
- Panagiotis Madamopoulos-Moraris, co-founder, ReGeneration, Sloan fellow, Stanford Business School
- Global Business Coalition for Education Youth Skills & Innovation Initiative, Youth Advisory Council Focus Groups
- Wadia Ait Hamza, head of the Global Shapers at World Economic Forum

Appendix B: Workforce model examples

Below are some examples of models from the education, afterschool, nonprofit, government, youth, and business communities.

Education-based models:

1. **Philippines/K-to-12 Program:** Implemented in the 2016-2017 school year, this reform extends basic education from 10 years to 12 years. In the additional two years, students can choose either an academic track to prepare for university or one of three specialization tracks focused on skills development. There are targeted employment opportunities for students who do not wish to pursue a university degree.¹⁵⁶
2. **Germany/Dual-Education System:** Germany's dual vocational training system offers secondary school students opportunities to parallel traditional education with two to three years of an apprenticeship in one of their approximately 350 officially recognized training programs.¹⁵⁷
3. **Korea/Working-Learning Dual System:** Modeled on the German/Swiss apprenticeship model, this program

targets young people, regardless of educational background, by partnering with employers to provide hands-on training. Program completion involves an evaluation by the government, and by the related industry leading to a certificate or degree.¹⁵⁸

Afterschool models:

1. **Singapore/Student Care Centres and Co-Curricular Activities:** The Ministry of Education works with primary schools to set up Student Care Centres, and with secondary schools to offer co-curricular activities. The programs also offer social and emotional learning.^{159,160}
2. **United States/21st Century Learning Centers:** Since 1998, the US federal government has supported 21st Century Learning Center grants for local afterschool, before school, and summer-learning programs for students in high-poverty, low-performing schools. Programs support enrichment in the areas of academics, youth development, health and wellness, social and emotional learning, career technical programs, college and work readiness, and STEM, among others.¹⁶¹

Nonprofit models:

1. **Educate!** Educate! works with national education systems and secondary schools to tackle youth unemployment by reforming what schools teach, and how they teach. This helps students in Africa develop the skills needed to start businesses, get jobs, and drive development in their communities.¹⁶²
 2. **EFE-Maroc:** Using a demand-driven approach, EFE-Maroc works with local employers to source, train, and hire youth. Through intensive market assessments, EFE-Maroc provides adaptable trainings infused with soft skills and tailored to the needs of the market coupled with direct job placement.¹⁶³
 3. **Harambee Youth Employment Accelerator:** Focused on South Africa, and using a demand-driven model, Harambee connects youth to employers. They partner closely with employers to understand their needs, and then train youth in specific skills for the opportunities through intensive work readiness training, employment matching, and ongoing wraparound services and support.¹⁶⁴
 4. **JA Worldwide:** Junior Achievement (JA) Worldwide's global network provides career readiness programs that include job shadowing opportunities, experiential learning, and immersive entrepreneurship experiences that prepare youth for the future of jobs.¹⁶⁵
 5. **Jobs for America's Graduates' Out of School (OOS) Program:** Focused on youth ages 16-24 who have left traditional education, the OOS program provides up to two years of skills training, employment placement, leadership development, personal skills competencies, and wraparound services. Using Jobs for America's Graduates' state-based model, OOS leverages local knowledge and resources to help youth address barriers to employment, pursue educational goals, and connect with local employer demands.¹⁶⁶
 6. **Save the Children's Youth Employment Programs:** Supports Indonesian youth ages 15-24 to acquire skills through training curriculum on employability skills, entrepreneurial skills, financial literacy, job counseling, mentoring, and vocational training. They collaborate with the private sector to create partnerships for mentoring, and to develop job linkages for youth based on market needs.¹⁶⁷
 7. **Sistema de Aprendizaje Tutorial (SAT):** Serving rural areas of Brazil, Colombia, Ecuador, Honduras, and Nicaragua, the program is an alternative to secondary school for rural youth who have finished primary school. The trainers use a "learn-by-doing" methodology, such as teaching math and science in the context of agricultural innovation.¹⁶⁸
- register with their country-specific program, and are connected to a variety of employment and skills training opportunities.¹⁷⁰
3. **South Africa/National Career Advice Portal (NCAP):** Supported by the South African Qualifications Authority (SAQA), the NCAP is an online career pathway information system with information for more than 1,000 learning pathways, 500 occupational pathways, self-assessments, contact information, and an e-portfolio option. The online portal is monitored by qualified staff who can provide live support in multiple languages.¹⁷¹
 4. **Skill India Mission Operation (SIMO):** SIMO addresses the skills gap by increasing the market relevance of short-term skills training programs at the national and state levels. The six-year program aims to support at least 8.8 million youth by up skilling teachers with renewed learning resources, leveraging public/private partnerships, and providing private-sector actors with matching grants for CSR-funded skilling activities.¹⁷²
 5. **SkillsFuture Singapore:** Under the Ministry of Education, SkillsFuture Singapore provides a multifaceted platform to support and strengthen educational and skills training. The initiative includes information on industry-relevant training programs, a personalized training and career guidance portal, a community outreach initiative aimed at individual up skilling, a skills framework, apprenticeship and entrepreneurship support, and employer awards.¹⁷³
 6. **United States Department of Labor Career Pathways Toolkit:** An updated version released in 2014 in light of the Workforce Innovation and Opportunity Act (WIOA), this toolkit aims "to provide the workforce system with a framework, resources, and tools for states and local partners to develop, implement, and sustain career pathways systems and programs." The toolkit provides information and resources for state and local networks to build comprehensive career pathways using demand-driven employment and training needs.¹⁷⁴
 7. **The European Qualifications Framework:** To support transparency and recognition of skills and qualifications across Europe, the Qualifications Framework provides a tool for comparing member-country employment qualification frameworks and levels to demonstrate equivalency. The framework also includes a validation system for demonstrable skills, a credit system for higher education and TVET programs, quality assurance agreements, and the Europass (a "passport" containing standardized documentation designed to easily present qualifications). Several member countries have voluntarily aligned their country-level frameworks to the EQF.¹⁷⁵
 8. **India National Skills Qualifications Framework:** The NSQF maps different levels of knowledge, skills, and aptitudes with requirements of different jobs and roles, including detailed learning outcomes that recognize formal and non-formal education and TVET. The framework also establishes a system of equivalence to facilitate the transfer of credits. The framework was designed in partnership with industry to align employer needs and expectations.¹⁷⁶

Government-sponsored models:

1. **South Africa Skills Development Levy:** A levy that directly supports the training and education of South African employees, it represents 1 percent of the total amount paid in salaries to employees, and is distributed through Skills Education Training Authorities (SETAs) to provide industry-aligned trainings and skills development.¹⁶⁹
2. **European Union Youth Guarantee:** Adopted in 2013 by all EU member states, the Youth Guarantee is a commitment to all youth younger than 25 to provide quality employment, continued education, apprenticeship, or traineeship within four months of becoming unemployed or leaving formal education. Funded through national budgets, youth

9. **Skills Initiative for Africa:** An initiative by Germany and the chairperson of the African Union Commission, it creates new perspectives through increased employment and income opportunities for young people in Africa. The initiative encompasses a financing facility for skills development to promote innovative TVET approaches with potential for regional dissemination, institutional strengthening and capacity development support for TVET coordination, and an Africa-wide dialogue platform to disseminate innovative TVET approaches and best practices.¹⁷⁷

Youth-led models:

1. **Commonwealth Youth Council:** Commonwealth Youth Council works to communicate, engage, and advocate for youth-led participation. Its economic agenda includes a range of initiatives, including youth employment policy development, supporting youth entrepreneurship, and facilitating the creation of job opportunities for marginalized youth. The council encourages the use of information and communication technology in education, and technological infrastructure improvement.¹⁷⁸
2. **ReGeneration:** Using social media and game-based psychometric assessments to recruit participants, the program offers participants hands-on, holistic training focusing on 4IR-relevant soft and hard skills, community service opportunities, mentorship, and paid job placement. Partnering directly with employers and academic institutions, ReGeneration is democratizing opportunity by actively connecting its graduates to meaningful career opportunities while empowering youth to be their own ambassadors.¹⁷⁹
3. **Soliya:** Founded by two young entrepreneurs as an international nonprofit that operates at the intersection of technology, peace-building, and global education, its programs are designed using community dialogue and facilitation training to empower the next generation to thrive in a globalized world and workforce.¹⁸⁰
4. **Sustain Solutions:** Working through a youth-led mission to solve social and environmental issues through community participation, Sustain Solutions includes eco-social enterprise development in Sri Lanka, India, Bangladesh, Maldives, and Cambodia, along with global education programs that support career and skill development, global social innovation to create sustainability and efficient products, and global dialogue among cross-sector partners to develop and support sustainable solutions.¹⁸¹

Business community models:

1. **CORE @ Deloitte (Deloitte US):** The Career Opportunity Redefinition and Exploration (CORE) Leadership Program is a 2.5-day experiential and personalized-learning program, held four times a year at Deloitte University. Designed to help transitioning military service members translate their leadership abilities into a business context, the program helps veterans shift their mindsets to focus on their individual strengths and interests, and encourages them to pursue careers that are good fits for their attributes. Additionally, participants receive post-program support and join a strategic network of veterans to enable purposeful career development.¹⁸²

2. **Gap Inc. This Way Ahead:** Launched in 2007, Gap Inc. created This Way Ahead to help more teens and young adults from low-income communities get a foot in the door for that life-changing first job experience. Youth are recruited by local nonprofits running job training programs, and receive ongoing support from nonprofit job coaches, store managers, and store colleagues. By 2020, Gap Inc. expects that 10,000 young people will participate in This Way Ahead.¹⁸³
3. **Hilton's Open Doors and Passport to Success Programs:** Conducted in partnership with the International Youth Foundation, these programs are part of Hilton's global commitment to impact at least 1 million young people by 2019. The programs' goals are to help participants reach their full potential in three ways: connecting youth to the world of travel by immersing them in Hilton's expansive supply chain, preparing youth for success by developing their life and professional skills with mentorships, apprenticeships, and Hilton's innovative career-awareness program, and employing youth across all divisions in more than 5,300 owned, managed, and franchised hotels worldwide.^{184,185}
4. **HP's National Education Technology Assessment (NETA):** These nation-scale education studies are designed to match policies and curricula to the needs of the future labor market. Using a combination of macroeconomic analysis, hyperlocal insights, national surveys, and predictive analytics, NETA empowers leaders with the data and evidence to create effective human capital development policies.¹⁸⁶
5. **Intel Future Skills as part of Intel's Intel Innovation Generation Initiative:** Future skills is a hands-on innovation experience that leverages technology curricula and employability skills training to provide youth with essential skills for the jobs of the future. The program is integrated into community-based workforce programs in seven US states and in Mexico, helping participants secure employment, start their own businesses, continue their education, or create technology solutions. In Germany, Future Skills has been included in refugee training programs, while in India, it is run in collaboration with the government's "Atal Innovation Mission" to help build exemplar "Tinkering Labs" in schools.¹⁸⁷
6. **Pathways in Technology Early College High Schools (P-TECH):** Pathways in Technology Early College High Schools (P-TECH): In 2011, IBM, working with the New York City Department of Education and The City University of New York, created the P-TECH 9-14 School Model. Through P-TECH, students graduate with both a high school diplomas and an associate's degrees within six years, along with the skills required to either continue their education in a four-year, post-secondary institution, or enter into entry-level careers in competitive STEM industries. P-TECH integrates high school coursework and a range of workplace experiences, including mentoring, site visits, and paid internships. Upon graduation, participants receive a commitment to be among the first in line for suitable jobs. P-TECH schools have open enrollment and, because students come from disadvantaged backgrounds, the associate's degree is provided for free.¹⁸⁸

7. **Salesforce Pathfinder Training Program:** A joint effort between Deloitte US and Salesforce, Pathfinder is a job-training program designed to prepare participants from diverse backgrounds for careers in the Salesforce ecosystem. Offering both technical and business training, the program places participants on the path to become Salesforce administrators or developers. Participants receive

both virtual and in-person training over a four-month period, and assistance in preparing for the applicable Salesforce certification exams upon completion. Additionally, Deloitte has committed to interview Pathfinder graduates, and provide internships or other employment to at least 10 percent of qualified graduates (about 50 total by 2020).¹⁸⁹

Appendix C: Research methodology

Scope

The Youth Skills and Innovation Initiative has two primary goals; identify new models to rapidly enhance the skills and innovation readiness of young people, and inspire collective action among the business community, civil society, government leaders and youth to bolster the skills of our next generation of innovators. The scope of this work is global, with a special focus on the most marginalized and disadvantaged young people. This report and the recommendations herein consider the unique role and power the business community can provide in preparing youth for 4IR.

Research questions

Our initial research was based on the following set of questions:

How can we prepare youth with the skills to succeed in the Fourth Industrial Revolution (4IR)?

1. What is the challenge?
 - a. How do we address the 1.8 billion young people coming into the workforce between now and 2030?
2. How does 4IR change the game?
 - a. What skills are needed and valued in 4IR?
 - b. What is now possible thanks to 4IR?
3. What skills are needed in the new world of work?
 - a. What work readiness skills are needed?
 - b. What core skills are needed?
 - c. What technical skills are needed?
 - d. What entrepreneurial skills are needed?
4. What current models are working?
 - a. Can these models be scaled?
 - b. How can they be scaled for impact?
5. What new models are emerging?
 - a. Can these models be scaled?
 - b. How can they be scaled for impact?
6. What are the opportunities for business to make an impact while engaging youth?
 - a. Can these models be scaled?
 - b. How can they be scaled for impact?
 - c. How is business engaging youth voices?

Additional research questions to drive the interview phase of research included:

- What is the business community's role in hiring and preparing youth for the workforce?
- What are the opportunities and challenges of hiring youth?

- What are the opportunities for the business community to engage, invest, and/or participate in youth skills/workforce development?

Data collection

A literature review was conducted to assess the state of current research related to skills needs for 4IR. This included models of youth engagement with industry for skills development with proven results or potential to scale. The review included research and data from think tanks, industry leaders, research institutions and researchers, universities, and the business community.

The goal of this review was to better understand the problem, examine solutions and potential models, explore new areas of potential opportunities, and to make recommendations to the business community to drive progress and sustainable impact in youth skill and workforce development.

The research also included interviews with multiple stakeholders, including industry leaders, innovators, global experts, researchers, and nonprofits. Additional interviews were also conducted with youth engagement programs, workforce development and training programs, and with youths themselves. Findings from these interviews are woven into the background, current state analysis, and recommendations of the report. See *Appendix A* for a list of interviewees and contributors.

Further, focus groups were conducted with members of the Global Business Coalition for Education Skills and Innovation Initiative Youth Advisory Council. Nine youths attended four focus groups; the participants were ages 19 to 29 from several countries, including Jordan, Nigeria, Singapore, and the United States. Focus groups lasted about 60 minutes. The Youth Network is a network of youths appointed by leading youth organizations to support the Global Business Coalition for Education Skills and Innovation Initiative's work and outcomes. It does this by informing and helping to shape the research agenda, providing feedback to the Global Business Coalition for Education Skills and Innovation Initiative's Commissioners, supporting the recommendations, and encouraging business, governments, and youth to take action.

In addition, a global survey was conducted to understand the unique insights and perspectives of youths, with the goal of learning more about youth skills development and employment from the point of view of those most affected by this research. The 16-question survey was distributed globally to youth ages 15 to 29 by a secure and anonymous link through email and social media channels. Survey questions included basic demographics, education, employment, knowledge of 4IR, youth skills development, preparation for the workforce, barriers to employment, and recommendations to the business community. 531 participants responded from 45 countries.

Research limitations: Our research included 66 interviews, four youth focus groups, and 531 youth survey respondents. We acknowledge that both the limited sample size and self-reported aspect of our research affect the general applicability of the research. We attempted to mitigate limitations through the quality of consultations with experts, and through extensive literature review.

The largest response rate is youth in the United States (29 percent), and the data is skewed slightly toward youth perspectives in this region due to snowball sampling methods through known distribution channels and their networks. However, the responses provided a representative spread of youth from 45 countries across the world.

The research attempted to reach marginalized youth. While we were able to collect responses across the age, gender, income, education status, and employment status spectrums, we recognize that our methods rely on technology and, therefore, limited our reach to rural youth. Future research should seek the perspectives of rural populations across the globe, including those without Internet and mobile access who are traditionally accessed through field research.

Finally, as a competitor and collaborator in the space of youth workforce development, we acknowledge our researcher bias in the issues presented, and the business community's role in the solutions. Our methodology strived to balance these views with the voice of diverse stakeholders.

Appendix D: Summary of youth advisory council focus groups

In July 2018, we conducted four focus group discussions with the Global Business Coalition for Education Youth Skills and Innovation Initiative Youth Advisory Council. Below is a summary of findings:

1. Youths report that the skills important for youth in the future of work include work readiness skills, soft skills, technical skills, and entrepreneurial skills.

- Adaptability
- Basic computer skills
- Communication
- Courage
- Creativity
- Cross-cultural communication and conflict management
- Emotional intelligence
- Flexibility
- Innovation
- Interpersonal skills
- Leadership
- Networking skills
- Problem solving
- Resourcefulness
- Resilience
- Social and emotional
- Soft skills
- Teamwork, working together more efficiently and effectively
- Willingness to learn new things

2. Youths suggest that improvement is needed in the approach to skills development, making learning and training interactive, multicultural, engaging, constructive, and practical.

- Work across multiple cultures
- Connect and exchange through online platforms

- Engage constructively
- Start teaching soft skills in primary grades, and continue through the education lifecycle
- Opportunities to apply skills; practical application

3. Youths experience barriers in skills development, including lack of resources, lack of knowledge about careers and skills needed, and lack of tools and training.

- Some youth do not know what 4IR is
- Some teachers are not digitally literate
- Underfunded schools
- Disparities in education
- Schools are not able to keep up with the rate of change of technology
- Students switching majors
- Students do not always know what they want to do with their careers
- Some students do not feel the need to go beyond formal school to get what they need to acquire a job
- Some students feel that getting an education will give them all that they need to get a career
- Impracticality; acquiring knowledge without figuring out how it should be implemented
- Poor access to the right tools needed to develop these skills
- Inability to afford basic tools like computer, electricity and Internet connection, which are relevant to personal development for the modern work place
- Some youth do not have access to computers
- Some youth have access to computers, but do not know how to use them

4. Youths state there is misalignment in the skills they acquire and the demand for skills needed in the workforce.

- Misalignment between needs/demands of business community and education
- Gap between education received and what the market needs
- Insufficient knowledge on how to acquire skills needed for a particular job or career
- Lack of understanding of what the market needs

5. Youths report a lack of knowledge, resources, and opportunities as key barriers to youth employment.

- Lack of knowledge of the process
- Lack of role models to provide guidance around job searching and interviews
- Lack of internships
- Internships that are unpaid or do not pay a living wage; those without resources miss opportunities because they cannot afford it
- Shortage of jobs, particularly creative or innovative jobs
- Job competition
- Lack of Internet access; inability to search for jobs online
- Lack of basic tools and amenities like computers, Internet connection, constant electricity needed to develop their skills and explore the modern world of work
- Decreasing vacancies for on-the-job training as most employers seek those with the right skills coming in
- Inadequate and unproductive engagement of young people

6. Mindsets and systemic issues are also described as barriers to youth employment.

- Poverty
- Structural racism
- Attitudes around youth inclusion
- Unrecognized or undiagnosed mental illness, such as depression and trauma
- Inadequate job role experience
- Increasing work population with limited job vacancies
- Inadequate skills needed for available job roles
- Employers request extensive demonstrated job experience; unemployed youth may not have demonstrated experience to fulfill request
- School-to-prison pipeline
- Perceived mindsets of adults

7. Youths suggest that the responsibility to prepare them for future jobs lies in the hands of a variety of players, including government, nonprofits, the business community, schools, and society as a whole.

- Government and formal education cannot do it alone due to funding, policies, and structure
- Nonprofit organizations are well positioned because of their flexible structure, nimbleness, capability to innovate and incubate, and their ability to reach the most marginalized youth

- Society as a whole
- Public and business community
- Afterschool, co-curricular space
- Schools

8. Youths recommend that the business community clearly communicate the skills they seek in employees.

- Create a clear message of what skills are needed
- Introduce relevant skills in education system
- Provide skills trainings for needed skills

9. Youths encourage the business community to provide resources, opportunities, and flexible funds to support skill development.

- Provide flexible funds to fill the gap where government cannot
- Provide internships that offer a living wage
- Offer career pipelines to youth; work with workforce development programs to build a pipeline
- Coach and mentor youth
- Provide feedback to youth on resumes

10. Youths suggest that the business community engage with the education sector and workforce development programs to advance their efforts.

- Work with education system; ministries of education
- Partner with youth skill development organizations to build skills that are relevant to their businesses; the business community will be investing in human capital through their corporate social responsibility, and building a workforce that will be needed later

11. Youths recommend the need to create and support inclusive hiring and retention practices.

- Remove credentialing requirements for screening processes
- Seek out indigenous talent
- Market jobs on a variety of job platforms
- Recruit youths from a variety of universities and colleges, including community colleges
- Business community can start with better training on diversity, equity, and inclusion in their hiring decisions, and hire from diverse backgrounds
- Make sure hiring committees have diversity, and have diverse representation on hiring panel
- Hire youths with diverse backgrounds; create a pipeline for hiring women, people of color, and youths with disabilities
- Invest resources and time in professional development for young employees; create opportunities for youths to learn and grow (e.g. skills training, mentorships, lunch and learn)
- HR departments should establish programs that integrate young people into their communities (e.g. subsidize moving or housing costs; make sure people get diversity training; training on soft skills; intro training and support network)

12. Youths recommend that the business community engage them in their workforce development initiatives.

- Invest in skills development in coordinated, systemic, and targeted ways
- Collect data to understand what is working
- Ask for and implement young employees' opinions to the growth of the work place
- Understand the specific skills needed for improvement before being trained
- Periodical performance review of youths, and their job roles
- Bringing youths on board as champions for skills and workforce development advocacy

13. Youths say that workforce development efforts need to consider country specifics, up-to-date skills training methodologies, engage youths to solve problems, and see 4IR as an opportunity.

- Contextualize efforts based on what that society needs
- Understand country and cultural mindsets of those you are working to support
- Important for teachers to use up-to-date methodologies
- Help youths to understand what they want to do in primary and secondary school
- Colleges or organizations to offer career counseling to young people
- Encourage youths to solve global problems that affect them
- 4IR is creating great disruption, but also opportunity
- Invite youths to speak about this problem at high-visibility stakeholders' events that are likely to have a positive impact on solving the problems of youth skills



References

01. Klaus Schwab, "The Fourth Industrial Revolution: What it means, how to respond," *World Economic Forum*, 14 Jan 2016, <https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>, accessed 20 March 2018.
02. Jamie Condliffe, "Strategies to Cope with Job-Taking Robots," *The New York Times*, 9 June 2018, <https://www.nytimes.com/2018/07/09/business/dealbook/automation-developing-world.html>, accessed on 2 Aug 2018.
03. DESA, UN. *United Nations Department of Economic and Social Affairs, Population Division. World Population Prospects: The 2017 revision, key findings and advance tables*, custom data acquired via website, <https://esa.un.org/unpd/wpp/>, accessed 19 August 2018.
04. United Nations, *Population Facts: Youth population trends and sustainable development*, May 2015, p. 1, http://www.un.org/en/development/desa/population/publications/pdf/popfacts/PopFacts_2015-1.pdf, accessed 11 July 2017.
05. Yomi Kazeem, "More than half of the world's population growth will be in Africa by 2050, *Quartz Africa*, 29 July 2017, <https://qz.com/1016790/more-than-half-of-the-worlds-population-growth-will-be-in-africa-by-2050/>, accessed 11 July 2017.
06. Nicholas Burnett, Paul Isenman, Elizabeth King, and Annababette Wils, *The Learning Generation: Investing in education for a changing world*, International Commission on Financing Global Education Opportunity, 2016, p. 13, <http://report.educationcommission.org/report/>, accessed 28 March 2018.
07. The Education Commission, *The International Finance Facility for Education*, no date, p. 2, http://educationcommission.org/wp-content/uploads/2018/05/EC_IFFed_Prospectus-1.pdf, accessed 11 July 2017.
08. DESA, UN. *United Nations Department of Economic and Social Affairs, Population Division. World Population Prospects: The 2015 revision, key findings and advance tables*. Working Paper No. ESA/P/WP. 241, 2015.
09. DESA, UN, *United Nations Department of Economic and Social Affairs, Population Division. World Population Prospects: The 2015 revision, key findings and advance tables*. Working Paper No. ESA/P/WP. 241, 2015.
10. DESA, UN, *United Nations Department of Economic and Social Affairs, Population Division. World Population Prospects: The 2015 revision, key findings and advance tables*. Working Paper No. ESA/P/WP. 241, 2015.
11. OECD, *Youth in the MENA Region: How to bring them in*, 2016, https://www.oecd-ilibrary.org/governance/youth-in-the-mena-region_9789264265721-en
12. United Nation, *World Youth Report 2013*, <http://www.un.org/esa/socdev/unyin/wyr/2013/report.pdf>, accessed 10 June 2018.
13. United Nation, *World Youth Report 2013*, <http://www.un.org/esa/socdev/unyin/wyr/2013/report.pdf>, accessed 10 June 2018.
14. Monica Das Gupta, Robert Engelman, Jessica Levy, Gretchen Luchsinger, Tom Merrick, and James E. Rosen, *The Power of 1.8 Billion – Adolescents, Youth And The Transformation of the Future*, UNFPA, 2014, p. 31, http://www.un.org/youthenvoy/wp-content/uploads/2014/10/EN-SWOP14-Report_FINAL-web.pdf, accessed 8 April 2018.
15. Monica Das Gupta, Robert Engelman, Jessica Levy, Gretchen Luchsinger, Tom Merrick, and James E. Rosen, *The Power of 1.8 Billion – Adolescents, Youth And The Transformation of the Future*, UNFPA, 2014, p. 31, http://www.un.org/youthenvoy/wp-content/uploads/2014/10/EN-SWOP14-Report_FINAL-web.pdf, accessed 8 April 2018.
16. Wadia Ait Hamza (head of the Global Shapers at World Economic Forum), interview, 30 May 2018.
17. Mohammed Ali Khan, (senior education specialist, IFC), interview, 7 May 2018.
18. Daniella Foster (senior director, Global Corporate Responsibility, Hilton), interview, 31 May 2018.
19. International Organization of Employers, Business and Industry Advisory Committee to OECD, and Deloitte Global, *Youth Employment Opportunity: Understanding labor market policies across the G20 and beyond*, 2015, p. 5, <https://www2.deloitte.com/content/dam/Deloitte/global/Documents/About-Deloitte/gx-gbc-youth-employment-opportunity-labor-market-policies.pdf>, accessed 5 June 2018; International Labour Organization, *Global Employment Trends for Youth 2017: Paths to a better working future*, 2017, http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_598669.pdf, accessed 5 June 2018.
20. International Labour Organization, *Global Employment Trends for Youth 2017: Paths to a better working future*, 2017, http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_598669.pdf, accessed 5 June 2018.
21. International Labour Organization, *Global Employment Trends for Youth 2017: Paths to a better working future*, 2017, http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_598669.pdf, accessed 5 June 2018.
22. Decent Jobs for Youth, "The Challenge," 2017, <https://www.decentjobsforyouth.org/about>, accessed 8 Aug 2018.
23. International Labor Organization, *Toward Solutions for Youth Employment*, 2015, p. 9, https://www.ilo.org/wcmsp5/groups/public/---ed_emp/documents/publication/wcms_413826.pdf, accessed 8 Aug 2018
24. International Labour Organization, *Where do the world's NEETs live?*, http://www.ilo.org/global/about-the-ilo/multimedia/maps-and-charts/enhanced/WCMS_598674/lang--en/index.htm, accessed 21 May 2018.
25. Monica Das Gupta, Robert Engelman, Jessica Levy, Gretchen Luchsinger, Tom Merrick, and James E. Rosen, *The Power of 1.8 Billion – Adolescents, Youth And The Transformation of the Future*, UNFPA, 2014, p. 31, http://www.un.org/youthenvoy/wp-content/uploads/2014/10/EN-SWOP14-Report_FINAL-web.pdf, accessed 8 April 2018. <https://www.statista.com/statistics/813152/youth-unemployment-rate-in-the-united-states/>, accessed 12 July 2018.
26. International Labor Organization, "Global Youth Unemployment Is on the Rise Again," 24 August 2016, http://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_513728/lang--en/index.htm, accessed 12 July 2018.
27. "Global Youth Unemployment Is on the Rise Again." International Labor Organization, 24 Aug, 2016, http://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_513728/lang--en/index.htm, accessed 12 July 2018.
28. "Global Youth Unemployment Is on the Rise Again." International Labor Organization, 24 Aug, 2016, http://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_513728/lang--en/index.htm, accessed 12 July 2018.

29. "Global Youth Unemployment Is on the Rise Again." International Labor Organization, 24 Aug. 2016, http://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_513728/lang-en/index.htm, accessed 12 July 2018.
30. OCED, "Data: Youth unemployment rate," <https://data.oecd.org/unemp/youth-unemployment-rate.htm>, accessed 6 June 2018.
31. OCED, "Data: Youth unemployment rate," <https://data.oecd.org/unemp/youth-unemployment-rate.htm>, accessed 6 June 2018.
32. OCED, "Data: Youth unemployment rate," <https://data.oecd.org/unemp/youth-unemployment-rate.htm>, accessed 6 June 2018.
33. The World Bank, "Data: Unemployment, youth total," <https://data.worldbank.org/indicator/SL.UEM.1524.ZS?end=2017&start=2013>, accessed 6 June 2018.
34. Zineb Mouhyi (Policy & Partnership Development Officer, WISE, Qatar Foundation), interview, 15 May 2018.
35. Wadia Ait Hamza (head of the Global Shapers at World Economic Forum), interview, 30 May 2018.
36. Yemi Babington-Ashaye (president, United People Global), interview, 9 April 2018.
37. Jacqueline Muna Musiitwa, "The Youth Factor: Companies need more millennial board members if they want to stay relevant," *Quartz*, 23 April 2015, <https://qz.com/389387/companies-need-more-millennial-board-members-if-they-want-to-stay-relevant/>, accessed 6 June 2018.
38. Richard Dobbs, Anu Madgavkar, Dominic Barton, Eric Labaye, James Manyika, Charles Roxburgh, Susan Lund, and Siddarth Madhav, *The world at work: Jobs, pay, and skills for 3.5 billion people*, McKinsey Global Institute, 2012, https://www.mckinsey.com/~media/McKinsey/Featured%20Insights/Employment%20and%20Growth/The%20world%20at%20work/MGI%20Global_labor_Full_Report_June_2012.ashx, accessed 12 April 2018.
39. Rainer Strack, Jens Baier, Matthew Marchingo, and Shailesh Sharda, *The Global Workforce Crisis*, Boston Consulting Group, 2014, <https://www.bcg.com/publications/2014/people-organization-human-resources-global-workforce-crisis.aspx>, accessed 12 April 2018. http://imagesrc.bcg.com/Images/The_Global_Workforce_Crisis_Jun_2014_tcm9-84781.pdf, accessed 12 April 2018.
40. Nicholas Burnett, Paul Isenman, Elizabeth King, and Annababette Wils, *The Learning Generation: Investing in education for a changing world*, International Commission on Financing Global Education Opportunity, 2016, p. 31, <http://report.educationcommission.org/report/>, accessed 28 March 2018.
41. Klaus Schwab, "The Fourth Industrial Revolution: What it means, how to respond," *World Economic Forum*, January 14, 2016, <https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>, accessed 20 March 2018.
42. World Economic Forum, *Towards a Reskilling Revolution*, 2018, p. 13-14, http://www3.weforum.org/docs/WEF_FOW_Reskilling_Revolution.pdf, accessed 6 March 2018.
43. Deloitte Insights, "2018 Deloitte Millennium Survey," <https://www2.deloitte.com/content/dam/Deloitte/global/Documents/About-Deloitte/gx-2018-millennial-survey-report.pdf>
44. Klaus Schwab, "The Fourth Industrial Revolution," *Foreign Affairs*, 12 Dec 2015, <https://www.foreignaffairs.com/articles/2015-12-12/fourth-industrial-revolution>, accessed 20 May 2018.
45. World Economic Forum, "Five Million Jobs by 2020: the Real Challenge of the Fourth Industrial Revolution," 18 January 2016, <https://www.weforum.org/press/2016/01/five-million-jobs-by-2020-the-real-challenge-of-the-fourth-industrial-revolution/>, accessed 28 March 2018.
46. Deloitte, "The Fourth Industrial Revolution is here—are you ready?," *Deloitte Insights*, 2018, https://www.forbes.com/forbes-insights/wp-content/uploads/2018/01/Deloitte-FourthIndustrialRev_REPORT_FINAL-WEB.pdf, accessed 17 August 2018.
47. Victoria Chen (co-founder, BridgeYear), interview, 28 May 2018.
48. Alex Gray, "The 10 skills you need to thrive in the Fourth Industrial Revolution." *World Economic Forum*, 19 January 2016, <https://www.weforum.org/agenda/2016/01/the-10-skills-you-need-to-thrive-in-the-fourth-industrial-revolution/>, accessed 22 March 2018.
49. Deloitte, "The Fourth Industrial Revolution is here—are you ready?," *Deloitte Insights*, 2018, https://www.forbes.com/forbes-insights/wp-content/uploads/2018/01/Deloitte-FourthIndustrialRev_REPORT_FINAL-WEB.pdf, accessed 22 May 2018.
50. UNICEF Stories of Innovation, "Are young people prepared for the Fourth Industrial Revolution?," <http://unicefstories.org/2017/04/04/are-young-people-prepared-for-the-fourth-industrial-revolution/>, accessed 4 June 2018.
51. Adobe, "Creative Problem Solving in Schools: Essential Skills Today's Students Need for Jobs in Tomorrow's Age of Automation [Press release]", 24 January 2018, <http://cps.adobeeducate.com/?scid=social75378197&adbid=169597948711204&dbplfb&adbpr=341657335877606>, accessed 18 April 2018.
52. Laurence Chandy, *The future of work in the developing world*, Brookings Institute, 2017,, <https://www.brookings.edu/research/the-future-of-work-in-the-developing-world/>, accessed 23 April 2018.
53. Anna Davies, Devin Fidler, and Gorbis Marina, *Future Work Skills 2020*, Institute for the Future for the University of Phoenix Research Institute, 2011, http://www.iftf.org/uploads/media/SR-1382A_UPRI_future_work_skills_sm.pdf, accessed 23 April 2018.
54. Global Business Coalition for Education Skills & Innovation Initiative Youth Network, Singapore focus group, 6 June 2018.
55. Megan M McClelland, Shauna Tomtney, Sara A Schmitt, and Robert Duncan, SEL Interventions in Early Childhood, *Future of Children*, Spring 2017, p. 34-35, <https://files.eric.ed.gov/fulltext/EJ1145093.pdf>, accessed 2 July 2018.
56. Veronica Boix Mansilla and Anthony Jackson, *Educating for Global Competence Preparing our Youth to Engage the World*, Asia Society, 2011.
57. Global Business Coalition for Education Skills & Innovation Initiative Youth Network, Middle East focus group, 4 June 2018.
58. Hamza Debbarh (board member, EFE-Maroc), interview, 24 May 2018.
59. Alexis Menten (executive director, Program Development, Center for Global Education at Asia Society), interview, 1 June 2018.
60. Yemi Babington-Ashaye, (president, United People Global), interview, 9 April 2018.
61. Sarah Sladen, (director, Youth Economic Opportunities Network, Making Cents International), interview, 10 May 2018.
62. Youth Employment Network Ministry of Youth Affairs Sri Lanka, "Strategic Assessment and Policy Recommendations for a National Action Plan for Youth

- Employment" 2007, p. vii-xi, <https://www.unicef.org/srilanka/Final.pdf>, accessed 20 March 2018.
63. Tracie Neuhaus (senior manager, Monitor Institute by Deloitte), interview, 25 May 2018.
64. Hardy Simes (Office of the Future, HP), interview, 1 June 2018.
65. Zineb Mouhyi (policy & partnership development officer, WISE, Qatar Foundation), interview, 15 May 2018.
66. Dhushyanth Raju (lead economist, South Asia Region, World Bank) interview, 14 May 2018.
67. Jannette Collins, *Education Techniques for Lifelong Learning: Lifelong Learning in the 21st Century and Beyond*, RadioGraphics, Volume 20, Number 2, March-April 2009, p. 65, <https://pubs.rsna.org/doi/pdf/10.1148/rg.292085179>, accessed 11 July 2018.
68. Nate Hurst (chief sustainability & social impact officer, HP), interview, 18 June 2018.
69. Jannette Collins, *Education Techniques for Lifelong Learners: Lifelong Learning in the 21st Century and Beyond*, RadioGraphics, 2009, <https://pubs.rsna.org/doi/full/10.1148/rg.292085179>, accessed 28 May 2018.
70. Ariel Fiszbein (senior fellow and education program director, The Inter-American Dialogue), interview, 11 May 2018.
71. Ned McCulloch (global issue manager for Skill Development & Education, IBM Corporation), interview, 10 May 2018.
72. Christy Olenik (vice president technical services, Making Cents International), interview, 17 May 2018.
73. Ariam Mogos (learning lead, UNICEF Innovation), interview, 22 March 2018.
74. Rob Burnet (CEO, Well Told Story), interview, 24 May 2018.
75. Wendy Kopp (CEO, Teach For All), interview, 15 June 2018.
76. World Economic Forum, *Realizing Human Potential in the Fourth Industrial Revolution An Agenda for Leaders to Shape the Future of Education, Gender and Work*, 2017, p. 7-10, http://www3.weforum.org/docs/WEF_EGW_Whitepaper.pdf, accessed 23 March 2018.
77. Ned McCulloch (global issue manager for Skill Development & Education, IBM Corporation), interview, 10 May 2018.
78. Nate Hurst (chief sustainability & social impact officer, HP), interview, 18 June 2018.
79. Eduardo Velez (Eduardo Velez Bustillo, former World Bank Education sector manager and leader for LAC and EAP, current adjunct professor at Georgetown University and Kobe University), interview, 8 June 2018.
80. Alexis Menten (executive director, Program Development, Center for Global Education at Asia Society), interview, 1 June 2018.
81. Nate Hurst (chief sustainability & social impact officer, HP), interview, 18 June 2018.
82. The Education Commission, *The Learning Generation: Investing in education for a changing world*, 2016, The International Commission on Financing Global Education Opportunity, http://report.educationcommission.org/wp-content/uploads/2016/09/Learning_Generation_Full_Report.pdf
83. "263 Million Children and Youth Are Out of School." UNESCO UIS, 27 April 2017, <http://uis.unesco.org/en/news/263-million-children-and-youth-are-out-school>, accessed 12 July 2018.
84. "263 Million Children and Youth Are Out of School." UNESCO UIS, 27 April 2017, <http://uis.unesco.org/en/news/263-million-children-and-youth-are-out-school>, accessed 12 July 2018.
85. UNESCO Global Education Monitoring Report UNESCO International Institute for Education Planning (IIEP). "Six ways to ensure higher education leaves no one behind." (2017), <http://unesdoc.unesco.org/images/0024/002478/247862E.pdf>, accessed 10 June 2018.
86. The Education Commission, *The Learning Generation: Investing in education for a changing world*, 2016, The International Commission on Financing Global Education Opportunity, http://report.educationcommission.org/wp-content/uploads/2016/09/Learning_Generation_Full_Report.pdf, accessed 11 July 2018.
87. "Girls' Education," The World Bank, <https://www.worldbank.org/en/topic/girlseducation>, accessed 9 Aug 2018.
88. Na Jeong-ju, "Meister school fight social prejudice," *The Korea Times*, 23 May 2012, http://www.koreatimes.co.kr/www/news/nation/2014/01/181_111552.html, accessed 11 July 2018.
89. Coburgbanks, "The Pros and Cons of Doing an Apprenticeship," <https://www.coburgbanks.co.uk/blog/candidate-tips/pros-cons-apprenticeship/amp/>, accessed 11 July 2017.
90. Goldin Nicole, *Key Consideration in Youth Workforce Development*, Center for Strategic and International Studies, 2015, p. 11, <https://www.csis.org/analysis/key-considerations-youth-workforce-development>, accessed 25 March 2018.
91. Wadia Ait Hamza (head of the Global Shapers at World Economic Forum), interview, 30 May 2018.
92. Mohammed Ali Khan (senior education specialist, IFC), interview, 7 May 2018.
93. Victoria Chen (co-founder, BridgeYear), interview, 24 May 2018.
94. Debabratt (Debu) Mishra (partner, Deloitte India), interview, 18 June 2018.
95. Peter Miscovich, *The future is automated. Here's how we can prepare for it*, World Economic Forum, 2017, <https://www.weforum.org/agenda/2017/01/the-future-is-automated-here-s-how-we-can-prepare-for-it/>, accessed 12 June 2018.
96. World Economic Forum, *Realizing Human Potential in the Fourth Industrial Revolution An Agenda for Leaders to Shape the Future of Education, Gender and Work*, 2017, World Economic Forum, http://www3.weforum.org/docs/WEF_EGW_Whitepaper.pdf, accessed 12 June 2018.
97. American Institutes for Research, "Ready for Work? How Afterschool Programs Can Support Employability Through Social and Emotional Learning (Issue brief)," 2015, <https://www.air.org/sites/default/files/downloads/report/Afterschool-Programs-Support-Employability-Brief-Dec-2015.pdf>, accessed 28 May 2018.
98. American Institutes for Research, "Afterschool Programs Make a Difference: Findings From the Harvard Family Research Project," *Afterschool, Family, and Community*, Volume XX, Number 2, August 2008, http://www.sedl.org/pubs/sedl-letter/v20n02/afterschool_findings.html, accessed 28 May 2018.
99. Afterschool Alliance, "Building Workforce Skills in Afterschool (Issue brief)," November 2017, p. 2, http://afterschoolalliance.org/documents/issue_briefs/issue_workforce_readiness_70.pdf, accessed 28 May 2018.
100. Republic of India, Ministry of Skill Development & Entrepreneurship, "National Skills Qualifications Framework," <http://skilldevelopment.gov.in/nsqf.html>, accessed 5 June 2018.
101. Georgia Greer (head of student recruitment, Deloitte UK), interview, 22 June 2018.
102. Ibid.
103. Daniella Foster (senior director, Global Corporate Responsibility, Hilton), interview, 31 May 2018.
104. Statista, "Internet usage rate worldwide in 2017, by gender and market maturity," <https://www.statista.com/statistics/333871/gender-distribution-of-Internet-users-worldwide/>, accessed 5 May 2018.
105. Global Business Coalition for Education Skills & Innovation Initiative Youth Network, North America focus group, 4 June 2018.

106. Nattee Goodman, *The Impact of Employment on the Health Status and Health Care Costs of Working-age People with Disabilities*, Lead Center, November 2015, http://www.leadcenter.org/system/files/resource/downloadable_version/impact_of_employment_health_status_health_care_costs_0.pdf, accessed 5 May 2018.
107. Committee on Improving the Health, Safety, and Well-Being of Young Adults; Board on Children, Youth, and Families; and Institute of Medicine, "Investing in the Health and Well-Being of Young Adults," *National Academies Press*, January 27, 2017, <https://www.ncbi.nlm.nih.gov/books/NBK284788/>, accessed 8 April 2018.
108. Hardy Simes (Office of the Future, HP), interview, 1 June 2018.
109. Kidus Asfaw (partnerships lead, UNICEF Innovation), interview, 23 March 2018.
110. Ibid.
111. Souktel Digital Solutions, "World Bank: Souktel's Job-Find Solution Boosts Wages, Closes Gender Gaps," January 20, 2016, <http://www.souktel.org/media/news/world-bank-souktel%E2%80%99s-job-find-solution-boosts-wages-closes-gender-gaps>, accessed 15 March 2018.
112. Galperin Hernan and Catrìhel Greppi, "Geographical Discrimination in Digital Labor Platforms," Los Angeles, CA: University of South California, 2017, p. 2-5, <https://annenberg.usc.edu/sites/default/files/2017/11/27/Geographical%20Discriminaio%20Galperin%20%26%20Greppi.pdf>, accessed 13 April 2018.
113. Miguel Palacios, *Human capital contracts: "Equity-like" instruments for financing higher education*, Cato Institute, 2002, <https://www.cato.org/publications/policy-analysis/human-capital-contracts-equity-instruments-financing-higher-education>, accessed 16 August 2018.
114. Ibid.
115. India Ministry of Skill Development and Entrepreneurship, "National Policy for Skills Development and Entrepreneurship 2015," <http://skilldevelopment.gov.in/assets/images/Skill%20India/National%20Policy%20on%20Skill%20Development%20and%20Entrepreneurship%20Final.pdf>, accessed 28 March 2018.
116. Lumina Foundation, "Outcomes-Based Funding: Lessons for Colleges and Universities," <https://www.luminafoundation.org/news-and-views/outcomes-based-funding-round-3>, accessed 11 July 2018.
117. Ibid.
118. Lumina Foundation, "Frequently Asked Questions Outcomes-based funding," <https://www.luminafoundation.org/outcomes-based-funding-faq>, accessed 11 July 2018.
119. Lumina Foundation, "Frequently Asked Questions Outcomes-based funding," <https://www.luminafoundation.org/outcomes-based-funding-faq>, accessed 11 July 2018.
120. Education Commission of the States, *Policy Snapshot: Outcomes-Based Funding*, September 2017, p. 1-2, <https://www.ecs.org/wp-content/uploads/Policy-Snapshot-Outcomes-Based-Funding.pdf>, accessed 11 July 2017.
121. Lumina Foundation, "Frequently Asked Questions Outcomes-based funding," <https://www.luminafoundation.org/outcomes-based-funding-faq>, accessed 11 July 2018.
122. The Education Commission, "The International Finance Facility for Education," <http://educationcommission.org/international-finance-facility-education/>, accessed 11 July 2018.
123. Rishi Moudgil, About: what is social impact?, Business+Impact at Michigan Ross, 2014, <http://socialimpact.umich.edu/about/what-is-social-impact/>, accessed 13 August 2018.
124. Hamutal Berstein and Amanda Martin-Caughey, *Changing Workforce Systems: A Framework for Describing and Measuring Systems Change*, Urban Institute, February 2017, p. V, https://www.urban.org/sites/default/files/publication/88296/changing_workforce_systems.pdf, accessed 22 July 2018.
125. Jonathan V. Hall and Alan B. Krueger, *An analysis of the labor market for uber's driver-partners in the United States*, 2015, http://www.wonolo.com/wp-content/uploads/2017/10/Uber_Driver-Partners_Hall_Krueger_2015.pdf
126. Anna Bahney, "More than 44 million Americans have a side hustle," CNN Money, 12 June 2017, <https://money.cnn.com/2017/07/12/pf/side-hustle/index.html>
127. My Say, "How the gig economy could drive growth in developing countries," Forbes, 23 March 2017, <https://www.forbes.com/sites/groupthink/2017/03/23/how-the-gig-economy-could-drive-growth-in-developing-countries/#385f031f4a49>
128. Lauren Eyster, Christin Durham, Michelle Van Noy, and Neil Damron, *Understanding Local Workforce Systems*, March 2016, p. 2, https://www.urban.org/sites/default/files/publication/78496/2000648-understanding-local-workforce-systems_1.pdf, accessed 22 July 2018.
129. Pennie Foster-Fishman and Erin Watson, *The ABLe Change Framework: A Conceptual and Methodological Tool for Promoting Systems Change*, 2011, p. 1-2, <http://www.buildinitiative.org/Portals/0/Uploads/Documents/ABLe%20Framework.pdf>, accessed 22 July 2018.
130. Hamutal Berstein and Amanda Martin-Caughey, *Changing Workforce Systems: A Framework for Describing and Measuring Systems Change*, Urban Institute, February 2017, p. V, https://www.urban.org/sites/default/files/publication/88296/changing_workforce_systems.pdf, accessed 22 July 2018.
131. Mukta Dhavale (head, ACG Cares Foundation), interview, 18 June 2018.
132. ACG, "About ACG," <http://www.acg-world.com/company/about-us>, accessed 22 July 2018.
133. ACG Cares Foundation, "ACG Cares Foundation,": no date, <http://www.acgcaresfoundation.org/about.php>, accessed 22 July 2018.
134. Joya Banerjee, "India Mandates Corporates Social Responsibilities: The 2 Percent Bill," GBCHealth, 2013, <http://archive.gbchealth.org/asset/india-mandates-corporate-social-responsibility-the-2-percent-bill>, accessed 22 July 2018.
135. Mukta Dhavale (head, ACG Cares Foundation), interview, 18 June 2018.
136. ACG Cares Foundation, *Success Stories Under ACG Skill Development Project*, no date, https://drive.google.com/file/d/11EL8Sj_CpnT116StolnjUvjTcwRjNuur/view, accessed 22 July 2018.
137. Ibid.
138. Ibid.
139. Mukta Dhavale (head, ACG Cares Foundation), interview, 31 July 2018.
140. Ibid.
141. Ibid.
142. Ibid.
143. Ibid.
144. Ibid.
145. Ibid.
146. Ibid.
147. Mukta Dhavale (head, ACG Cares Foundation), email, 2 August 2018.
148. Mukta Dhavale (head, ACG Cares Foundation), interview, 31 July 2018.
149. Adrian Swinscoe, "How the Emerging Workforce Ecosystem Will Impact Customer Experience," Forbes, May 20, 2018, <https://www.forbes.com/sites/adrianswinscoe/2018/05/30/how-the-emerging-workforce-ecosystem-will-impact-customer-experience/#2a925faa116d>, accessed 22 July 2018.

150. Mukta Dhavale (head, ACG Cares Foundation), interview, 31 July 2018.
151. Ibid.
152. Hamutal Berstein and Amanda Martin-Caughey, *Changing Workforce Systems: A Framework for Describing and Measuring Systems Change*, Urban Institute, February 2017, p. V, https://www.urban.org/sites/default/files/publication/88296/changing_workforce_systems.pdf, accessed 22 July 2018.
153. Ibid.
154. Ibid.
155. Ibid.
156. K-12, "What is K-12," 2015, <http://k12philippines.com/>, accessed 11 July 2018.
157. Make it in Germany, "Make it in Germany," no date, <https://www.make-it-in-germany.com/en/for-qualified-professionals/training-learning/training/vocational-training-in-germany-how-does-it-work>, accessed 11 July 2018.
158. National Center on Education and the Economy, "South Korea: Career and Technical Education," 2018, <http://ncee.org/what-we-do/center-on-international-education-benchmarking/top-performing-countries/south-korea-overview/south-korea-school-to-work-transition/>, accessed 13 July 2018.
159. Ministry of Education Singapore, "Student Care Centres," 18 July 2018, [https://www.moe.gov.sg/education/primary/student-care-centres-\(sccs\)](https://www.moe.gov.sg/education/primary/student-care-centres-(sccs)), accessed 11 July 2018.
160. Ministry of Education Singapore, "Co-Curricular Activities," 15 Jan 2018, <https://www.moe.gov.sg/education/programmes/co-curricular-activities>, accessed 11 July 2018.
161. Afterschool Alliance, "21st Century Community Learning Centers," no date, <http://www.afterschoolalliance.org/policy21stccclcfm>, accessed 11 July 2018.
162. Educate!, "What We Do," note date, <http://www.afterschoolalliance.org/policy21stccclcfm>, accessed 11 July 2018.
163. Education for Employment, "About EFE-Morocco," note date, <http://efe.org/our-network/morocco>, accessed 11 July 2018.
164. Harambee Youth Employment Accelerator, "What We Do," 2018, <http://harambee.co.za/>, accessed 11 July 2018.
165. JA Worldwide, "Home," no date, <https://www.jaworldwide.org/>, accessed 11 July 2018.
166. Jobs for America's Graduates, "Out-of-School Program Application," 2011, <http://www.jag.org/jag-model/out-of-school>, accessed 11 July 2018.
167. Save the Children, "Save the Children's youth Employment Programs: Country Overview Indonesia," no date, https://resourcecentre.savethechildren.net/node/12110/pdf/youth_employment_programs_in_indonesia.pdf, accessed 11 July 2018.
168. Christina Kwauk and Jenny Perlman Robinson, "Sistema de Aprendizaje Tutorial," no date, <https://www.brookings.edu/wp-content/uploads/2016/07/FINAL-SAT-Case-Study.pdf>, accessed 11 July 2018.
169. SARS, "Skill Development Levy," 2018, <http://www.sars.gov.za/TaxTypes/SDL/Pages/default.aspx>, accessed 13 July 2018.
170. European Commission, "The Youth Guarantee," no date, <http://ec.europa.eu/social/main.jsp?catId=1079&langId=en>, accessed 11 July 2018.
171. Joe Samuels, "Career advice services at SAQA can assist the unemployed," South African Qualifications Authority, 2014, <http://www.saqa.org.za/show.php?id=6683>, accessed 11 July 2018.
172. The World Bank, Skills India Mission Operation, *Environmental and Social Systems Assessment (ESSA)*, 26 May 2017, <http://www.saqa.org.za/show.php?id=6683>, accessed 11 July 2018.
173. Government of Singapore, "Skills Future," 2017, <http://www.skillsfuture.sg/>, accessed 11 July 2018.
174. US Department of Labor, *Career Pathways Toolkit: A Guide for System Development*, https://doleta.gov/usworkforce/PDF/career_pathways_toolkit.pdf, accessed 11 July 2018.
175. European Commission, "Learning Opportunities and Qualifications in Europe," 17 August 2018, <https://ec.europa.eu/ploteus/en?cookie=no>, accessed 17 August 2018.
176. National Skills Network, "National Skills Qualification Framework – NSQF," 27 June 2016, <https://www.nationalskillsnetwork.in/nsqf/>, accessed 13 July 2018.
177. The African Union Commission, "Skills for Africa Initiative," no date, <https://www.africa-youth.org/programmes/technical-vocational-education-training-tvet/skills-for-africa-initiative/>, accessed 13 July 2018.
178. Commonwealth Youth Council, "About the Commonwealth Youth Council," no date, <http://commonwealthyouthcouncil.com/>, accessed 13 July 2018.
179. ReGeneration, "Home," no date, <http://regeneration.gr/en/>, accessed 13 July 2018.
180. Soliya, "About Us," 2018, <https://www.soliya.net/about/about-us>, accessed 13 July 2018.
181. Sustain Solutions, "What we do," 2018, <http://www.sustainsolutions.org/>, accessed 13 July 2018.
182. Deloitte, "Apply now: CORE Leadership Program," 2018, <https://www2.deloitte.com/us/en/pages/about-deloitte/articles/join-deloitte-core-leadership-program.html>, accessed 13 July 2018.
183. Gap Inc., "This Way Ahead," 2018, <http://www.gapincsustainability.com/people/way-ahead>, accessed 13 July 2018.
184. Hilton, "Hilton Worldwide Pledges to 'Open Doors' for One Million Young People by 2019," 22 Jan 2014, <http://newsroom.hilton.com/index.cfm/newsroom/detail/26184>, accessed 13 July 2018.
185. International Youth Foundation, "Passport to Success," <https://www.iyfnet.org/passport-success>, accessed 13 July 2018.
186. HP, "HP National Education Technology Assessment (NETA), 2012, <http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/ED/pdf/5-25-2HPNationalEducationTechnologyAssessmentOverviewMay.pdf>, accessed 13 July 2018.
187. Intel, "Intel Future Skills: Empowering Tomorrow's Workforce," no date, <https://www.intel.com/content/www/us/en/corporate-responsibility/social-impact-and-educational-initiatives/future-skills.html>, accessed 13 July 2018.
188. IBM, "What is P-TECH?," no date, <https://www.ibm.com/thought-leadership/ptech/index.html#see-how-p-tech-works>, accessed 13 July 2018.
189. Deloitte, "Salesforce Announces Pathfinder Training Program to Empower the Workforce of the Future," 2018, <https://www2.deloitte.com/us/en/pages/about-deloitte/articles/press-releases/salesforce-deloitte-collaborate-on-pathfinder-training-program-to-empower-workforce.html>, accessed 13 July 2018.

The Global Business Coalition for Education would like to thank the Youth Skills and Innovation Commission for their support:

Commission Co-Chairs:

Sarah Brown, Executive Chair, Global Business Coalition for Education; President, Their World
Rosalind Hudnell, Vice President Corporate Affairs, Intel; President, Intel Foundation (retired)

Commissioners:

Asheesh Advani, President and CEO, JA Worldwide
H.E. Sarah Anyang Agbor, African Union Commissioner for Human Resources
Adeyemi Babington-Ashaye, President, United People Global
José-Manuel Barroso, Non-executive Chairman of Goldman Sachs International (GSI); Former President, European Commission
Irina Bokova, Director-General, UNESCO
Fred Dedrick, President and CEO, National Workforce Solutions
Daniella Foster, Senior Director of CSR, Hilton
Henrietta Fore, Executive Director, UNICEF
Kristalina Georgieva, CEO, World Bank
Michael Hasting, International Head of Corporate Citizenship, KPMG International
Nate Hurst, Chief Sustainability and Social Impact Officer, HP
Tracy Lovatt, CEO, Batten and Co
Tim Nourse, President, Making Cents International
Janet M. Riccio, Dean, Omnicom University, Executive Vice President, Omnicom Group
Josette Sheeran, President and CEO, Asia Society
Michael Silberman, Global Director, Mobilization La
Jayathma Wickramanayake, United Nations Secretary-General's Envoy on Youth

For further information on the report, please contact:

Katie Armstrong, Deloitte Global: katarmstrong@deloitte.co.uk

Maggie Koziol, Deloitte US: mkoziol@deloitte.com

The Global Business Coalition for Education: info@gbc-education.org



Deloitte refers to one or more of Deloitte Touche Tohmatsu Limited, a UK private company limited by guarantee (DTTL), its network of member firms and their related entities. DTTL and each of its member firms are legally separate and independent entities. DTTL (also referred to as “Deloitte Global”) does not provide services to clients. Please see www.deloitte.com/about for a more detailed description of DTTL and its member firms.

Deloitte provides audit, consulting, financial advisory, risk management, tax and related services to public and private clients spanning multiple industries. With a globally connected network of member firms in more than 150 countries and territories, Deloitte brings world-class capabilities and high-quality service to clients, delivering the insights they need to address their most complex business challenges. Deloitte’s more than 245 000 professionals are committed to making an impact that matters.

This communication contains general information only, and none of Deloitte Touche Tohmatsu Limited, its member firms or their related entities (collectively, the “Deloitte Network”) is, by means of this communication, rendering professional advice or services. Before making any decision or taking any action that may affect your finances or your business, you should consult a qualified professional adviser. No entity in the Deloitte network shall be responsible for any loss whatsoever sustained by any person who relies on this communication.

© 2018. For information, contact Deloitte Touche Tohmatsu Limited

Designed and produced by Creative Services at Deloitte, Johannesburg. (814588/NM