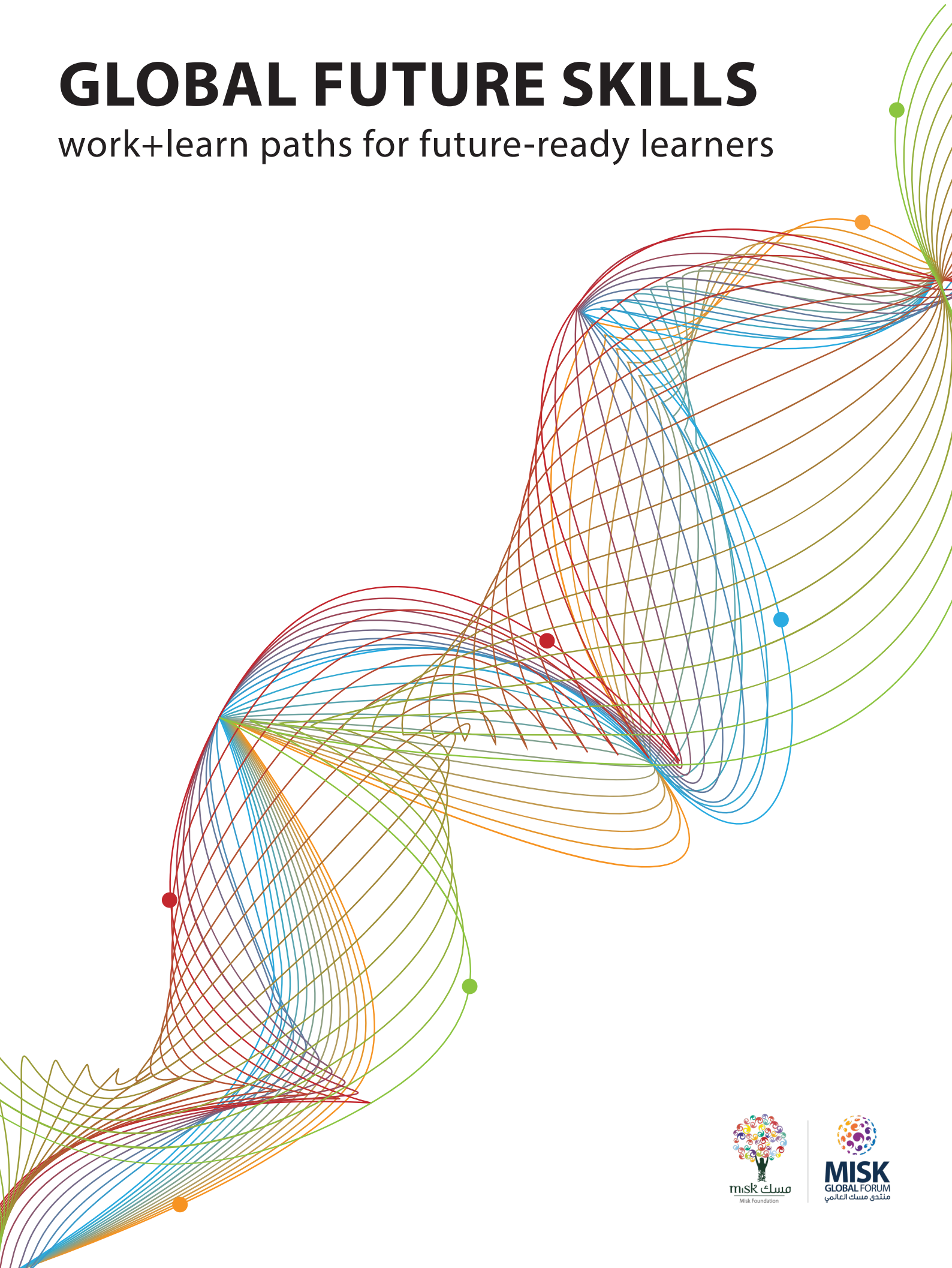
GLOBAL FUTURE SKILLS

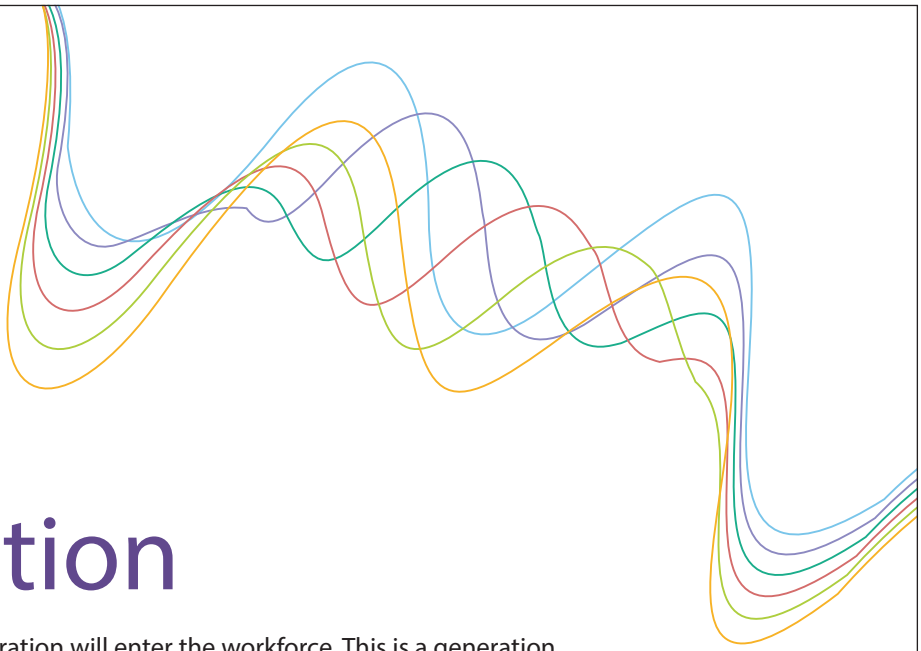
work+learn paths for future-ready learners



misk مسك
Misk Foundation

MISK GLOBAL FORUM
منتدى مسك العالمي

CONTENTS

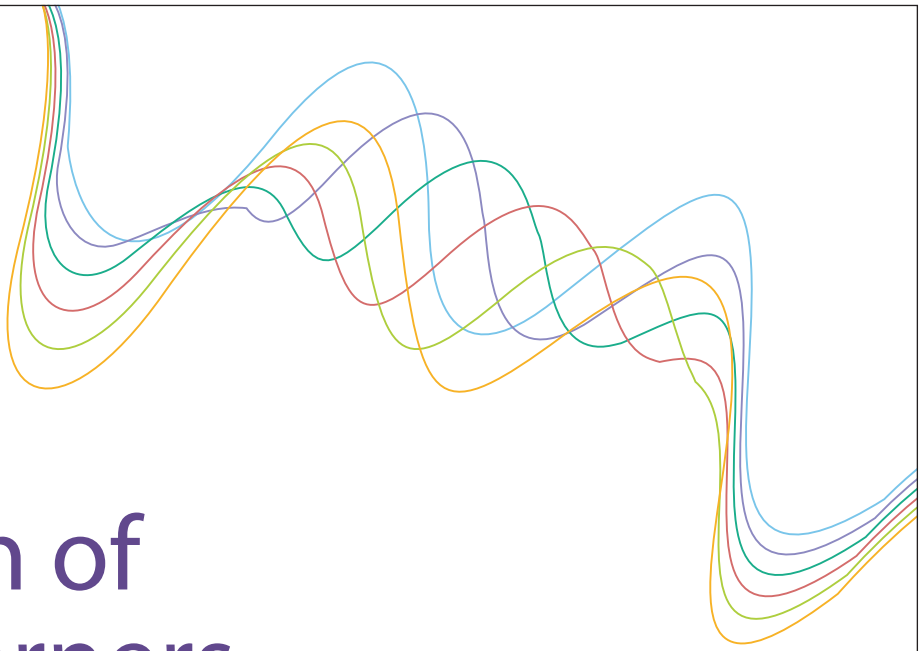


Introduction

Over the next decade, a new generation will enter the workforce. This is a generation that has been shaped by lifelong mobile connectivity, large-scale institutional shifts, widespread refugee migration, and first-hand experience of climate instability. It is also a generation that is coming of age in a global economy of mostly borderless markets, of global reputation platforms, and in many locations, nearly unbridled optimism for the future.

In the summer of 2018, Institute for the Future, with support from the MiSK Foundation, interviewed 60 members of this generation, aged 16 to 30, in six cities around the world: Austin, Berlin, Chongqing, Jeddah, Lagos, and Mexico City. We met with them in their homes, co-working spaces, maker spaces, their offices, bookstores, and cafés to explore their work+learn paths: the strategies they are using to work and learn their way into the futures they aspire to. To amplify our one-on-one experiences, we conducted workshops with them as well as other local business and regional leaders to explore the local future skills landscape and the learning ecosystems that will help young people build those skills.

This report is a summary of this Global Future Skills project.



1

In Search of Lead Learners

How We Learn about the Future from Today's Youth

The Global Youth Skills project aspires to understand the skills that young people around the world will need in the emerging economy a decade from now—and ultimately to create **future-ready learners and workers.**

To this end, we set out to find leading-edge learners: innovative young people who are forging their own work+learn paths, often using new tools and unexpected affordances of their communities. This approach builds on the well-established theories of diffusion of innovation* that identify sequential stages of diffusion, beginning with lead users, followed by early adopters, then majority adaptation, and finally established practice. This project, then, focuses on **lead learners** as a way to anticipate future established practices.

We identified these lead learners in six cities selected to span the major world regions as well as to represent zones of rapid growth and/or innovation. In each city, the IFTF teams worked with local affiliates to identify and recruit young people who met the project criteria. These young people were invited to both a three-hour interview session and a group workshop with other interviewees, as well as additional invited guests.

This chapter summarizes this methodology.

---

* This theory was first articulated in 1962 by Everett Rogers in *Diffusion of Innovations* and has provided a foundational framework for futures research ever since then. For example, from the earliest days of the Internet and the World Wide Web, IFTF sought out innovators who were applying technologies, often in unintended ways, in order to forecast future large-scale change. Such studies led IFTF to forecast the integration of digital technologies across household devices such as computers, television, phones, and even household appliances in the early 2000s, at a time when the internet was still accessed via dial-up modems and continuous internet connections from the home were just beginning. In 2007, IFTF's Ten-Year-Forecast used the same framework to forecast the growth of behaviors such as getting news from blogs, watching videos on mobile devices, and posting family or personal pictures for others to see online from an analysis of lead users in its bi-annual Ten-Year-Forecast Signals Survey. In short, lead users serve as signals of disruptive change and eventual mainstream behavior.

Interviews: 60 youth in six cities

The interviews were conducted by two-person teams of researchers in each city, assisted by translators, as needed. The teams used a common interview guide, with flexibility for adapting it to the specific context. The guide began by exploring the family background, with special emphasis on the family's educational experience and values, and the interviewee's learning and work pathway to date. The interviewers then probed various ways that the young people are currently pursuing five categories of activity from IFTF's Future Skills framework (see below). The final section of the interview pushed the conversation into the future, asking interviewees to imagine a future learning path. See Appendix 2 for a copy of the interview script.

Note: Before we conducted this set of six regional interviews, we piloted the interview process in Riyadh, Dammam, and Jeddah in Saudi Arabia. While these interviews were not formally included in this report, the insights helped us hone the interview process and focused our analysis on some of the key themes that emerged there.

SIX CITIES: SIX DISTINCTIVE PROFILES

How do you choose among all the cities worldwide to identify young people who can serve as signals of future skills?

The first criterion for this study was regional representation. The six cities studied span Africa, Asia, the Middle East, Europe, North America, and Latin America.

The second criterion was the potential for disruptive innovation. Often such innovation happens in cities that are undergoing rapid change, whether it's rapid growth, rapid migration, or response to a rapidly changing environment. Islands of distinctive culture in the midst of a more stable culture also give us a view into the trajectory of change. Thus, even though New York, Los Angeles, and San Francisco might be considered lead centers of innovation in the United States, the vibrant music and films scene of Austin, Texas, alongside its rapidly growing technology innovation sector, makes it a more attractive target. Similarly, while recognizing the leading international innovation centers in China, like the special economic zone in Shenzhen, the study chose Chongqing as a so-called third-tier city, currently focused on large-scale manufacturing but growing rapidly and shifting toward a future of large-scale automation.

Finally, a diversity of educational infrastructures, ranging from free access to higher education to limited local educational infrastructures of any kind helps us understand the changing relationship to traditional education.

Workshops: building shared visions

In addition to these one-on-one individual interviews, IFTF conducted workshops with young people in the six cities. These workshops included the young people who were interviewed. In some cases, a wider (or different) audience was invited to participate. The basic format for the workshops was a brainstorming discussion to imagine the future ecosystem of working and learning. But the on-the-ground teams had considerable latitude in adapting the workshop to the local opportunities. For example, in Lagos, the team sponsored a $1000 contest to present project proposals at a conference on artificial intelligence and machine learning. The Lagos team also conducted a workshop with established older business people to gain their more seasoned perspectives.

Note: As with the interviews, we pretested our Future Skills framework with a special luncheon workshop on the 2018 TED Age of Amazement in Vancouver, Canada. Expert guests gave us our first glimpse at some of the future skills that young people are likely to need as we steer toward 2030.

Analysis: immersion in the data

The raw data for our analysis, then, was the transcripts from the 60 interviews, the notes from the workshops (often with photographic records of the brainstorming sessions), as well as the researchers' own impressions of each interviewee, captured in summaries of so-called "standout" learners from each city. These ethnographic texts became the basis for our analysis, summarized in this report.

This analysis was conducted in two full-team analysis workshops at IFTF. In the first workshop, the local teams presented 30 "standout" learners, focusing on the distinctive learning strategies of each young person. They next highlighted other learners who were not included among the standouts. Together, the team then captured the range of behaviors, resources, and values they observed in the interviews and used these to begin identifying future work+learn paths for archetypal learners.

The second team analysis workshop focused on the workshops in each city and the insights that emerged from them. It created future "headlines" for each city, followed by recommendations for innovation, funding, and policy.

Follow-on analysis after the team workshops organized the findings by a set of frameworks, described in Chapter 2.

2

Perspectives on a Cohort

How We Discover the Work+Learn Paths of Today's Youth

The starting place for our analysis of Global Youth Skills is the recognition that the traditional path of formal learning followed by an uninterrupted linear professional career path is breaking down worldwide. In place of this traditional path is a growing integration of work and lifelong learning.

In this world, workplaces and project spaces are often where the most complex and applied techniques are learned and honed. Formal training, on the other hand, is fragmented and used as a way to continually steer one's path to accomplish goals—goals that are both personal and collective, both material and value-driven.

Accordingly, we are analyzing today's lead learners in order to understand the working learners of the future.

Four analytical frameworks help us build a rich initial picture of these working learners and their skills:

Framework 1:
five-zone future skills framework

Over the past several years, IFTF has been developing perspectives on future work skills and learning strategies. In February 2018, it released a map entitled *Future Skills: Get Fit for What's Next*. The map identified five peak performance zones where we'll have to hone our skills for the future:

Make Yourself Known
with the art and science of reputation management

Befriend the Machines
to master human-machine collaboration

Build Your Crew
in the many worlds of peer production

Make Sense
of loopy complex systems

Keep It Going
by building resilience in extreme environments

These peak performance zones were the starting point for the research and the foundational framework for the interviews. We asked young people to think systematically about these zones, to identify the ones that were most important to them, and then begin to help us understand how they went about working and learning in each of these zones. To help our interviewees answer our questions, we turned to Framework 2: Values, Resources and Behaviors.

Framework 2:
values, resources, and behaviors

The fundamental unit of analysis for this research is the individual learner—and the analysis is focused on the work+learn values, resources, and behaviors (VRBs) that support and motivate these individuals.

The **values** tell us why lead learners pursue the paths they do and what they hope to achieve, often beyond the simple goals of a living wage or even a reputable career. Examples of values expressed in the interviews range from celebrity to self-knowledge, from reliability to imagination and magic, from money to contributing to the greater good.

The **resources** give us insight into the creative ways that lead learners mix and remix the tools, people, spaces, and know-how they have at their disposal, often outside traditional educational institutions. They also provide the infrastructure for work+learn behaviors. Examples of resources from the interviews and workshops include everything from social networks and YouTube University to community spaces and even trash.

The **behaviors** are the ways that lead learners organize their daily activities to achieve their goals. Sometimes these goals are immediate, but often our leading-edge young people also often have a longer view. Among the behaviors we see in the interviews are everything from taking advantage of WhatsApp as a learning and teaching platform, to participating in contests and challenges, to focusing on one's own mental health.

Appendix 3 shows how the VRBs cluster in the peak performance zones.

Framework 3:
age-cohort-period effects

In research that targets a specific age group, it's important to be able to distinguish the observations according to age, cohort, and period effects.

Age effects are those that we would expect to happen in any group of this age as a result of developmental processes shaping mind, body, and social experience.

Cohort effects occur when a group grows up with a shared set of influences, such as the diffusion of mobile connectivity or the ubiquitous role of social media.

Period effects are those that result from the existing conditions in which an age group finds itself in the world, such as a maturing global economy or an era of pronounced climate change. In thinking about period effects for future skills, it's important to anticipate future forces that will be in play a decade or more from now.

The reason we need to distinguish these effects is to help us know which VRBs are likely to be persistent and which are likely to change and how. For example, rebelliousness and a rejection of the dominant culture are typical age effects for young adults. Will today's lead learners drop those values and behaviors once they reach middle adulthood? Or is the rebelliousness so widespread in the age cohort—perhaps as a result of technological amplification of voices of dissent— that it forms a core identity to be developed and expressed in new ways throughout their lives? Or will they continue with these behaviors as a response to period effects, such as climate disasters or continued growth of wealth inequality?

The chart in Appendix 3 categorizes the VRBs as age, cohort, and period effects, although as noted, any given value, resource, or behavior may result from multiple effects.

Framework 4:
the learning stack

The idea of a stack has been used to describe systems that depend on multiple components to achieve diverse goals. Often, technologists speak of a technology stack that defines a complex technology, such as the internet or a mobile device: it describes the components, typically in a hierarchy, that build upon one another to provide all the functionality of the system.

This concept has been extended here to a so-called **personal learning stack** that includes the various networks, resources, applications, and tools that individual learners may use to support their learning strategies. It can include both technology and the softer elements of a learner's work+learn ecosystem. We can analyze each individual's learning strategy in terms of a learning stack and the skills required to use that stack. But we can also use the concept of the learning stack to create more general models of educational systems and describe the way those systems are shifting. For example, we might describe a generic stack that looks like Figure 1a. Figure 1b represents the expression of that stack in most formal education systems today. Figure 1c reflects a shift that we see when we look across many of our leading-edge working learners—what we might call a transitional stack that points to a more universal learning stack of the future.

Notice that people in proximity replace educational institutions as the infrastructure layer in the transitional stack: community groups like bands and running groups as well as social platforms like Twitch, YouTube, and WhatsApp, take on more significant roles as intentional learning infrastructures. Experiences, projects, and events tend to displace the expert-designed courses in the curriculum layer. Instead of credentialed teachers in classrooms, leading-edge working learners seek crowd-rated teachers, coaches, and performers offering MOOCs, while degrees and certificates take a back seat to the fan base and their ratings. Perhaps most important, though, is the shift in incentives from job opportunities and stable earnings to diverse income streams and ways of making an impact on a community, a country, or the planet at large.

The state-mandated standards of the formal learning stack have no equivalent today in the transitional stack, other than terms and conditions of use imposed by the various platforms themselves. Over the coming decade, though, we may see high-resolution simulations come to take the place of standards as they accurately foretell the kind of skills and success that a particular path will offer to individual learners.

Of course, the familiar formal educational stack doesn't actually go away: nearly all of the young people we interviewed had formal educations, extending at least into a first year of college or technical training. For most, however, this learning path was necessary but insufficient to achieve the futures they seek. **Their real work+learn paths opened up from the transitional stack we're seeing today.**

In the end, the learning stack has historically served two functions: first, to transmit knowledge and skills, and second, to allocate status in the society. The formal stack has lagged in serving the first goal and driven lead learners to build the transitional stack. But the transitional stack has yet to provide strong formal status markers of the formal stack. It remains to be seen whether these two stacks will diverge to serve these different goals, or whether the transitional stack will eventually codify celebrity and reputation markers or other elements of the stack to define a new kind of status across society.

A NEW LEARNING STACK

FIGURE 1A: **A GENERIC** learning stack	FIGURE 1B: **TODAY'S FORMAL** learning stack	FIGURE 1C: **THE TRANSITIONAL** learning stack
Incentives	Job opportunities, career advancement, & growth earnings	Impact, opportunities & multiple income streams
Credentials	Degrees & certifications	Fan base, followers, ratings, endorsments & social connections
Instruction	Credentialed teachers in classrooms	Crowd-rated teachers, coaches, performers and peers in MOOCs, demos, forums and community workshops
Curriculum	Expert-designed courses	Experiences, projects and events
Infrastructure	Educational institutions	Social platforms (Twitch, YouTube, WhatsApp)
Standards	State-minded tests and literacies	(In the future) Simulations

GLOBAL YOUTH SKILLS
overview of the methodology

STEP 1 INTERVIEWS INTRODUCE LEAD LEARNERS TO **PEAK PERFORMANCE ZONES**

- MAKE YOURSELF KNOWN
- BEFRIEND THE MACHINES
- BUILD YOUR CREW
- MAKE SENSE
- KEEP IT GOING

STEP 2 LEAD LEARNERS DESCRIBE 254 **VALUES, RESOURCES, BEHAVIORS (VRBs)** IN EACH PEAK PERFORMANCE ZONE

V R B

STEP 3 TEAM FILTERS VRBs THROUGH **AGE/PERIOD/ COHORT EFFECTS**

AGE effects

VRBs linked to **current age of lead learners**

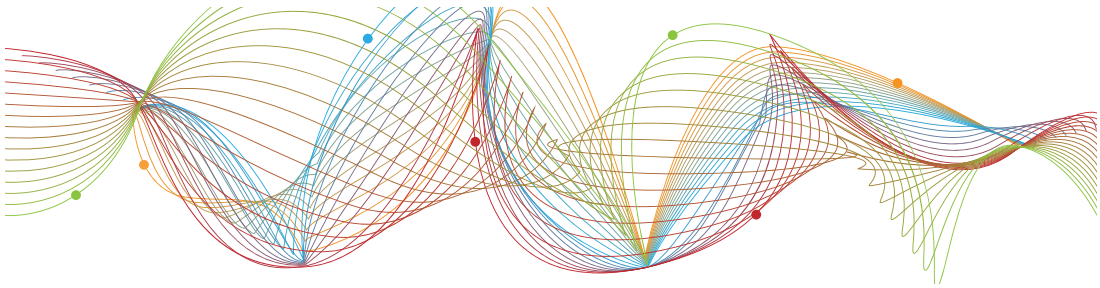
COHORT effects

VRBs linked to **life experiences of the cohort**

PERIOD effects

VRBs linked to **the current historical period**

STEP 4 TEAM SYNTHESIZES **24 WORK+LEARN PATHS** FROM THE FILTERED VRBs



STEP 5 WORK+LEARN PATHS DEFINE **SPECTRUMS OF SKILL**

MAKE YOURSELF KNOWN	celebrity	visibility	self-knowledge
BEFRIEND THE MACHINES	curation	creation	simulation
BUILD YOUR CREW	startups	communities	networks
MAKE SENSE	narratives	operational frameworks	ecosystems
KEEP IT GOING	caring	sharing	evolving

3

In Their Own Words

The Work+Learn Paths of Lead Learners in Six Global Cities

Lead learners around the world are remaking education and work for a new global economy. They are assessing the world they will face in the future and making work+learn choices that redefine not just the basic skills that everyone will need but potential lifelong work+learn paths.

In an era of rapid change, today's lead learners are cultivating skills for continuous learning. As part of a generation that will experience ever more scarcity of full-time, lifelong jobs, they are creating unique sequences of work identities and strategies for building those identities. And in a time of urgent social, economic, and environmental choices, they are consciously balancing personal development with a deep awareness of their responsibilities to those who will follow.

In short, today's young people—today's lead learners—are laying the tracks for tomorrow's work+learn paths. They are building futures for themselves that promise just the right amount of economic security within lives that allow them to achieve other life goals ranging from community building to artistic expression. **The lens on their lives is perhaps wider than recent generations: they simply see so much more to be done in their lifetimes, so many more possible work+learn paths.**

By observing the choices of these young lead learners, we can expand the scenarios for the labor economy of the future, for the ways that individual workers and learners will create new social and economic value, often as part of their ongoing learning strategies. We can define the skills that young people will need in these various scenarios and begin to create ways for them to assess their readiness for the paths they choose. We can anticipate how these emergent work+learn paths will evolve over the coming decade—and how we, as a society, can champion the social and technological infrastructures to support them.

The work+learn paths of our lead learners vary from region to region, reflecting the unique past, present, and future of the cities they are remaking. Let's explore each of these cities through the lens of working and learning as an inventive young person today—through the work+learn paths that may well describe the future in these six cities around the world.

THE WORK+LEARN PATHS OF LEAD LEARNERS IN SIX GLOBAL CITIES

AUSTIN
remaking the system

Austin is one of the 10 fastest growing cities in the United States. Even though it's the seat of government for the state of Texas, it is a culture apart. Its rapidly evolving tech scene distinguishes itself from other technologically advanced regions in the U.S. (such as Silicon Valley and the tech corridor of the Northeast) by intentionally hosting homegrown, cross-cultural extravaganzas like SXSW and intentionally working to "keep Austin weird," as the slogan goes. The city also cultivates a unique local design aesthetic: crisp, clean, and visually expressed in neon lights and local brands. Construction cranes dot the Austin skyline, while small pop-up businesses, from artisan vendors to vegan food trucks, paint the city's economic landscape on the streets.

The formal educational system is likewise pursuing leading-edge strategies with more innovation and optimism than most other educational systems across the U.S. For example, Austin is piloting a public program that enables high-school students to simultaneously earn a two-year degree in a community college. Another program provides free tuition to high-quality state universities to top-ranked high school graduates.

While Austin residents may pursue equitable opportunity and celebrate diversity more than their neighboring Texan communities, this local culture flourishes within a state that emphasizes personal freedoms and low government regulation. This combination produces a crucible for transformative experiments—as lead learners demonstrate with four evolving learn+work paths.

Why Austin?

Austin is a city of innovation. The public school system is undertaking a number of educational experiments, alongside a large network of private and alternative institutions for preschool through 12th grade. It is digital leader, with more internet usage than any other city in Texas, and more bloggers than any other U.S. metropolitan area. It also has a robust and rapidly growing music and film scene.

IN ADDITION:

- Fastest growing city in Texas
- Large Latino population
- Ranked #1 place to live by U.S. News and World Report
- "Silicon Hills" tech innovation alternative to Silicon Valley
- High level of community engagement
- Capitol of Texas and home to University of Texas at Austin, with more than 51,000 students

Work+Learn Paths in Austin

Social Justice Through Systems Thinking:
cultivate a systems view to address complex social issues

Social justice is a guiding motivation for lead learners like Adrian, a 26-year-old public high-school teacher with four degrees and a master's degree on the way. He sees himself as a conduit for social and political activism to undo racism and offer supplementary curriculum on history, language, and culture that's been left out of the text books. Alex, at 27, holds undergraduate degrees in psychology and neuroscience, is slowly studying for his GRE test to enter graduate school, works on a food truck, volunteers at the juvenile detention center in Austin, and creates community support spaces. These two lead learners represent that spectrum from formal to informal learning and work while both articulate the importance of systems thinking as a way to achieve their goals of social justice—a goal that is integral to their work+learn strategies.

DEFINING SKILLS

- Systems thinking
- Critical thinking
- Justice thinking
- Collective thinking
- Narrative building
- Virtual reality design (as a medium for experiencing and transforming complex systems)

Making My Way:
creatively cultivating authentic identities and communities

Austin has a lively maker community, but to turn it into a long-term work+learn path, Daphne, at 27, is living, learning, and working the life of a maker after abandoning a career trajectory in occupational therapy. The apartment complex where she lives has a maker space for residents, but Daphne is equally interested in building her reputation as a maker teacher in online communities—though she wants to draw her identity from her community, not from a marketing brand. She is making a part-time living as she begins to teach others how to be makers, and she's continuously using online videos to upgrade her own maker coaching skills and to coach others. Making one's way authentically goes beyond maker skills, however. Lori, at 30, is a graphic designer who happily took 11 years to complete her undergraduate degree. Originally headed for a prestigious design university, Lori instead bartended and freelanced as a way to support herself while she explored alternative learning pathways: a permaculture internship on a Costa Rican farm, a summer studying history in Prague, massage school, and hurricane relief work in Florida. Drawn by Austin's reputation, Lori is exploring her new local community through art, doula, and photography classes while building Squarespace websites to pay the bills.

DEFINING SKILLS

- Basic maker skills
- Physical and digital toolsets
- Self-teaching
- On-line teaching
- Building on online following
- Web design skills
- Digital arts
- Disaster relief work
- Freelance work
- Self-directed experiential learning

Do-It-Ourselves:
cooperating to build collective well-being

Austin lead learners place a strong premium on learning to look beyond the status quo, and indeed beyond individual work+learn goals, to cooperate in communities that are seeking alternative cultural, political, or economic pathways. Javier, a 28-year-old sculptor, printmaker, furniture designer, and urban planner, aspires to create a cooperative planning firm for the public good or leverage his own heritage by working in Latin America. He is committed to showing up for local communities, such as the local biking community, while also expanding his global network and perspective. His emphasis on learning and doing in community echoes the sentiments and experience of other lead learners like Adrian, Alex, and Daphne. Like Daphne, he sees art as a key component of cooperative community building.

DEFINING SKILLS

- Community building (digital and physical)
- Collective action
- Using stranded assets
- Global thinking
- Art and design skills
- Ecosystems thinking

The Other Intelligences:
pursuing non-analytical knowledge

Across the lead learners in Austin, non-analytical skills and knowledge stand out as key components of learning and working. But consider in particular Maria, a 16-year-old in Austin's Early College High School program who is using her experience in the high-school band to develop leadership skills. Or Ela, a 25-year-old social media maven who has converted her (mild) Aspergers strengths of analysis and creativity to build audiences, but has to actively develop her emotional IQ and interpersonal skills. And recall Daphne, the maker-teacher who, among other things, focuses on building empathy into design and making.

DEFINING SKILLS

- Emotional intelligence
- Interpersonal intelligence
- Leadership skills
- Acting and performance arts Artistic and creative skills
- Maker skills
- Community building (digital and physical)
- Mental health skills
- Self-awareness
- Empathy

Austin: in their own words

It's difficult to have a course of action or a kind of ethics if you don't have an understanding of systems. The goal is: you're thinking long-term. Human life is messy, and in the absence of the willingness to engage with complex systems or complicated thoughts or conflicting ideas, what you have is people becoming, not necessarily through any fault of their own, able to be manipulated and believing the most intuitive and straightforward answer.

Alex, 27
artist and community activist

If the lesson that I design is truly transformative, it pushes kids not just to select from a multiple-choice question but to ask, "How do we create a world that provides more economic, social, and political equality for everyone?

Adrian, 26
high-school teacher

We're definitely very driven towards communities and just becoming more involved with tribes like our own. And I think collaborating is going to be really helpful because you get real insight into what's working well for other makers, where they are seeing a need. And they probably have some great ideas that we haven't thought about—about how to tackle this.

Daphne, 27
maker & online teacher

I love cross-cultural work. I think, in terms of the interconnected world that we're living in now, it's important. There's a lot to be gained from interacting, studying, and participating in other cultures and contexts, and learning to navigate that.

Lori, 30
graphic designer and cultural explorer

I'm worried that with the rise of technology we're all going to be distant from each other, and we're going to lose that human emotion of empathy.

Maria, 16
high school student

Individual resilience is a losing battle. I think that you can be incredibly strong as a person, but if you don't have a network of people supporting you—who you are beholden to and who are beholden to you—it seems incredibly lonely. And I think that also keeps you kind of accountable to the future you're trying to build.

Alex, 27
artist and community activist

I think we could see a world where we're going towards even more extreme inequality or perhaps a world where we have some redistribution of resources. Either way, we're going to have to think about sharing.

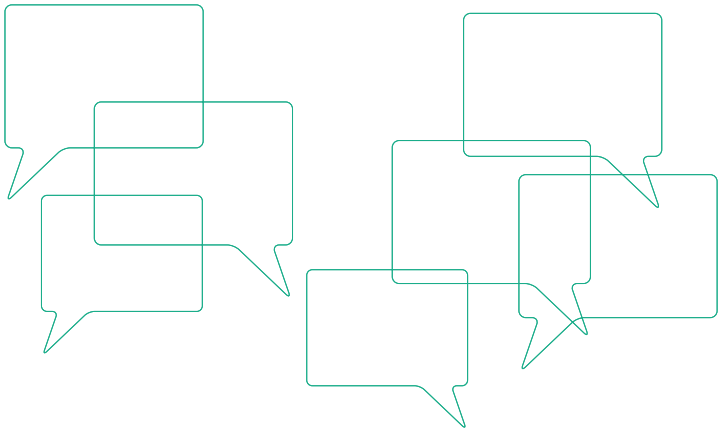
Javier, 28
sculptor and urban planner

I have a digital job. However, I make it a point to go to the office as often as I can even though I can do it from bed, and sometimes do. But that's because in the office, I can actually get a feel for what the people are like, what the feel of the brand that I'm digitally representing is, how it's changing.

Ela, 25
social media maven

I just feel like you get so much more from helping others than you do from helping yourself. Because I think, no matter what religion you are, the basis for everything is just to be selfless and to give love to everyone.

Maria, 16
high school student



BERLIN
working with tolerance

Like Austin in Texas, Berlin is a culture apart from the rest of Germany. Since World War II, it has been a city of immigrants and refugees, coming together to rebuild the city and craft a culture of tolerance. And tolerance is more than just a political message: it's the acknowledged cultural and personal work of everyone from nannies in the park to refugees volunteering in neighborhood integration councils.

The city is more a government-run economy than a market economy, having invested in a vast infrastructure for education, health, security, and the arts. With access to free education (if one qualifies) and little pressure to carve out a competitive career path, young Berliners are likely to continue their formal education until age 30, often pursuing many different interests and sometimes getting lost in the choices. None of them expects their education to prepare them for a job.

In fact, none of our lead learners here has a full-time job. Germany recently adopted a 28-hour work week, and students are often limited by a law that requires them to pay into the German social security system if they work more than 20 hours per week. But if they are not working in formal jobs or earning wages, everyone has projects—and many of them incorporate some kind of artistic endeavor. Stringing these projects together is how these young people are creating the four work+learn paths that stand out in the city.

Why Berlin?

Berlin is a long-standing world center of world culture, politics, media and science. With a full complement of high-tech industries, on one hand, and a diversity of creative industries, on the other, it is an undisputed center forf innovation in the so-called knowledge economy. Its four major universities attract as many as 175,000 students per term, 18% of whom have international backgrounds.

IN ADDITION:

- Second largest city in the EU, after London
- Cosmopolitan entrepreneurial scene
- Tuition-free college until age 30 for both German and international students
- 40 Nobel Prize winners affiliated with its universities
- Four public research universities
- 30 private, professional, and technical colleges

Work+Learn Paths in Berlin

The Project Economy:
working together in a world without jobs

In Berlin, all our lead learners are stringing together gigs and projects, either paid or not, that allow them to pursue their diverse passions. Linking up with others to make the project happen is better yet. Sophie is a 22-year-old performance artist and part-time bakery worker who returned to Berlin after graduating from a prestigious art school in London to join a community collective to learn performance art. Her current projects include a retrospective on the Bauhaus movement of the 1930s. Hakeem, a 27-year-old Bachelor's student and head of two NGOs, is working on a documentary in the Middle East. Ali, a 26-year-old Syrian refugee who aspires to be either a politician or a project manager, makes this collaborative project economy come together for himself by systematically categorizing the contacts in his network by the learning opportunities they represent.

DEFINING SKILLS

- Collaboration and cooperation
- Collective action
- Project conceptualization
- Personal network analysis

Scenes and Spaces:
programming shared experiences

In art-driven Berlin, young people can build a work+learn path on their ability to turn spaces into creative scenes. Karla is a 23-year-old freelance journalist for top-tier magazines who wrote a book on youth culture at the age 15. Today, she conducts her work largely in cafés, where she deliberately creates a scene with costume and style, often evoking a 1920s Bohemian culture as the backdrop. She believes that people are searching for aesthetic experiences, and part of her art is giving them a good time in these scenes that provide a reprieve from mainstream reality. Similarly, Florian, a 22-year-old freelance designer of animated 3D digital environments uses his personal aesthetic—he calls it "early Internet"—to create cutting-edge digital spaces for novel experiences. In fact, spaces are a critical (and often scarce) resource for Berlin's lead learners: while Sophie searches for creative spaces for performances, Ali says that restaurants and bars are some of the best learning spaces.

DEFINING SKILLS

- Performance arts
- Improvisation
- Conversational skills
- Fashion design
- 3D digital design
- Virtual reality programming
- Community space design
- Development of trademark aesthetics

Deep Tolerance:
integrating diverse perspectives in working, learning, and living

The tolerance culture unfolding in Berlin is a work+learn path in its own right, and Ali, the Syrian refugee pursuing a master's degree, shows how it's done by working part-time in a refugee camp, volunteering as a member of an integration council in a conservative neighborhood as well as seeking out opportunities to promote mediated conversations among his friends. Hakeem takes this path a step further. Half German, half Egyptian, he juggles the demands of academic study (in politics) with social activism. As his bootcamp experience in both learning and working to champion tolerance, he points to the two nonprofit organizations he started at age 18: one for mentoring second-generation immigrant youth and another that's a network of nonprofits supporting tolerance and acceptance for people of color in a time of growing tensions surrounding the refugees in the city. His formula for learning deep diversity? Get out of your bubble!

DEFINING SKILLS

- Working and learning with diverse populations
- Pushing the boundaries of the "comfort zone"
- Mediated conversation
- Developing volunteer skills
- Establishing non-profit organizations

The Human Project:
curating multi-persona lives in a multicultural environment

Perhaps the most important project in the Berlin experience is the human project—the intentional work to create a diversity of human faces for the diversity of projects and cultures that may co-exist on a work+learn path. Florian sees his art as evolving expressions of himself and points to the iterative instances of himself on Instagram as his portfolio. Ali points to the importance of learning and using body language with skill in the conversations he mediates. Karla and Sophie, as performance artists of two different kinds, clearly cultivate the ability to take on new personas for new contexts. They also emphasize the hard work involved in these performances: Karla calls it emotional labor, and Sophie recognizes that every conversation calls on her to perform, and that conversation is work.

DEFINING SKILLS

- Self-monitoring and self-reflection
- Fashion
- Design
- Emotional intelligence
- Online self-expression
- Skillful choice of personal and social media
- Self-design
- Maximizing first impressions

Berlin: in their own words

If you share your resources with people that you trust that much, I think you're going to elevate each other…. Plans can be put into practice so much easier if you have people that want to do it with you.

Sophie, 22
performance artist

[I would] just practice and learn how people react to what I say. What is this person's interest and this person's? You learn how to describe your project, to pitch them. Then I managed to get some people involved on the trains, in the cafés in Berlin…and I started to get into the project….You don't need much money for a project that is a win/win situation. It just brings people together.

Hakeem, 27
bachelor's student and founder

The production of knowledge and culture as tied to a physical space is really interesting to me. As in people gathering somewhere to be exposed to a certain thing. Or people seeking out a room, a space…to find something.

Sophie, 22
performance artist

Now I'm doing a project about Syrian women who moved from the Syrian public space to the Berlin public space, and how these public spaces affected their life, their private life, personal life, family life, everything that they have. Like, everyone says it's about the freedom, that you should believe in it in order to live it, but Berlin gives it to you.

Ali, 26
Syrian refugee and master's student

I think storytelling has to change on a grand scale for people…because things are just more complex than archetypes portray but also because I think it's going to liberate a lot of people, to not be stuck in a certain way they're told the world is. I think complex and disruptive narratives are liberating to people.

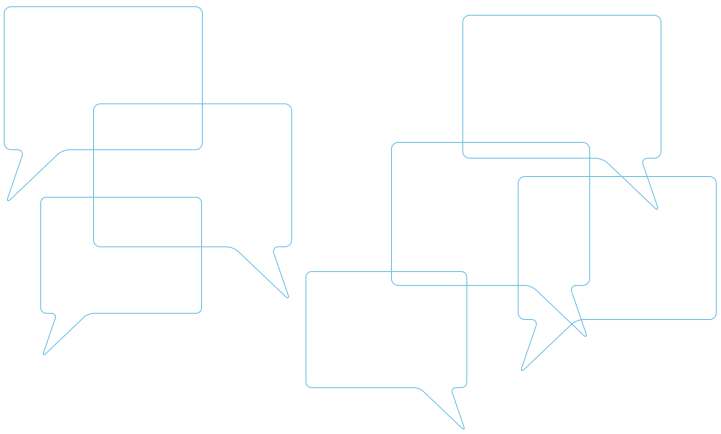
Sophie, 22
performance artist

When acting a certain emotion is part of your work, and sometimes part of your paid work, then it's "emotional labor." In journalism, I'm trained in doing that. I'm trained in being in a good mood or being in a sensitive mood or being in a sad mood, depending on what the person next to me needs when I want to listen to the story. And so that's a skill, a skill most people have.

Karla, 23
Freelance culture journalist

Don't try to be too specific with your learning because you need to adapt to tools faster than humans ever had to have done before. And don't just focus on one tool for example. Don't just focus on one niche. Focus on niches but switch them up from time to time and be aware that there's some kind of general knowledge or meta-knowledge about things.

Florian, 22
freelance 3D designer



CHONGQING
seeking stability

With 30 million inhabitants and year-over-year growth in the double digits, Chongqing is one of the fastest growing cities in the world. While today it is known mostly for manufacturing—40% of the world's motorcycles and 70% of laptops are made there—the Chinese government is making vast investments to turn it into an internationally prominent smart city.

In spite of this growth and focus on cutting-edge technology, however, the defining influence on working and learning in the city stems from the Cultural Revolution of the 1970s: most the parents or grandparents of today's young adults were denied the opportunity to attend college during the nationwide back-to-the-farm movement of that earlier era. As a result, their greatest aspiration is for their children to attend university and secure the lifelong employment stability that they see as the reward for a formal degree.

Lead learners in China have largely adopted this aspiration as their own, though they realize that not everyone can gain access to the very competitive, hierarchical system of education and employment. Entrance to college is determined by test (and even gender) and sometimes through social connections. In this environment, lead learners dutifully and even willingly pursue traditional degrees in traditional institutions, while recognizing that they may need more for a successful life.

Why Chongqing?

Chongqing's rapid growth and it global status as an entrepreneurial manufacturing hub is driving a new startup culture with a frontier feel in the city. (In fact, the city is the beneficiary of China's "Go West" policies.) Less influenced by Western media than other large Chinese cities, all citizens must attend the so-called "nine-year compulsory education" that is funded by the state.

IN ADDITION:

- Fifth largest city in the nation
- Rapidly aging population
- Male-female gap in under-20 population
- City's GDP quadrupled since 1998
- Produces 48% of China's manufactured goods
- More robots than any other nation but robots per workers lags other nations
- 45.4 percent of population uses smartphones (2016)

Work+Learn Paths in Chongqing

The Iron Bowl:
investing in the lifelong job

The Chinese speak of the "iron bowl"—the job with career prospects that will provide security for a lifetime—as the ultimate goal of education. So even though Liu Caicai, 22, has a current venture with a friend to sell German products in China, she is following the dictate of the grandmother to "study hard and not be like" her parents who left Liu Caicai to be raised by her grandmother while they went to another province to work. And while she believes that she must have a university degree to get a decent job, she also believes she has to do more to be successful, including working on her venture, learning more about international trade, and getting to know more people who can help pave her way. Li Dawei, a 21-year-old logistics manager for a bike sharing company, is similarly swayed by the elders in his family, who are encouraging him to join the army and take the civil service exam. Even though Li Dawei identifies as a member of the "post-90s generation," which he sees as valuing freedom and disdaining the mainstream, he is studying to take the exam. He's quick to point out, however, that he's doing it for the adventure of the army, not for the security his elders seek for him.

DEFINING SKILLS

- Learning to the test
- Making the grade
- Practical business experience
- Maintaining beneficial social connections
- International trading
- Balancing social obligation with personal aspiration
- Navigating corruption

Learning on the Side:
enriching life with digital resources

In Chongqing, work lives and private lives are carefully segregated, and young people take advantage of informal online and community learning primarily to enrich their private lives and personal aims. But lead learners also use this channel as a way to acquire that something extra that they expect their careers will demand of them. Liu Caicai, for example, uses the online app Yingyu Qu Pei to improve her English by imitating English-speaking voices from famous movies or videos. Zhi Ruo, a 25-year-old geography teacher, also uses HelloTalk and WhatsApp to practice her English with people she meets from other countries. Mo Chou is a 26-year-old designer who regularly participates in design competitions hosted by commercial companies who are launching new products; she uses online learning communities like ZCOOL to accelerate her design skills. But ultimately, she hopes that these efforts will connect her to people and resources that will help her design side projects to benefit others—for example, to create a nonprofit where young people take care of the elderly or a project that increases access to quality vegetables for the city's residents.

DEFINING SKILLS

- Language skills (especially English)
- App-based learning
- Competitive skills
- Navigating online learning communities
- Creating social-benefit organizations

Hustling to Survive:
making the most of the informal path

Not everyone has an "iron bowl" job in their future, and for them, the future is a hustle. Wang Shu is a 27-year-old who is working hard to build her reputation as a DJ. Wang Shu was first in her class when she had to drop out of school at 15 in order to support her grandmother. She apprenticed herself to a student of a well-known DJ (a typical path for building a reputation). The apprenticeship gave her access to the DJ's musical assets as well as a WeChat group and in-person performance sessions where her fellow apprentices performed, critiqued one another, and shared equipment tips. Wang Shu is continuing to hustle to grow her DJ gigs even as she realizes that this work+learn path is age-limited: audiences in Chongqing want young, energetic DJs, and Wang Shu will eventually outgrow this image and need to retool for another path. Mo Chou, the designer who chases design competitions, was similarly shut out of the formal path when Shanghai University turned her down because the school had already filled its quota for female students. (The quota is a 10:1 male-to-female ratio.) Mo Chou was forced to enroll instead in business English at Chongqing University and pursue her self-directed path through design competitions.

DEFINING SKILLS

- Apprenticeship networks
- Informal group skill-building
- Public performance
- Managing parent expectations
- Self-learning for the long run
- Strategic contest participation

The Robot Future:
putting AI to work

As Chongqing retools itself to be an internationally connected smart city, lead learners expect artificial intelligence to remake their personal and work lives. Li Dawei, the young man who plans to take the civil service test for an iron bowl job, has a degree in Smart Homes (a specialized degree clearly designed for the prevailing vision of the future). His dream ultimately is to own a smart home appliances company that manufactures "every single robot in the world." Meanwhile, Rou, the geography teacher, has designed a personal AI robot in her imagination. Named Daisy, the robot will read the morning news to her, prepare tea, make breakfast, pick up the kids at school and monitor the family's health on a daily basis. Similarly Wei, a 25-year-old electrical engineering doctoral candidate, believes that machines will enable everyone to spend more time with their families. At the same time, he cautions that we need to ensure closer interactions with people so that we are not ultimately estranged by our focus on smart machines.

DEFINING SKILLS

- General AI skills
- Work-based applications of AI
- Personal management with AI
- AI for specialized applications
- Machine-assisted time management
- Machine interaction and management

Chongqing: in their own words

It was the elders in my family that forced me to be a civil servant. My true intention is not joining the civil service. I like to experience new things, and I like exciting activities. My own interest is the main reason I agreed to join the army.

Li Dawei, 21
bike sharing logistics manager and aspiring civil servant

I am the only child, so they [parents] put all their expectations on me. So I think that is also the reason for me to be the first person in my family to go to the university...they told me to study hard and not to be like them... they think if we want to find a decent job in China now, we must have a university degree.

Liu Caicai, 22
undergraduate student

In China's society many people think that education is the only way out, one will be able to find a good job if he or she studies well. They, however, think that learning and mastering a skill is more important, the skill learnt will be for life and can rely on it to make a living.

Wang Shu, 27
DJ

I work in a school. When I have questions, I will ask [the other teachers}. And even with my students, I think they know a lot, and I can learn from them. There is a phrase in Chinese "bu chi xia wen" (不耻下问). It means when you don't know something, don't feel ashamed to ask those who are younger or lower ranked than you.

Zhi Ruo, 25
geography teacher

I feel [making sense of systems] is an important skill, the ability to transform something. Revolution gives meaning. I haven't thought of in what ways exactly human life today will be changed, but I am certain human life needs to be revolutionized for the future.

Mo Chou, 26
designer and university undergraduate student

In China, [being a DJ] is a career that lasts as long as one's youth, a career for a limited time span. The working place for this occupation is limited to clubs, and clubs will want to hire young energetic deejays…. Being able to persist when hope seems slim at the start will be crucial, or else the hard work will be left unfinished.

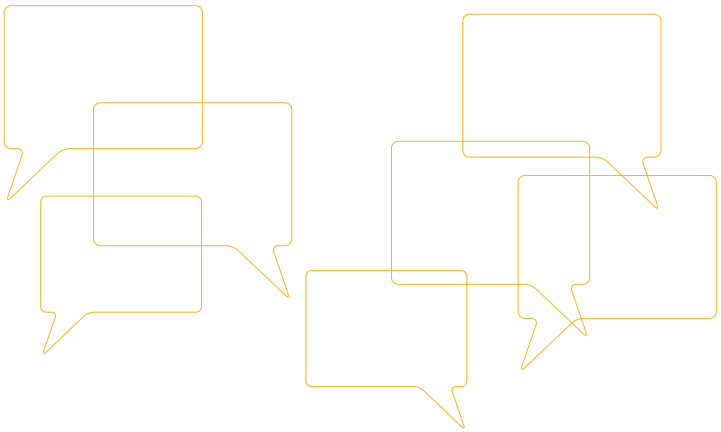
Wang Shu, 27
DJ

In the future I imagine our life will be fully equipped with smart technologies. I will be living in a mansion in a countryside, and it will be a smart home. I think a lot of tasks in our life will be carried out by robots. I might also be able to go space traveling frequently in the future. In that future, we will be able to make seawater into freshwater through technology like desalination, so that we could provide water to those living on other planets. Humans will fully conquer the oceans. It seems to be a future very far away.

Li Dawei, 21
bike sharing logistics manager and aspiring civil servant

I think in the future, the diversity of people's needs will become clearer. We need to design or build different, specific things to meet everyone's need. I think that is the ideal world.

Liu Caicai, 22
undergraduate student



JEDDAH, YANBU, AND THE NEW CITIES
living the future

The future is here in Jeddah, Saudi Arabia's port city on the Red Sea at the center of international shipping routes between east and west. Backed by the Saudi Vision 2030, Jeddah, Yanbu, and their neighboring new purpose-built cities like KAEC and NEOM are the focus of bold investments in science, engineering, and capital development that will take the country beyond its current oil economy and create a new horizon of opportunities for its young population: nearly 70% of the Saudis are under 30.

These investments set the tone for learning and working among young people throughout the country. As one lead learner in Jeddah said: "The future is like a train. Either you get on, even if you don't think you are ready, or else you miss the train." This sentiment shapes attitudes of youth, who are largely optimistic. They believe that they have agency, that they can change the nation, that they can help realize the Vision 2030.

With this combination of personal agency and a shared vision for the country, lead learners in Jeddah and the new cities see themselves as learning not just for themselves, but for the generations to come. They learn in order to teach those who follow, and this commitment to the future shapes the work+learn paths they are forging.

Why Jeddah?

Jeddah's motto is *Jeddah Ghair*, an Arabic phrase that translates to "Jeddah is different." As both a port region and a gateway to Mecca, the region has been influenced by multi-ethnic citizenry. Today, Jeddah, KAEC and Yanbu are attracting significant government investment and internal migration, particularly young people.
More than half of the country's population is under 30, providing a strong optic on youth skills.
Education is free at all levels.

IN ADDITION:

- Quarter million young Saudis entering job market per year
- 94.7 national literacy rate
- 16.2% women in the economy
- 91% active internet users
- Leading Middle East producer of high-quality research (*Nature*)

Work+Learn Paths in Jeddah

The Transnational Experience:
learning abroad to reinvent the culture at home

The Kingdom invests in sending its young people to foreign schools in order to build a sense of global citizenship as well as Saudi leadership in the international sphere. Talal is a 30-year-old man who went to study in Canada, but dropped out before completing his degree in order to create a series of three startups back home, including one that generated content for comedy clubs. He has 50,000 Instagram followers, advises presenters on the Ignite website for innovative ideas, is part of a filmmaking community, and has developed a systematic approach to YouTube to support his own learning. But he has recently taken a traditional job for stability—work that he describes as "slavery." As the oldest lead learner in the study, he perhaps points to a dilemma that will challenge other young learners who have been pioneers in their 20s but find themselves confronted with traditional norms and needs as they move into their 30s.

DEFINING SKILLS

- Transnational learning
- Transnational coaching
- Transnational self-branding
- Startup skills
- Local community building
- Scaffolding online learning
- Creative content creation

The Purpose-Built Exile:
relocating to reinvent self and country

Saudi's new purpose-built cities provide unique work+learn opportunities for young people who are willing to leave the social infrastructure of established communities for the more austere cultural landscape of these cities of the future. Baibeus is a mechanical engineer who is currently in a training co-op in the developing city of Yanbu. At 23, he holds three patents and has started his own company. But he's having trouble living up this parents' definition of academic success, which has always eluded him. He contrasts good grades with good experiences, and points out that he has taught himself English and robotics, presents research at world events, and has won a global competition in Lego robotics. He believes that learning works best when you draw peers from various groups and backgrounds and bring them into a new space. So Yanbu is a stop for him, not a destination. Migrating to this frontier city is not easy. It's lonely. But it's a way of expressing his citizenship in the future.

DEFINING SKILLS

- Self-teaching
- Experiential learning
- Prototyping
- Global identity building
- Independent research
- YouTube learning

Future Challenges:
understanding the human experience

In Jeddah, lead learners are creating challenges for themselves and for others as they push the boundaries of existing systems and the official vision of the future. Samantha, 22, has a marketing degree and works for a marketing startup. She dropped out of a U.S. college after two years to "find her passion," traveling widely and even setting herself the challenge of climbing Mafadi peak (the highest mountain in South Africa) before she completed her degree in marketing. Her current challenge: working with young people to grow their emotional intelligence. Likewise, Ferdous, 22, wants to advance the science of the human species. A master's student with an undergraduate degree in genomics, she wants to change the educational system by starting her own elementary school with a focus on teaching not "human-made science" but the science of being human. Abbey, a 19-year-old artist and self-taught coder with Nigerian parents, sees the human challenge through a socio-economic lens, aspiring to get out of her comfort zone in order to end classism.

DEFINING SKILLS

- Learning from travel
- Cross-cultural insight
- Emotional intelligence
- Startup skills | Marketing
- Self-teaching
- Teaching
- Artistic expression
- Learning from experience

Paying It Forward:
learning for the sake of those who follow

Across the lead learners in Jeddah and the new cities was a commitment of learning for the sake of those who will follow—for the future of the country and the world. For Samantha, paying-it-forward means working in a nonprofit scuba diving center devoted to developing emotional intelligence. For Talal, it means re-imagining FIFA—the football governing organization for football—as an educational platform to disrupt the existing educational system worldwide. For Baibeus, it means finding ways to think globally, to be a global citizen, even when living "in exile" in a protocity like Yanbu. And for Abbey, it simply means taking advantage of every experience as both a learning and teaching experience.

DEFINING SKILLS

- Hacking existing systems and platforms
- Startup skills
- Nonprofit business models
- Global citizenship skills
- Self-teaching
- Teaching
- Creative disruption

Jeddah, Yanbu and the New Cities: in their own words

That was my first time going to United States. We know American culture from movies, but knowing it is totally different than experiencing the culture and the environment and the whole country itself. MIT itself was different. I was actually living inside the campus ... So being in USA is something, being in Boston is in another thing, and being in MIT is a third thing. There are three layers [that influenced me].

Billy, 24
mechanical engineer, Yanbu

Culture is one of the roads that I take towards knowing about a person, and I have done that. I've traveled so many places, like I went to Asia, I've been into China, been to Europe. I've been to different places, and I care about culture, and that's one of the things that I teach, and that's the thing that I know people from—from their culture.

Abdulaziz, 23
student, KAUST

[Getting your own apartment and taking care of yourself and all those things] is the easy part. The hardest part is being alone. It's a very sad thing to do. It's the hardest thing to do to yourself.

Billy
mechanical engineer, Yanbu

When I was in college, I was studying industrial engineering, and an important course there is simulation. So we would use software that would, I think to a very large percentage, give us a result that's very close to what will happen in reality on your computer. I think this is a great, great advantage that can be used, and I think, in the future, that percentage would be close to 100% that you'll be able to actually achieve in real life. That would really help us on spending our money wisely and putting large-scale investments in the right places.

Talal, 30
founder of three companies, Jeddah

People think that they have to be one thing: I have to be really strategic {with math}, all that engineering. Or I have to be really dreamy—colors! No, both sides of your brain can work in full potential if you just give yourself. Actually the space where arts and science merge, I think this is when you really can make magic. Like, use both of them! It's amazing!

Abbey, 19
artist and stage performer

Maybe I would build up my own after-school program for kindergarten or just [an] elementary private school. I would introduce new methods for learning. I have no experience. I don't have the science behind it. I know I have the vision, and I would love to change it because along with other people, I suffered the most with the various structures of education that we have here. So would definitely need to go abroad and get some knowledge, maybe get some experts to come and work with me.

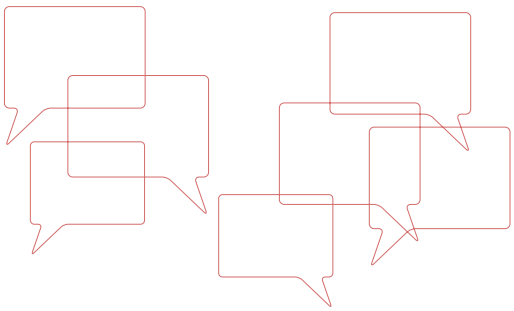
Ferdous, 23
master's student, Jeddah

I'll start FIFA's schooling system. I told you I want to disrupt schools. I think football is a great platform because it reaches more than 1.3 billion people around the world.

Talal, 30
founder of three companies, Jeddah

"Your responsibility is to build the Earth…you can put a stone for others to complete."

Baibeus, 23
co-op trainee, Yanbu



Lagos
gaming volatility

Lagos is the largest city in Africa, with more than 16 million people. Infrastructure is a chaotic patchwork of faulty municipal systems, private services, and ad hoc individual solutions. With no reliable power grid, its inhabitants depend on millions of diesel generators that drone day and night. The city has historically been isolated from the global industrial powers, and development has been scattershot, with an economy that has been pockmarked with recessions over the last decade. And…the median age of its citizens is just 18.

Despite these challenges, lead learners in the city exude optimism and energy. Without reliable access to resources, they use services like WhatsApp and Instagram as core infrastructure to start businesses, teach classes, and level up their own access to emerging skills and markets. Everyone is a self-starter.

Lacking a coherent narrative of the future, young people in Lagos don't expect to be handed opportunities. Every new situation, every new technology is thus a potential opportunity to be discovered and grasped, and ideation is as rich or richer than anywhere else in the world. The bleeding edge of technology—AR, VR, and cryptocurrencies—all these represent opportunities ripe for innovation.

But innovation is more than just a necessity driven by the environment and a desire to improve lives. It's a cultural strategy that lead learners want to immerse themselves in. It's a resilient and adaptive core in a volatile society poised to meet the challenges that humans across the globe will face in the near future.

Why Lagos?

Metropolitan Lagos is a fast-paced, business-oriented community that is rapidly becoming a global city, home to financial institutions and global corporations. With a wide spectrum of wealth distribution, the city mixes some of the most expensive real estate in the world with poor settlements lacking basic amenities. A major push to upgrade education and offer nine years of schooling to everyone has not eliminated the large population of out-of-school children who work as hawkers in the city streets.

IN ADDITION:

- One of fastest growing cities in the world
- Highest GDP in Arica
- Largest information/ communications technology (ICT) market in Africa
- Famous for its music scene and nightlife
- Home to emerging Nollywood film industry

Work+Learn Paths in Lagos

Hackable Opportunities:
finding the business angle

Hustling is a lifestyle across generations in Lagos, but especially among young people, the appetite for opportunities that can be turned into immediate business plans is intense. A group of young people who call themselves LandIn drove six hours at the last minute to participate in a machine AI/machine learning conference where IFTF put up a $1000 prize for the best project pitch. The LandIn team won the prize with a proposal to use spectrography and AI to help farmers uncover granular insights into how to take advantage of the agricultural potential of their land. Identifying situations that need solutions is foreground in the minds of entrepreneurial lead learners. For example, in this sprawling city with massive traffic challenges, 27-year-old Trevor, a self-taught coder with his own website development company, is working on the side to map the city traffic flows. While he has a bachelor's degree in computer science—and his parents want him to get an advanced degree—he argues that the curriculum was already out of date when he enrolled and so he has turned to online courses from Coursera, Udactiy, Sitepoint, Pluralsight, and the local Andela Community to build the cutting-edge skills and business contacts he needs.

DEFINING SKILLS

- Hustling
- Translating skills into business opportunities
- Startup skills
- Cutting-edge technical literacies
- Coding
- AI expertise
- Self-directed learning
- Mastery of ad hoc infrastructures
- Strategies for accessing patchwork resources

The WhatsApp Path:
working the platform to learn and earn

Even for lead learners who are not engaged in cutting-edge technological innovation, technology is at the core of their work+learn paths. Belle, a 22-year-old young woman, is emblematic of what might be called the WhatsApp path to learning and earning. This path is centered squarely in the Make Yourself Known peak performance zone. It requires a mobile phone, mobile payments software, and the ubiquitous hustling spirit to build an online following that will create an income stream and eventually perhaps support a physical space for Belle to set herself up as a teacher and retailer. Belle takes WhatsApp video classes in hair and makeup fashions to build her skill set. She goes to WhatsApp followers camps to find people that she can pay small fees to begin following her as she builds her own following. Ultimately, Belle aspires to be a mid-tier WhatsApp teacher with two-way video virtual office hours for people willing to pay for her style and product expertise. In short, she is working the WhatsApp platform both to simultaneously learn and earn.

DEFINING SKILLS

- Mobile phone skills
- Mobile online course savvy
- Translation of online instruction into practical hand skills
- Building an online following
- Designing viable online services
- Self-branding

Big Ambitions:
simulating personal futures to make them real

Lead learners in Lagos have no consensus vision of the future to guide them in paying their learning forward (as learners in Jeddah do). They nevertheless have the long-standing model of the "big man" who succeeds in order to give back to his community. Coach, a 29-year-old online wellness and nutrition coach, is perhaps the latest generation of this model: teaching WhatsApp classes, offering customized recipes and health plans adapted to regional diets around the world, he hopes to scale his business and create an infrastructure for others to grow their own life coaching businesses. His tools? He hopes that virtual reality and machine learning can help him test each step in the evolution of his business and his personal future—that they will help him game the emerging systems in the best traditions of simulation to continuously innovate himself and the infrastructure he's building.

DEFINING SKILLS

- Problem-solving
- Strategic futuring
- Building an online following
- Building crowd infrastructures
- Predictive analysis of business and personal pathways
- AI augmented simulation in virtual reality

The Dissident Arts:
expressing oneself in a world with no future

It should not be a surprise that even the brightest lead learners can sometimes get lost in chaos and volatility of Lagos. Mavis is a 20-year-old photographer, aspiring performance artist, and revolutionary, a troubled genius who is trying to navigate her genius in this world. She talks about organizing her learning around Internet islands—an art documentary island, a technology island, and medicine island. She will spend months on a single island, filtering out everything else, and then she'll jump to a new island. She has learned from a young age to be an effective salesperson in her uncle's bookstore by rapidly assessing both books and people, and performing as a helpful friend to them. She has built a following for her photographs with her Instagram brand, but her radical dream is to create a performance that is actually a protest march, a March for No Reason, in which children march wearing masks: they are Kids with No Faces because they have No Future.

DEFINING SKILLS

- Managing personal identity
- Managing personal data
- Creating Internet disciplines
- Immersion learning
- Self-directed learning
- Multiple art tracks
- Rapid interpersonal assessment
- Expressing dissidence
- Building Instagram brand

Lagos: in their own words

Like I said, I am very adventurous, I want to meet people, great minds, I want to hear something new, I want to meet people who have different point of view from what I am thinking. Form ideas, brainstorm, and you know, come up with wonderful brands and you know, business ties together.

Coach, 29
online nutrition coach

Most times, building a business in Nigeria is sort of like a one-man thing or two-man if you're building it with somebody else. But it's just going to be both of you are against the world.

Belle, 20
makeup artist & hair stylist

I'd say I've learnt more online than offline…particularly from forums. You get straight to the point, you might even see different ways to get one thing done, you'd even see a different way at which people approach problems from the kind of answers they give on forums. So forums like Stack Overflow.

Trevor, 27
self-taught programmer

I want to own a chain of business ventures, in different areas, different sectors, in tech, in health. So I just want to have like a chain of them. Own at least two tech schools, where we train teenagers most especially, getting them exposed into the world….You just train them to develop their knowledge of tech and help them become whoever they want to become.

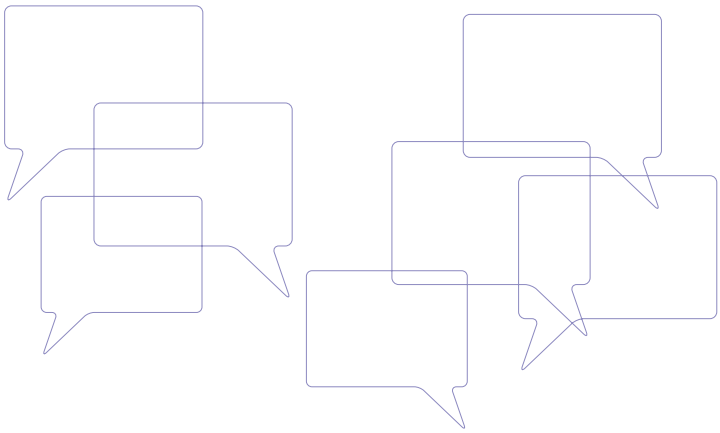
Coach, 29
online nutrition coach

I want to be known by people but essentially [my goal] would be to have a large number of people who know me and who trust me. Because it's one thing to be known, it's another thing to be trusted.

Belle, 20
makeup artist & hair stylist

I want to live in a future where I'm able to have moved past all these little obstacles, all these little challenges, and really face the very large problems that we face in this country and even in Africa as a continent. Because I feel if we can face those big problems in Africa, we can solve problems anywhere else, similar big problems anywhere else.

Trevor, 27
self-taught programmer



Mexico City
creating a collective narrative

With 21.3 million people in the greater metropolitan area, Mexico City is the largest urban area in the Western hemisphere. In such a sprawling metropolis, it's not surprising that the city is really many cities within one. Nor is it surprising that these span the extremes of everything the city has to offer, from high culture to crushing traffic and landfills.

Culture is indeed thick on the ground in Mexico City. Founded in 1521, it was one of the first Western cities in the so-called New World, and it has a storied past replete with indigenous, colonial, and modern themes. Today, this culture is expressed in an unusually strong focus on the arts, on imagination, and even magic. But the city—and its young learners—struggle with competing impulses to monetize this resource, on one hand, and to make it accessible for everyone to appreciate, on the other. They also struggle to weave a coherent future narrative that incorporates the city's historical richness while inspiring the heroes of the future.

Most of the public universities in Mexico are both rigorous and free, and many of the lead learners we talked to here had taken advantage of these formal institutions. Yet as lead learners, their work+learn paths seem to tread more alternative and self-directed tracks. Their personal stories reveal an intensely capable and competitive spirit. Indeed, individualism has been a core value of the past. But along with their keen commitment to individual success, this new generation of lead learners dreams of a more cooperative future. If there is a future narrative emerging here, this might be it.

Why Mexico City?

At 800 years old, Mexico City is working to balance its long heritage with a new culture of innovation. Granted self-autonomy just 20 years ago, it is the largest city in the Western hemisphere. Not surprisingly, given its scale and density, the city is experimenting actively with new environmental regulations that color the awareness of its citizenry. A creative center for the arts, artistic expression is a well-revered occupation with a long history.

IN ADDITION:

- 78.84% urban population in Mexico
- 94.4% literacy rate in Mexico
- 2011 GDP of $411 billion for Greater Mexico City, one of largest in the world
- Fast growth of workers above age 15
- 13% of Mexico's jobs could be automated (McKinsey)
- Two-thirds of the country plays video games

Work+Learn Paths in Mexico City

The Collective Advantage

seeking solutions together

The first indication of the shift from individual to collective strategies for the future comes from Guillermo, a 29-year-old who was educated in Germany and initially employed by the prestigious global consulting firm, Deloitte. But following his exposure to the maker community in Germany, he returned to Mexico City to launch a Facebook group for makers in Mexico, and soon became their celebrity leader. He sees this leadership role as simply a character, an identity he can play with even as he turns his attention to the pressing threat of climate change. Here he sees a solution in collective living and working. Meanwhile, with many fewer advantages, Yessinia, age 21, has arrived at a similar solution in Iztapalapa, one of the poorest and most dangerous neighborhoods in the city. She lives there with her 20-year-old husband and 1-year-old-baby in her parents' home—in the shadow of a major landfill. Instead of pursuing the training in dental prosthetics that she began at her mother's urging, she has formed an eco-cooperative with six other women she met online. The women sell eco-friendly necessities, like soap and diapers, in a Facebook shop, and they have worked out schedules for sharing the task of looking after their children, covering for one another in both their personal and work lives if anyone gets sick.

DEFINING SKILLS

- Collective living
- Online community building
  Online cooperative enterprise
- Maker skills
- Collaborative leadership
- Child care
- Self-directed learning
- Environmental awareness

Zero Waste:

building the *cultura remix*

Waste is probably the most visible symbol of the environmental crisis in Mexico City, and it was certainly visible to Yessinia in Iztapalapa. Her eco-cooperative got its start when her baby's disposable diapers began piling up and she went online to learn how to make cloth diapers. She quickly connected with Zero Waste Facebook groups, and that's where she met the women who eventually formed the cooperative to sell products that reclaim, recycle, and remix discarded materials. Angel, a 30-year-old artist, takes this vision a step further, using algorithms to analyze trash and recycle it into art. Meanwhile, across town, Raul is remixing both digital and physical resources. At 25, he has already earned a degree in interactive media design, served a stint as coordinator of digital strategy in the office of Mexico's president, and started a 3D digital printing company to craft custom-designed lamps. Today, he blends this art with his work as a media artist in the *cultura remix* tradition.

DEFINING SKILLS

- Zero Waste thinking
- Recycling and remixing
- Reuse of stranded assets
- Online retail
- Digital arts
- 3D printing
- User-generated AI
- Online learning
- Online community groups

The Competitive Machine:
learning to the contest

It's a well-known fact that in a world of standardized tests, young people often learn to the test. But in a world of competitions and challenges, youth are increasingly learning to the contest. Vincente is a 17-year-old science fair champion whose family built an enterprise on this skill. From an early age, the family devoted themselves to building Vincente's reputation as a champion, with such entries as a fertilizer pill made from urine. Vincente explains that he was a shy child, but after working in Germany, his father returned to Mexico with a commitment to the engineering model he experienced there and turned the family into a contest-winning "machine" where each family had its individual function. Now Vincente is building on his celebrity in a new role as a motivational speaker for young people, raising money and food for charity causes. Here again, we see a blending of personal competitive spirit with a more collective mission.

DEFINING SKILLS

- Building celebrity
- Grant seeking (for entering contests)
- Family-built learning enterprises
- Systematizing intellectual competition ("like soccer for the mind")
- Cross-discipline fluency
- Building social impact platforms

Self-awareness:
doing the work of inner futures

The story of the future is not just public narrative. It's also a personal narrative that lead learners are trying to build for themselves through self-knowledge. Like Vincente, Natalia used to be highly competitive in school, enjoying contests even if she didn't win. But her mother contracted a prolonged illness and died when Natalia was 15, so Natalia had to go work and take care of her younger brother. She tried several work+learn paths, migrating from sociology and socially oriented art (where she participated in workshops to teach children performance art and social action in their free study periods) to her present efforts to her current studies, at age 25, in interdisciplinary pedagogy and engraving. Through these 10 years, and with guidance from her psychologist aunt, she has developed a personal practice of autoconosciente, creating future scenarios for herself: short-term, mid-term, and long-term visions of her future self. Similarly, Alejandra, a 19-year-old student in physics and engineering, hopes to carve out a cross-disciplinary perspective on quantum physics and memory, drawing from her interest in managing her own high levels of anxiety. In a very personal way, science comes to her rescue as she escapes into her imagination by creating science fiction stories.

DEFINING SKILLS

- Online learning
- Social Imagination
- Interdisciplinary imagination
- Scenario building
- Art-based social change strategies
- Community action
- Workshop design and management
- Experimentation
- Self-reflection

Mexico City: in their own words

Sometimes we as humans are a bit selfish, and we only work for what we care about and what matters to us. But if we see the world and if we see each other as a great big family, we're not going to harm them… If we love each other, we are going to work together and we're going to make something better. Like when there's a disaster like the earthquake or the hurricane, if we work as a family and we work based on love rather than based on hate, it's the way I'd like to see the work.

Alejandra, 19
physics and engineering student

Some networks last forever. And some networks, we create pop-up communities, ephemeral communities, to get things done when we want to. This also recognizes that a lot of our work and influences and networks are global. And then there's a big need to also connect locally, in communities.

Guillermo, 29
maker leader

I believe that artificial intelligence is very important. I would like to create an algorithm that finds something…the algorithm makes a design come out, automates the design process with some machine learning intelligence algorithm, with that being able to recycle a lot more. I know companies that recycle three tons of electronic waste every day. I think they are making a real difference here in Mexico. I think maybe I'm too far from achieving that. I think that in terms of volume, I can make recycling a lot more, reduce almost all the garbage and waste we have.

Alejandra, 19
physics and engineering student

My father says that we are a machine. I am in charge of thinking of projects. My father is in charge of writing. There needs to be a specific order to writing, to printing, everything. My mother is in charge of going and obtaining resources. While I am doing my job in the lab or in my room, my father is already writing or thinking of names for my projects. My mother has already gone to the municipality, or a company, or to the head of SOMOS to see if we can get money to go to the fair. If one of these parts fails, we all fail. And if one of these parts wins, we all win. It's a whole collective, this whole group that rises up. They are very important to me because they are always right behind me, supporting me.

Vincente, 17
science fair champion and motivational speaker

There were many contests that you could participate in, and I participated because—I don't know—I like them. I like to give something to my school when you work harder in a way. There were debate contests, there were biology contests, music contest. They were word contests, they were many things. We won a choirs contest, our school won the choir's contest, and we sang in the Apartes.

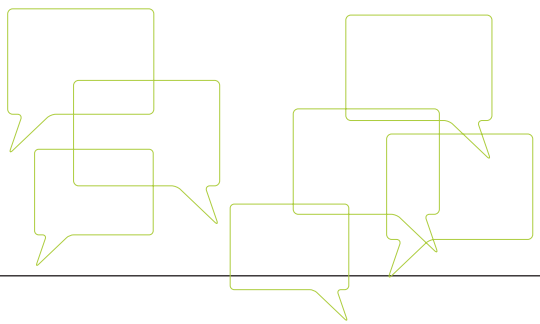
Alejandra, 19
physics and engineering student

I think about long-term plans, and I write them down and organize them by year. For example, what do I want to do this year? What are my goals and purpose? Then, two years, five years, six years, and I have a series of questions that help me, which is like, "What do I want?" What would I like to do? And "How do I plan to achieve it?"...It makes sense of everything I do, gives it meaning, and gives a certain certainty to that fear of uncertainty.

Natalia, 25
bachelor's student

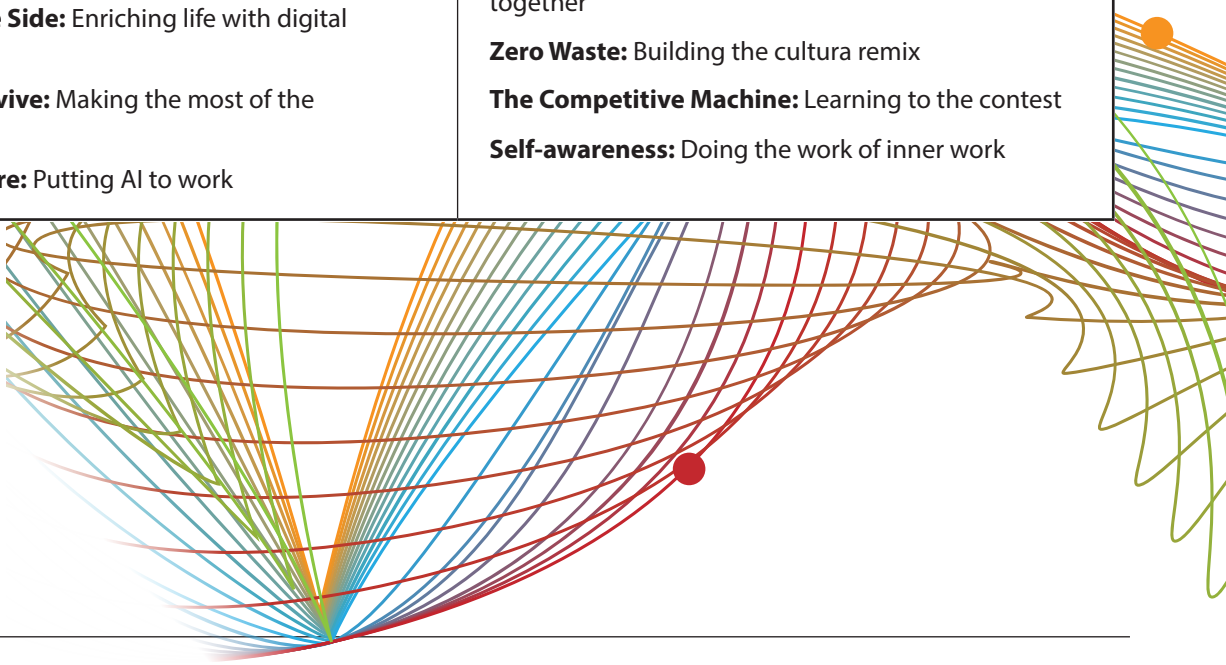
At the end of the day, [Esteban and I] are going to die. The person who will remain in this world is [my son}, and I'm not going to leave him any money. But at the very least, I can leave my grain of sand—mi granite de arena. I want to leave him a good planet, and I want him to know that I did something to save it.

Yessinia, 21
founder of eco-cooperative



IN SUMMARY
24 work+learn paths

AUSTIN	JEDDAH
Social Justice Through Systems Thinking: Cultivating a systems view to address complex social issues **Making My Way:** Creatively cultivating authentic identities and maker communities **Do-It-Ourselves:** Cooperating to build collective well-being **The Other Intelligences:** Pursuing non-analytical knowledge	**The Transnational Experience:** Learning abroad to reinvent the culture at home **The Purpose-Built Exile:** Relocating to reinvent self and country **Future Challenges:** Understanding the human experience **Paying It Forward:** Learning for the sake of those who follow
BERLIN	**LAGOS**
The Project Economy: Working together in a world without jobs **Scenes and Spaces:** Programming shared experiences **Deep Tolerance:** Integrating diverse perspectives in working, learning, and living **The Human Project:** Curating multi-persona lives in a multicultural environment	**Hackable opportunities:** Finding the business angle **The WhatsApp Path:** Working the platform to learn and earn **Big Ambitions:** Simulating personal futures to make them real **The Dissident Arts**: Expressing oneself in a world with no future
CHONGQING	**MEXICO CITY**
The Iron Bowl: Investing in the lifelong job **Learning on the Side:** Enriching life with digital resources **Hustling To Survive:** Making the most of the informal path **The Robot Future:** Putting AI to work	**The Collective Advantage:** Seeking solutions together **Zero Waste:** Building the cultura remix **The Competitive Machine:** Learning to the contest **Self-awareness:** Doing the work of inner work



4

A Common Global Future

What Lead Learners Around the World Share in Common

The work+learn paths of lead learners differ from city to city around the world, in subtle and not so subtle ways. From Austin's focus on complex systems and Berlin's emphasis on tolerance and the arts to Jeddah's vision of a new national identity and the opportunistic gaming of chaos in Lagos, lead learners both adapt to their context and invent the paths that may ultimately remake their cities.

At the same time, today's lead learners are carving out paths for themselves that are truly global—that is, they link local innovation to the emerging global society that they themselves are building. This global society does not promise a homogeneous approach to a global learning society, but rather a multitude of pathways that are personalized for each local culture. Such an evolution will ultimately assure a more equitable economy, as workers and learners make the best use of local resources while building a global future that spotlights their unique social, economic, and cultural strengths.

While their individual paths are localized, however, lead learners around the world do share several strategies in common, and it's important to recognize these global patterns. They are the patterns that can begin to build a truly global learning culture, one that's championed by future-ready learners who are both local and global citizens—patterns that unite them across geographic borders in spite of their differing local contexts.

Here then are the patterns that will shape the future-ready learners of tomorrow—everywhere.

Learners will continuously reinvent informal learning

Across the cities in this study, lead learners are busy adopting and adapting informal paths to learning. As fast as organizations institutionalize new paths—with online classes and alternative credentials, for example—the learners we met are pushing the ability of all kinds of platforms, from games to social media to new VR platforms, to create new pathways for learning individually and in groups. Even as platforms like Coursera or Udacity seek to displace classroom learning and as educational institutions are creating their own online degree programs, lead learners are appropriating platforms like WhatsApp and YouTube to teach, learn, convene learning communities, and even build income streams as they learn.

Several forces are driving this continuous disruptive innovation: rapid technology innovation, the desire for open and free (or inexpensive) access to context-appropriate learning, and ultimately the need to adapt to a swiftly changing local and global context. For individuals and for society as a whole, this strategy will provide a selective advantage over formal institutional learning, which, by its very nature, is slower to adapt.

Learners will not use traditional institutions as the primary path to work

Even though a majority of our lead learners have participated in traditional educational systems, the majority also view this education as perhaps necessary but certainly not sufficient for building income or achieving other kinds of work goals. In particular, few lead learners believe that there is a direct path from formal education to a secure job or work of any kind.

But although some lead learners dismiss the value of traditional learning and choose to drop out, many have found benefit in their formal coursework, particularly as a way to "build good people." And often, formal institutional learning also helps build larger perspectives and frameworks in which to situate the more applied informal learning. It's an adjunct to "real world" learning.

As noted earlier, the exception to this pattern is Chongqing. Here, the traditional educational process, with its tracks and degrees, is still tightly coupled with the job opportunities and ultimately the status that young Chinese learners seek.

Learning AND teaching will be socially sourced

Among lead learners, we find story after story about the role that a social platform—or a community space—has played in catalyzing a work+learn path. These socially sourced learning spaces range from phone-based apps like WhatsApp and YouTube to gaming platforms like Twitch to community workshops where people come together for entertainment, art, or community action. What they all have in common is the ability for learners to tap into what others know, to amplify these knowledge resources through the network effects of (often vast) social networks, and to publicly level up their own knowledge.

The flip side of this story is that everyone is also a potential teacher, and indeed our lead learners express over and over their desire to teach others what they learn, whether for their own celebrity and income or for the good of their community or country. Learning is interwoven with teaching, and every encounter is an opportunity for both. The public platforms, online and off, make these opportunities more visible, more accessible, and more powerful. Ultimately, they build resilience into the local and global learning communities.

Learners will fashion their work+learn paths by negotiating intergenerational differences in values, resources, and behaviors

Lead learners are, by definition, innovative young people who are challenging the values and experiences of their parents. This pattern is certainly an age effect: each generation tends to distinguish itself from the previous generation. Yet the pattern is amplified by both period and cohort effects. In a time when labor is being transformed by technology and global trade, lead learners often see their parents' experience as irrelevant. And having grown up with digital tools, they are primed to take advantage of—and appreciate—the fast-evolving technologies of informal, socially sourced learning.

The combination of these three effects produces a strong conviction among lead learners that they must find their own way. (In some cases, it even leads to condemnation of the older generation: "No one over 40 should be allowed to vote—they're the ones who got us into these problems.") At the same time, family ties and family history continue to shape their paths. Whether they are trying to take advantage of opportunities their parents never had (as in Chongqing) or they are launching their own startups instead of pursuing the formal educational paths of their parents, they continue to be driven by their parents' approval and, in some cases, expect to support their parents through their alternative work+learn paths.

Startup ventures will be the classrooms for learners of the future

Regardless of location or economic situation, lead learners are learning by creating or participating in startups of many kinds: entrepreneurial ventures,

co-ops, nonprofits, or even alternative schools. Often they are doing this in their teens and sometimes as an alternative to traditional education. And if they haven't already launched their own venture, many of them aspire to in the future.

This path fits for young people who are growing into adulthood at a time when technology is offering platforms that make it easy to launch small but global enterprises with minimal resources and maximum reach—platforms that build on the tools they have been using nearly their entire lives. The step from gaming and social media to online enterprise is increasingly easy and enticing as the forms of enterprise proliferate alongside problems to be solved. Multiple startups may well become essential building blocks on the resume of the future, as learners use them as a way fund further learning and innovation in the startup form itself.

Celebrity will be the new credential

The future will favor learners and workers, and ultimately citizens, who master celebrity. Even among the humblest of our lead learners—those seeking authentic identities and cooperative reputations—building a visible and recognizable following is a key strategy to succeed in a noisy world of nearly 8 billion people. Celebrity will be measured in different ways, of course: everything from personal style (which will form the basis of entire curricula) to global impact (as measured by the ability to mobilize public response) to competitive talent (expressed in contests and games) will distinguish workers and learners in the global economy. And in an increasingly collaborative global future, building group celebrity will be as important as individual celebrity.

Regardless of the path to celebrity, however, it will be themost reliable and practical measure of a person's job- or project-readiness, and indeed of their future-readiness. In fact, the most celebrated will likely be those who are able to help others see the future for themselves and make themselves future-ready.

Smart mobile devices will be a learner's best friend

The most ubiquitous infrastructure for today's lead learners is the mobile phone. To think that such a small device could displace huge centuries-old campuses and multi-million dollar curricula is staggering, and yet the phone is now a primary channel for people all over the world are learning what they need to know and then building their own enterprises literally from their pockets.

The starting place for understanding the future learning ecosystem, then, is to monitor the proliferation of functions and capabilities of these increasingly smart devices, as well as the social uses of these functions. These will be the wellspring of new work+learn paths for tomorrow's young people.

Learners will forge a new global citizenship

Lead learners see the big picture in a way that perhaps no other generation has. They are globally aware. Many have traveled outside their country for formal education or to challenge themselves with new experiences. Others build global brands for enterprises large and small. Still others feel a responsibility to use their skills and crafts to change the human story in ways large and small. Almost all recognize the pressing global-scale problems that increasingly impact their own families and communities.

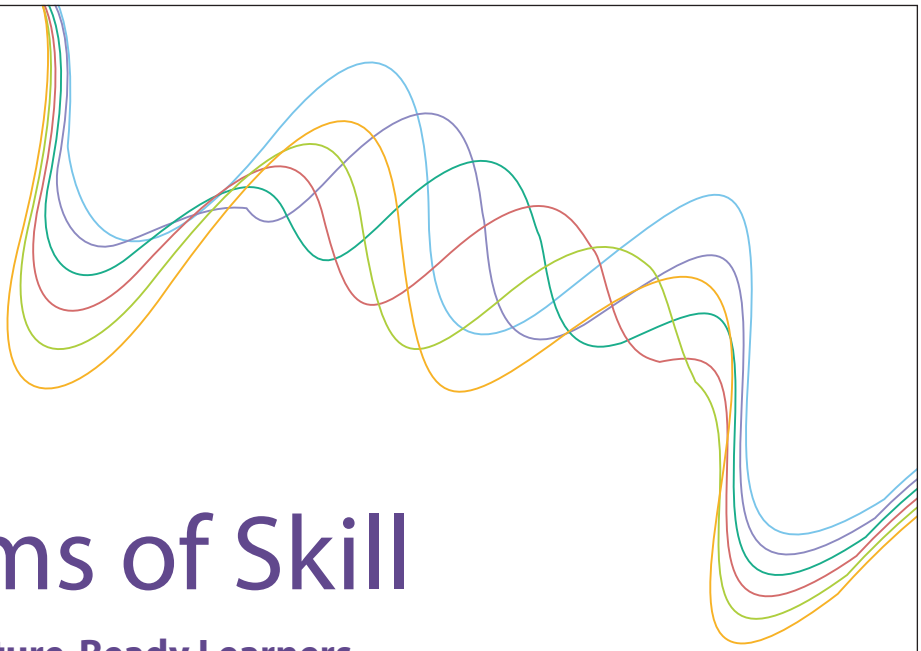
To build their work+learn paths, young people will invent new ways to express their citizenship over the coming decade. Many of these innovations will start from their phones and their social networks. Their citizenship strategies, like their work+learn paths, will reinvent the traditional political systems and infrastructures of citizenship. They will likely borrow from the templates of their informal learning to create informal citizenship structures, behaviors, and values that ultimately become more resilient in face of global crises than our current institutions. Expect to see the emergence of parallel systems of governance that both augment and compete with existing forms as startups and phone-based platforms for learning provide the substratum for the reinvention of citizenship.

Learners will learn for the future

From city to city around the world, lead learners are learning not just for themselves but for the future. They are learning for the sake of the next generation. They are learning in order to embody a new vision of their country, whether it's the official vision of the country or one that they are working to birth themselves. They are learning for the species, for the planet.

The paths to learning for the future are as diverse as the motivations. For some, the path starts with the autoconosciente of Natalia in Mexico City: self-knowledge that comes from building short-, medium- and long-term visions for herself. For others, like Alex in Austin, it's a systems view of the world that allows him to chart a path toward resilience, or like Florian's 3D immersive environments in Berlin, designed to help communities understand their interdependence. And as they aspire to make their marks on the future, they are also flexing their futures thinking skills, building a new global aptitude in personal and planet-wide foresight.

Lead learners recognize that they are on the cusp of a new society. They realize that ultimately the shape of that society will depend not just on what they know but how they go about knowing it and ultimately how they put their knowledge to work in the world of unexpected new ways of working.



5

Spectrums of Skill

Five Ways to Build Future-Ready Learners

When we look across all the work+learn paths in the six cities visited by this study, we realize that there is no simple "top 10 list" of future skills. Rather, for each peak performance zone, there is a spectrum of skills that learners can cultivate to create their own unique work+learn paths to take advantage of their personal strengths and interests as well as their resources and cultural environments.

Each point on these spectrums represents a set of unique skills that any given individual may cultivate. It may be building celebrity through sophisticated social media branding or increasing self-knowledge by simulating personal futures. It may be taking care of migrant workers in a strange country or coaching others to evolve their life paths in a chaotic global economy. These are the spectrums of future learning: the skills depend on where along the spectrum any given learner chooses to focus.

MAKE YOURSELF KNOWN

mastering reputation and identity in a connected world

celebrity **visibility** **self-knowledge**

For more than a century, young people have sought credentials and certifications to gain entry to the workforce. They have then sought to build resumes that would help them pursue a lifelong career, hoping to find the job that "fits."

For most of today's young people, however, credentials are not the key to unlocking the door to a productive life. While they may still seek them, they realize that they need much faster and more relevant means of making themselves known, both to the public and to themselves.

MAKE YOURSELF KNOWN is a spectrum of skills that spans both public reputation and private identity. Not everyone will master the entire spectrum. But everyone will need to master some position on the spectrum.

celebrity: the ability to stand out from the crowd in one's field of endeavor and leverage one's name recognition in order to make an impact in the world

visibility: the ability to make oneself accessible to the people and organizations that one needs to collaborate with in order to build a desired work+learn path

self-knowledge: the ability to know one's own mental, emotional, and physical strengths and weaknesses in order to bring one's authentic self into life's projects

BEFRIEND THE MACHINES

mastering the world of digital machines

curation **creation** **simulation**

Because digital machines are constantly evolving, it is impossible to point to a single technical skill—such as coding—that young people can turn into a long-term career. In fact, many experts believe that artificial intelligence (AI) will render human coding obsolete, in much the way that robotics will render many human physical tasks, from assembly line work to surgery, obsolete.

Nevertheless, every young person will need to find ways to collaborate with digital machines, both managing them and working for them over the coming decades. They will need to find their unique role in the global human-machine ecosystem.

BEFRIEND THE MACHINES is a spectrum of skills that enables people not only to collaborate with digital tools and technologies to shape daily reality for themselves and others.

curation: the ability to find, interpret, and apply digital resources to the task at hand and to share those resources with others in order to create new value

creation: the ability to create innovative content, resources, tools, or experiences, using digital media and even building AI as needed in order to amplify creativity

simulation: the ability to build digital models of oneself, one's environment, and one's future in order to test possibilities and make the better decisions about one's individual and shared realities

BUILD YOUR CREW

mastering collaborative structures

startups **communities** **networks**

Traditional education has been organized hierarchically and has trained young people to work in hierarchical organizational structures. Once trained, they have been hired for well-defined roles and assigned well-defined tasks.

Young people today are learning to work in a very different world, where they must often put together their own teams to work collaboratively. They must create their own collaborative work structures. Even if they find themselves working and learning in traditional institutions, they are evolving the skills of peer-to-peer and collaborative enterprise in projects outside these organizations.

BUILD YOUR CREW is a spectrum of skills that connect people in organizational structures that allow them to create new value, both financial and social, from their relationships, both local and global. These tend to be scale-free structures—that is, they can quickly scale up or down beyond the limits of traditional corporate structures.

startups: the ability to tap networks of friends, family, and other supporters to launch new small-scale enterprises in order to create significant returns on investment (rather than relying simply on wages)

communities: the ability to create collaborative spaces, from simple scenes to structures such as learning co-ops or digital and place-based projects such as disaster relief, in order to create new value in the community

networks: the ability to connect people and resources in distributed, node-based systems of value creation or social impact in order to amplify the ability of individuals to learn and earn throughout their lives

MAKE SENSE

mastering a high-resolution world

narratives **operational frameworks** **ecosystems**

One of the roles of traditional work and educational institutions has been to build a consensus reality about how the world works and what's important to accomplish in that world. This consensus reality has relied on general agreement on broad-brush descriptions of the living world.

Over the coming decade, the growth of digital data will vastly outpace the growth of human population, creating a high-resolution digital ecosystem that reveals the complexity of our global realities in unprecedented detail. And young people will learn to manipulate this digital ecosystem to create new global realities.

MAKE SENSE is a spectrum of skills that spans the art and science of interpreting the high-resolution sensory experience of the world to better understand—and even remake—human experience.

narratives: the ability to convert complexity, whether it arises from the growth of digital data or the human experience, into brain-friendly stories in order to motivate and guide human effort

operational frameworks: the ability to create simple recipes for complex activities in order to support both human and machine collaboration and value creation

ecosystems: the ability to visualize and manage whole systems in order to coordinate an ever growing set of subsystems for the benefit of whole

KEEP IT GOING

mastering resilience in extreme environments

caring **sharing** **evolving**

The long-term values and precepts of individuals and communities are typically taught in the context of family and religious institutions. In more secular aspects of daily life, educational institutions have also performed this function, and today, even young people who don't seen the relevance of formal learning to work opportunities acknowledge that it is a critical foundation for creating "good people."

Nevertheless, young people are also creating new pathways to taking care of one another and the planet in the face of such extremes as climate change, migration, and a volatile global economy.

KEEP IT GOING is a spectrum of skills that will be necessary to build sustainable lives and communities in extreme environments of the future, reimagining everything from ethics to intelligence.

caring: the ability to empathize with many "others," from one's own family and community to imagined communities around the world, in order to understand the broader impacts of one's own actions

sharing: the ability to create new social and economic structures for making the most of limited assets in order to assure the viability of human communities while protecting the environments they depend on

evolving: the ability to grow one's own intellectual, emotional, and physical capacity, using AI, neuroscience, and experiences of failure, in order to pivot rapidly to a new path

Today and Tomorrow

seven ways to follow lead learners toward the future

Today's lead learners are already finding their place on these spectrums of skill, defining their own unique work+learn paths. They are building futures for themselves that allow just the amount of economic security they seek within a framework that allows them to achieve their goals, whether its independence, service to their community, making a positive impact on the environment, or simply advancing our understanding of what it means to be human. They are innovating both work and learning in ways that say, "I value so much more."

This reinvention of working and learning invites educators, policy-makers, foundations, and the business community participate in creating a future that support the efforts of lead learners everywhere. Specifically, they can

» Participate in the development of new work+learn narratives that reimagine the stories of lifelong learning, working, and living in community

» Make distributed learning resources more visible and accessible across platforms

» Develop the sciences of personalizing learning for body, mind, community and the planet

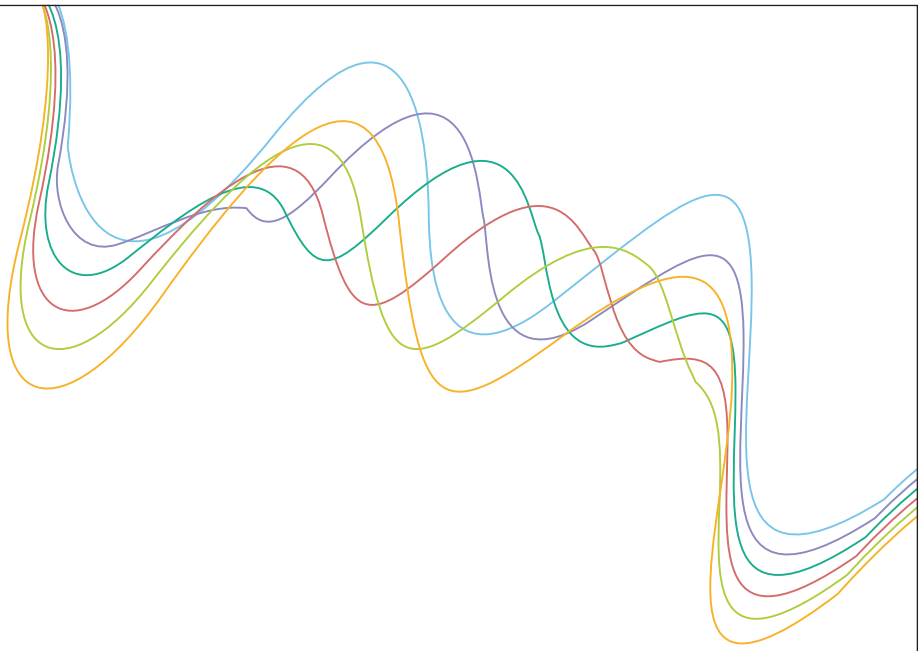
» Create templates for young people to build new work+learn structures in their communities

» Create credentialing and accreditation services for these new kinds of work+learn structures (such as startups)

» Create platforms for reverse mentoring, to teach the older generations how to think and act like a lead learner

» Work with lead learners to reimagine work and learning in the context of global citizenship to build the new precepts and practices that support global citizenship

This, then, is the call to action: to look beyond today's workplace needs and learning curricula to support the inventive strategies of learners who are building the work+learn paths of the future. For more information, see the *Global Future Skills Toolkit* at miskglobalforum.com.



Glossary

age effects

those results of a cohort analysis that can be directly linked to the age of the cohort, either now or in the future. Age effects suggest that if the same analysis were done ten years from now, the age-related results would change.

cohort

A group of people with a common statistical characteristic

cohort analysis

An analysis of the shared characteristics of a group of people. Any analysis of an age group is, by definition, a cohort analysis.

cohort effects

Those results of a cohort analysis that can be directly linked to a set of experiences shared by members of the cohort over time. Cohort effects tend to last the entire lifetime of the cohort.

diffusion of innovation

The spread of a social or technological invention through a population of potential adopters of the invention. The theory of diffusion of innovation, developed by E.M. Rogers in 1962, is one of the oldest social science theories. It originated in communication to explain how, over time, an idea or product gains momentum and diffuses (or spreads) through a specific population or social system.

future skills

abilities and capacities that people will develop in response to the future human environment, including the changing institutional environment, the evolving human toolset, and larger environmental factors such as the global economy and global climate change

lead learner

A learner how is one of the first in a population to adopt an innovative tool or process for learning. A lead learner is analogous to a lead user in diffusion of innovation theory and thus serves as a signal of practices that may spread through the larger population.

learning stack

The combination of standards, infrastructure, curriculum, instruction, credentials, and incentives that support formal or informal learning for groups or individuals

peak performance zone

A critical category of skill development that determines readiness to achieve a high level of success. IFTF's Future Skils framework uses five peak performance zones to identify future-ready workers and learners: Make Yourself Known, Befriend the Machine, Build Your Crew (Tribe), Make Sense, Keep It Going.

period effects

Those results of a cohort analysis that can be directly linked to the specific period during which the analysis is performed.

skill

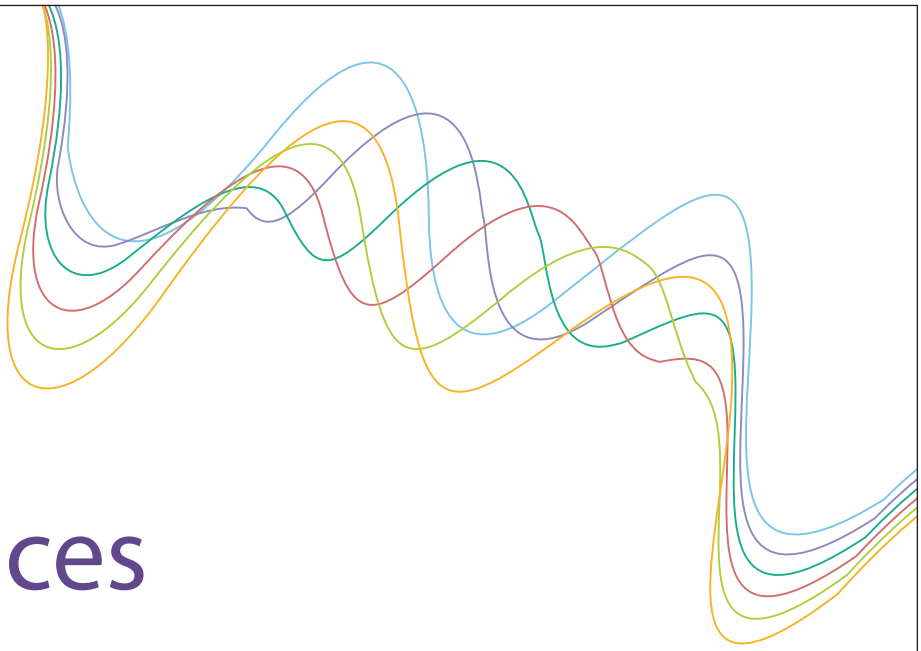
The ability to do something well. In a labor economy, different skills are assigned different values, shaping the ability of workers to achieve economic success.

VRBs

The values, resources, and behaviors (VRBs) that guide a human activity. Values tell us why people behave in certain ways. Resources include the mix of tools, people, spaces, know-how, and financial support that allow people to behave in those ways. Behaviors demonstrate the way values and resources combine to create distinctive individual profiles of activity (in this case, working and learning profiles).

work+learn path

A set of values, resources, and behaviors for working and learning over time



Appendices

Appendix A: list of lead learners

IFTF's team of ethnographers visited six cities to understand the work+learn paths of 60 young people, age 16-30, and the skills that are essential to those paths. In keeping with ethical practices for human subjects research, we list these lead learners by their pseudonyms and age, with brief labels to indicate their current work+learn activities.

Austin, Texas

Maria	16	early college-high school student
Bobby	21	intern in San Francisco
Elle	25	teacher
Ela	25	social media maven
Mark	25	high-school dropout & software developer for investment firm
Adrian	26	public high school teacher
Alex	27	artist & community activist
Daphne	27	maker & online teacher
John	27	maker & community leader
Javier	28	sculptor & urban planner
Sam	28	teacher and instructional specialist
Lori	29	body movement student
Nate	31	credit card fraud analyst

Berlin, Germany

Lena	17	secondary school student
Thomas	17	secondary school student & IT consultant
Jules	18	secondary school student & social rights advocate
Wolfgang	20	fashion designer and musician
Florian	22	3D computer graphics artist
Karla	23	culture journalist
Mia	23	working student (at Volkswagen)
Sophie	22	interactive installation artist
Hakeem	27	founder of 2 NGOs
Ali	26	refugee & master's candidate
Sebastian	28	independent tour guide

Chongqing, China

Yang	18	student and aspiring hip hop singer
Li Dawei	21	bike sharing logistics manager
Mo Chou	21	designer & undergraduate student
Liu Caicai	22	undergraduate student
Zhang Wei	25	electrical engineering doctoral candidate
Zhi Ruo	25	geography teacher
Yu Yan	26	teacher, etymologist, and food blogger
Wang Shu	27	DJ & photographer
Hui Yin	28	language teacher

Jeddah, KSA

Abbey	19	artist
Rodya	21	computer science major at Dar Al-Hekma and Creative Mornings
Samantha	22	marketing professional
Billy	23	mechanical engineer
Ferdous	23	master's student & aspiring entrepreneur
Mike	23	runner & online teacher
Baibeus	23	mechanical engineer in co-op training program
Omar	24	entrepreneur
Abdulaziz	26	student at KAUST
Talal	30	founder of 3 companies

Lagos, Nigeria

Zoelle	19	college student & intern
Lisa	20	aspiring celebrity
Mavis	20	artist
Belle	22	makeup artist & hair stylist
Maximus	25	insurance broker
Efa	26	masters student in communications
Trevor	27	self-taught programmer
Coach	29	online nutrition coach

Mexico City, Mexico

Camilo	16	secondary school student and children's rights advocate
Vicente	17	science fair champion & motivational speaker
Alejandra	19	bachelor's student
Yessina	21	founder of online eco-cooperative
Natalia	25	bachelor's student
Raul	25	artist & entrepreneur
Raquel	26	permaculturist & designer
Guillermo	29	leader of Mexican maker movement
Angel	30	zero waste artist

Appendix B: the interview guide

INTERVIEWEE NAME:

INTERVIEWER NAME:

DATE:

LOCATION:

Global Youth Skills
Interview Guide (Version 6/20/18)

As I think you know, I work for Institute for the Future, which is a non-profit research organization in Silicon Valley, California. <<introduce yourself>> We've been studying the changing nature of work and learning, this project is our latest effort to understand the future skills that young people will need to succeed over the coming decade…out to about 2030, so about 12 years from now. We're talking to youth and young adults between 16 and 30 from cities around the world. Altogether, we hope to talk to about 50-60 young people in this first round of the research project. I want to especially thank you for being willing to talk with me and my research partners, [names], who will join us today to take notes, listen, and ask a few questions during the interview.

There are three sections of the interview and we anticipate this taking two and a half hours. We'll start with your personal background and learning pathways in part one, then talk about your present-day skills and practices in part two, and in the final section we will shift our conversation to thinking about the future. In total it should take around 2.5 hours.

Before we begin, we'd like to just make sure that you know what we're going to do with the information you share today and ask your permission to record the interview. The information you share with us will all be kept anonymous. We may include some of the details in reports, but we will never refer to your name without getting your explicit permission. This document describes how we will protect your identity and privacy. And if you agree, you can sign the two copies. We'll keep one and you can keep one.

Part I. Personal Background, Learning/Work Pathway (30-45 Min, Q 1-8)

So, let's jump right in and gather a bit more background information from you and then then we'll explore Future Skills in detail. Do you have any questions before we get started?

Great I'm going to start the recording now. For the sake of the recording, could you start by stating your name

Q1: So, let me start by just confirming your age. How old are you? Tell me more about yourself, who you live with, and where?

Q2. The first thing we want to ask about is education and learning in your family. This will help us understand how you think about education and what matters most in your family. Can you tell me what kind of education or training your parents (or the people who raised you) have?

P: What do you think was most important about their education to them?

P: Do you think they are pleased with their education?

P: Do you think it has served them well? Have they expressed regrets about their education?

Q3: Do you have siblings? Tell me about them. For each: Are they in school? At what level? And what kind of learning (and work) experiences have they had?

P: Have any of their experiences influenced your choices about learning and work? If so, how?

Q4: Now let's talk about you. What's been your learning path? Walk me through it. What kind of education have you had?

P: Are you engaged in any formal education right now? Where at and what kind? What do you study? And what led you to choose that course of study?

P: What are some of the informal ways of learning that you tried? Give me an example of something you tried recently? What was it? What was it like?

Q5: Now I want you to think about all the ways that you go about learning (formal and informal ways) and think about all resources you rely on to support your learning. What are they?

P: Who are the people and communities that support your learning? Think about friends, social networks, and communities. Let's start by listing them out [up to 10] and then describe how they support your learning.

P: What organizations or institutions support your learning? Think about online courses and programs too. Let's start by listing them out [up to 10] and then describe how they support your learning.

P: What are the technologies or tools you use to support your learning? Let's start by listing them out [up to 10] and then describe how they support your learning. Include any learning apps you use. What is the latest technology or tool you tried? How does it support your learning? Does it meet your expectations? Why? Why not?

P: What are the other resources that support your learning? How do they support your learning?

Q6: When you think about your learning path to date, what has been the most satisfying? Why? What has been the least satisfying? Why?

P: Is there something that you would say is unique or special about the way you learn? What makes it special and when did you start doing this? Is this something others might benefit from? How?

Q7: Now let's talk about the work you do. Are you working now? What kind of work is it? What do you do?

P: Is this paid work? Is it a full-time job?

P: Do you like this work? What do you like about it?

P: Does this feel like the work path you want to be on at this point in your life?

P: Is there something else you'd rather be doing for work?

Q8: When you think about your learning and work path to date, what would you say you're working toward? What are your big goals out in the future?

P: What will help you achieve those goals? People? Communities? Organizations? Institutions? Tools?

P: Are there any obstacles to achieving those goals?

P: How might you overcome these obstacles?

Thank you for sharing more about your background and learning pathway.

In the next part of the interview, we're going to share a way of thinking about the future of working and learning that we've been developing. It's based on the idea of getting fit for the future. And, we want your help to build out this future from your own experience and perspective.

Part III: Peak Performance Zones In The Present (45-60 Minutes)

To get started, we would like to share with you a basic tool that we're going to use to guide our conversation. This is a sort of map of the way we have been thinking about the future of working and learning. Its organized into five zones of skills—we call them peak performance zones. And most of the rest of our conversation is going to be about these zones. We are going to explore the skills you might choose to develop in each of these peak performance zones, and the ways you're already engaging in these spaces today. But first, let me give you a quick introduction to the zones. And feel free to ask me questions as we go through each one.

(Note: Use worksheet to guide discussion and to take notes. Provide interviewee with worksheet and writing implement)

We call the first zone: **Make Yourself Known**, and it's all about managing your REPUTATION and the new ways that you build reputation, credentials, and connections that help you achieve your goals.

P: Do you have any questions about this zone? (share example if needed)

P: So, thinking about today, right now in the present, how would you rate yourself in this zone? On a scale of 1 to 5, where 1 is just getting started, 3 is working on it, and 5 is completely fit or strong. Why did you rate yourself this way? Explain.

The second zone is **Befriend the Machines**, and this is all about TECHNOLOGY and our ability to generate value with that technology. More and more, people are going to be working with robots and artificial intelligence. Sometimes you'll work alongside them. Sometimes you'll have to manage them. Sometimes you'll have to work for them.

P: Do you have any questions about this zone? (share example if needed)

P: So, thinking about today, right now in the present, how would you rate yourself in this zone? On a scale of 1 to 5, where 1 is just getting started, 3 is working on it, and 5 is completely fit or strong. Why did you rate yourself this way? Explain.

The third zone is called **Build Your Tribe**. We know that more and more people will need to find (even build) their own NETWORKS or communities for doing whatever they need to do. Sometimes those will be people you work or learn with in person. But you may already find yourself working with people in other parts of the country or other parts of world, right? So, this zone is all about how you will build the relationships that help you make the future you want for yourself.

P: Do you have any questions about this zone? (share example if needed)

P: So, thinking about today, right now in the present, how would you rate yourself in this zone? On a scale of 1 to 5, where 1 is just getting started, 3 is working on it, and 5 is completely fit or strong. Why did you rate yourself this way? Explain.

The fourth zone is called **Make Sense**. Here we recognize that the world is becoming increasingly complex, and it's often hard to make sense out of all the INFORMATION and data that surrounds us. So, this is a zone for building sense-making skills—for being able to tell stories that motivate people to act or to use media to make changes in the world or just to think about and anticipate the future, like we're doing today.

P: Do you have any questions about this zone? (share example if needed)

P: So, thinking about today, right now in the present, how would you rate yourself in this zone? On a scale of 1 to 5, where 1 is just getting started, 3 is working on it, and 5 is completely fit or strong. Why did you rate yourself this way? Explain.

And then our final zone is called **Keep It Going**, and this is about building RESILIENCE in extreme environments. It could be a large-scale environment, like the global climate. Or it could be organizing an emergency food drive for a community that has experienced a disaster of some kind. Or it could mean setting up a health clinic for political refugees. You might think of this as building sustainability, for yourself or your business or your community or the larger world.

P: Do you have any questions about this zone? (share example if needed)

P: So, thinking about today, right now in the present, how would you rate yourself in this zone? On a scale of 1 to 5, where 1 is just getting started, 3 is working on it, and 5 is completely fit or strong. Why did you rate yourself this way? Explain.

These are the five skill zones we're exploring in this project. Let's shift and get your thoughts about a few of these zones and talk about ways that they might relate to your own learning strategies and the skills you are trying to build.

Q9: Let's start by choosing a zone that's particularly interesting to you. Pick a zone that you're already working on or where you're doing something that's new or exciting to you. What do you think? Which zone would you like to begin with? (Note: repeat description/definition of selected zone.)

P: Okay, great! Tell me first why you chose this zone. How does this zone connect to the learning and skills you are trying to build?

P: What would you say you know how to do really well in this zone? Give me an example of the last time you did this. Tell me the story.

P: What are some unusual strengths that you have or that you're building in this zone? How did you come to focus on these skills/strengths? Why are they important?

P: How have you learned to do what you do in this zone? Where does this learning happen for you?

P: What role do other people and communities play? What role do organizations or institutions play? What tools or technologies are you using? Why are these important in this zone?

P: What's the reward for learning these things and building strength in this zone? What's the benefit for learning in this way?

Q10: Okay let's look at one more zone, while we're still in the present. And let's choose the zone where you think you have the most to learn, where you feel like your skills might be a little weak. (Note: Take a look at worksheet and repeat definitions if necessary.)

P: Okay, great! Tell me first why you chose this zone. Why is this a zone where you have the most to learn? Does this zone connect to the learning and skills you are trying to build?

P: What are the obstacles to getting fit in this zone? What's in the way? Can you think of ways to overcome these obstacles?

P: What do you need to get fit in this zone? Who are the people and communities who might help? Are there organizations or institutions you need access to? Are there certain kinds of tools or technologies you need? Give examples. If you gained access to these resources what would be different?

Q11: How does the learning and action you take in these zones (say out loud the names of the two zone just discussed) relate to the big goals you shared with me before? (See Q8) In what ways? What are your expectations or hopes?

Okay, thank you. So, I think you're starting to get a feel for these zones and what kind of skills and tools you need in each of them. We want to shift and begin to think about the future now, but before we do, would you like to take a five-minute break? Catch your breath?

Part III: Peak Performance Zones in the Future (2030) (45-60 Minutes)

Thank you again for sharing your thoughts and insights and experiences about learning and working in these five peak performance zones.

Now we're going to shift from the present to the future. We're going to imagine that it's 2030—so 12 years into the future. How old will you be then?

Ok. So, imagine that you're [age], and we're going to tell a story about what your life is like then. So, you may want to think about who is in your life in 2030, imagine where you are you living and what your communities look like, think about what do you do for fun, and what's happening in the world around you.

Okay, so with that in mind, we're going to look again at the performance zones, but this time, we're thinking out to about 2030, and we have a fun little workbook that we'd like to use. You may have had a book like this when you were young, where you get to make up the story. It's called a flip book, and it has some choices for each of the five zones.

For this process we're going to ask that you choose three zones you'd like to focus on. These three zones should be the ones that you think will be most important in your future.

Which three zones would you like to focus on?

Zone 1:

Zone 2:

Zone 3:

Great! Now our next step is to go through each of those zones, and share some strategies that you could leverage to achieve your goals in the future. For each zone, you're going to choose the strategy that you think will be most important or most inspiring for your future.

<<show the flip book and show how it works – only go into three of the zones >>

Q12: Let's start with the first zone: _____. We're going to explore five possible strategies for the future in this zone. (Note: Go through each strategy and explain as simply as possible, then ask them to choose the strategy that is the most important or inspiring for the future they imagine for themselves.) Which strategy did you choose?

P: Why did you select this strategy? Why is it important?

P: How will you do this in 2030?

P: How will you learn to do this?

P: What resources or tools will you rely on?

Q13: Let's move on to the second zone: _____. (Note: Explain each strategy as simply as possible, then ask them to choose the strategy that is the most important or inspiring for the future they imagine for themselves.) Which strategy did you choose?

P: Why did you select this strategy? Why is it important?

P: How will you do this in 2030?

P: How will you learn to do this?

P: What resources or tools will you rely on?

Q14: Let's move on to the final zone: _____. (Note: Explain each strategy as simply as possible, then ask them to choose the strategy that is the most important or inspiring for the future they imagine for themselves.) Which strategy did you choose?

P: Why did you select this strategy? Why is it important?

P: How will you do this in 2030?

P: How will you learn to do this?

P: What resources or tools will you rely on?

Okay, thank you for building this picture of the ways you might work and learn in 2030. Now we want to turn what you just shared with me about each of these zones into a short story about the future. So, looking across the zones, we would like you to think about a day in your life in 2030. Once more, you may want to think about who is in your life in 2030, imagine where you are you living and what your communities look like, think about what do you do for fun, and what's happening in the world around you.

(Note: Share worksheet and instruction sheet and give person a few minutes to think and jot down notes)

Q 15: So, start by telling us where you're living and who you're living with? What do you do when you get up in the morning? Walk me through your day in 2030.

Remember that your day is all about these three zones and the strategies that you've chosen. This is just a story, a possible story among many. So, it doesn't have to be "right." It's just a one way you might spend a day in 2030.

Q16: How do you organize your day to build peak performance in the zones you've chosen? And, how do you draw on the strengths you've identified for each zone—or your aspirations in those zones? How do your strategies guide your choices of what to do throughout the day?

P: How do the strategies you chose help you achieve your goals?

P: What are the biggest challenges as you go through your day?

Q17: Now imagine that you're meeting up with a young person—someone who is your age today. What advice would you give that person about how to get ready for the kind of day you've just described for yourself? Why would you give them this particular advice?

Thank you for sharing this very personal vision of the future with us. Before we return to the present, we'd like to ask you to reflect on more question:

Q18 (FINAL): Thinking over everything you've said about this future, what are the most important new skills you'll need to develop over the next 10-12 years? Why are these important?

Thank you. You've been an amazing futurist for us.

We would like to hold on to all of these materials for our research process, but if you would like to have copies, we can take some photos now.

As a reminder, the next step is a small workshop on Thursday, June 28th at 6:30pm at the Impact Hub [insert address]. The workshop will be with the other people who we have interviewed for this project, and we will run a facilitated process to share and explore your future skills and goals together. The whole experience will last 2.5 hours. [We may contact you before the workshop and ask you to share some of your story, but other than that,] no preparation is needed. Do you have any questions?

We want to remind you that all of the information you've given us will be anonymized, and we won't identify you in any reports without asking your permission. We will be using the information and insights you've used to understand future skills for today's youth better. We'll help policy-makers and investors think about what kind of training to invest in for people your age to help them have the kinds of futures they want. When we've completed our report, we will send you a copy. We really appreciate your time and thoughtfulness. If you have any questions or further thoughts, you can email us at the address on our cards.

Appendix C: values, resources, and behaviors

The following chart shows the initial coding of values, resources and behaviors from the transcripts. It also shows the performance zones that the VRBs are most closely related to as well as the primary classification by age, cohort, or period effects. This chart served as an initial way to identify the themes and work+learn paths that emerged from the interviews.

VRB		performance zone	age-cohort-period
behavior	Demonstrate non-institutional learning	Make yourself known	Period
behavior	Make a good first impression	Make yourself known	Age
behavior	Create a value exchange in interpersonal "self-presentation"	Make yourself known	Cohort
behavior	Manage my personal aesthetic	Make yourself known	Age
behavior	Manage an intersectional identity	Make yourself known	Period
behavior	Develop performative skills	Make yourself known	Cohort
behavior	Manage multiple identities for dynamic context switching	Make yourself known	Cohort
behavior	Track sequential identities as I innovate myself	Make yourself known	Cohort
behavior	Develop a WhatsApp following for classes I teach	Make yourself known	Cohort
behavior	Use Instagram as my portfolio	Make yourself known	Cohort
behavior	Manage iterative instances of myself on Instagram	Make yourself known	Cohort
behavior	Use performance art as work	Make yourself known	Period
behavior	Develop personal talking/dressing style as performance art	Make yourself known	Period
behavior	Play with identity by creating a "character" for oneself	Make yourself known	Cohort
behavior	Use app to coach me to speak English in ways that imitate actors in famous movies	Make yourself known	Cohort
behavior	Become a celebrity in the maker world	Make yourself known	Cohort
behavior	Win contests to build celebrity & credentials	Make yourself known	Cohort
behavior	Learn body language explictly	Make yourself known	Age
behavior	Use art to show different expressions of self	Make yourself known	Period
behavior	Practice "autoconosciente"--self-knowledge	Make yourself known	Age
behavior	Take WhatsApp classes	Befriend the machines	Cohort
behavior	Teach self using technology	Befriend the machines	Cohort
behavior	Navigate the world without technology first, then add it on	Befriend the machines	Age
behavior	Simulate the past, present, and future	Befriend the machines	Period
behavior	Join WhatsApp groups	Befriend the machines	Cohort
behavior	Create virtual reality art	Befriend the machines	Cohort

VRB		performance zone	age-cohort-period
behavior	Use VR to scale personal reach	Befriend the machines	Cohort
behavior	Develop addiction to YouTube	Befriend the machines	Cohort
behavior	Use Udacity to learn Unreal and Unity (AI&VR)	Befriend the machines	Cohort
behavior	Teach myself coding	Befriend the machines	Cohort
behavior	Use documentation to learn	Befriend the machines	Cohort
behavior	Teach people about larger theoretical frameworks underlying technology	Befriend the machines	Period
behavior	Play with new tech in new ways	Befriend the machines	Cohort
behavior	Invent & secure patents	Befriend the machines	Period
behavior	Get a degree in smart home tech	Befriend the machines	Period
behavior	Lead with actions to teach others by example	Build your crew	Age
behavior	Be part of a collective	Build your crew	Period
behavior	Teach WhatsApp classes	Build your crew	Cohort
behavior	Create a start-up	Build your crew	Cohort
behavior	Create challenges for others to solve	Build your crew	Cohort
behavior	"Juice people:" learn all you can from a conversation	Build your crew	Cohort
behavior	Get roommates	Build your crew	Cohort
behavior	Engage others in prototyping	Build your crew	Cohort
behavior	Use scenes to create venues for conversations	Build your crew	Cohort
behavior	"Use people" in search of an aesthetic experience	Build your crew	Cohort
behavior	Create Facebook page for regional makers	Build your crew	Cohort
behavior	Apprentice with an apprentice of famous DJ	Build your crew	Period
behavior	Engage family and partners in cooperative enterprises	Build your crew	Period
behavior	Seek out like-minded people	Build your crew	Age
behavior	Activate local communities with shared affinities	Build your crew	Period
behavior	Triage roles to build a team with the skills you need	Build your crew	Cohort
behavior	Learn by doing and teaching	Build your crew	Age
behavior	Build a film community as a way to learn film-making	Build your crew	Cohort
behavior	Categorize networks contacts by learning categories	Build your crew	Cohort
behavior	Learn performance arts in collective	Build your crew	Period
behavior	Learn how to conduct a book tour	Build your crew	Period
behavior	Use band to develop emotional intelligence	Build your crew	Period

VRB		performance zone	age-cohort-period
behavior	Host art drawing night	Build your crew	Period
behavior	Create a zero-waste cooperative of women I meet online	Build your crew	Period
behavior	Start with observation followed by internalization	Make sense	Age
behavior	Stretch outside my comfort zone to use discomfort as a way to understand the world	Make sense	Age
behavior	Seek to understand human motivations and behaviors	Make sense	Age
behavior	Find the harmony and coherence in a situation to experience "the narrative"	Make sense	Period
behavior	Engage in route-finding	Make sense	Cohort
behavior	Write and create performance art	Make sense	Period
behavior	Reflect on my sequential learning paths	Make sense	Cohort
behavior	Write down everything and analyze afterwards	Make sense	Age
behavior	Formulate imagination challenges (such as "buuild a castle out of plants")	Make sense	Cohort
behavior	Monitor what's trending on social media	Make sense	Cohort
behavior	Keep a "failure notebook" to learn from mistakes	Make sense	Age
behavior	Strive to be polymath	Make sense	Period
behavior	Keep 4 different notebooks to capture and categorize different lines of thought	Make sense	Age
behavior	Create focused mental simulations of possibilities	Make sense	Period
behavior	Verify information with multiple articles, talking to people, checking science sources and doctor friends	Make sense	Period
behavior	Teach emotional intelligence through scuba diving	Make sense	Period
behavior	Research body movement as a form of knowledge	Make sense	Period
behavior	Promote mediated conversations among friends	Make sense	Period
behavior	Write a book (on youth culture at age 15)	Make sense	Period
behavior	Transcend temporal cultures by creating "scenes" from historic eras	Make sense	Period
behavior	Pursue unexpected intersecations of disciplines, such as quantum physics + memory	Make sense	Period
behavior	Run alternative personal scenarios	Make sense	Age
behavior	Use journaling to understand my world	Make sense	Age
behavior	Emphasize upcycling and remix in art	Keep it going	Period
behavior	Find ways to rejuvenate myself	Keep it going	Period

VRB		performance zone	age-cohort-period
behavior	Listen to all sides in a discussion	Keep it going	Period
behavior	Create productive feedback loops from lived experience	Keep it going	Age
behavior	Focus on mental health	Keep it going	Period
behavior	"Echarle ganas" —effort & self-motivation	Keep it going	Age
behavior	Avert a bad scenario	Keep it going	Period
behavior	Blend formal and informal learning resources	Keep it going	Period
behavior	Get back to the land	Keep it going	Period
behavior	Practice a growth mindset	Keep it going	Age
behavior	Pursue work in cycles—commercial work in order to pursue personal passions	Keep it going	Cohort
behavior	Teach tolerance and acceptance as the new leadership	Keep it going	Period
behavior	Start a nonprofit for mentoring immigrants	Keep it going	Period
behavior	Use stranded assets to improve others' lives	Keep it going	Period
behavior	Teach myself making to make a living by teaching making online	Keep it going	Cohort
behavior	Live on your own from a young age as an explicit learning strategy	Keep it going	Age
behavior	Tutor at a juvenile detention center	Keep it going	Period
behavior	Incorporate empathy into design	Keep it going	Period
behavior	Build the "cultura remix"	Keep it going	Cohort
behavior	Leverage "trash" in the local enviornment to create personal and social value	Keep it going	Cohort
behavior	Become an eco-maker	Keep it going	Period
behavior	Be resourceful with people and things around you	Keep it going	Cohort
behavior	Push boundaries intentionally	Learning to learn	Age
behavior	Pursue education for stable future job (iron bowl)	Learning to learn	Age
behavior	Use apps to teach myself outside of educational systems	Learning to learn	Cohort
behavior	Pursue multiple degrees and channels for self-awareness (including sports and drugs)	Learning to learn	Cohort
behavior	Freelance as a way to earn while learning	Learning to learn	Cohort
behavior	Turn adversity into learning	Learning to learn	Period
behavior	Fail in order to learn	Learning to learn	Cohort
behavior	Take a gap year	Learning to learn	Cohort
behavior	Change my environment	Learning to learn	Cohort

VRB		performance zone	age-cohort-period
behavior	Engage in "safe" rebellion	Learning to learn	Age
behavior	Drop out of high school or college	Learning to learn	Age
behavior	Push back on norms, tradition, and status quo	Learning to learn	Age
behavior	Autodactición—teach myself	Learning to learn	Period
behavior	Inspire myself	Learning to learn	Age
behavior	Cultivate a sense of personal agency	Learning to learn	Period
behavior	Manage my energy	Learning to learn	Age
behavior	Manage my time	Learning to learn	Age
behavior	Be intentional about my life and my learning	Learning to learn	Period
behavior	Resist pressure to finish a degree	Learning to learn	Cohort
behavior	Block off explicit time for different types of work	Learning to learn	Cohort
behavior	Leverage Asperbers for analytical and creative activities	Learning to learn	Period
behavior	Pursue formal pathways to infer status	Learning to learn	Period
behavior	Use the educational system while secretly having very different paths in mind	Learning to learn	Period
resource	Real vs. fake products	Make yourself known	Period
resource	Personal appearance products (eg., hair color)	Make yourself known	Age
resource	Comedy clubs as a venue for self-expression	Make yourself known	Cohort
resource	50,000 Instagram followers	Make yourself known	Cohort
resource	3 seconds to judge a person	Make yourself known	Cohort
resource	Sprout Social (brand marketing website)	Make yourself known	Cohort
resource	Social network infrastructure	Befriend the machines	Cohort
resource	Online platforms & forums	Befriend the machines	Cohort
resource	Index of learning resources	Befriend the machines	Cohort
resource	YouTube University	Befriend the machines	Cohort
resource	TV shows (especially artistic and creative shows)	Befriend the machines	Cohort
resource	Data as a tool for social understanding	Befriend the machines	Cohort
resource	Drugs	Befriend the machines	Period
resource	Expert videos, talks, podcasts	Befriend the machines	Cohort
resource	Mobile payment platforms	Befriend the machines	Cohort
resource	Two-way video virtual office hours	Befriend the machines	Cohort
resource	Wifi	Befriend the machines	Cohort
resource	Electrical power	Befriend the machines	Period

VRB		performance zone	age-cohort-period
resource	Technical documentation	Befriend the machines	Cohort
resource	Facebook Live classes	Befriend the machines	Cohort
resource	3D printing tools	Befriend the machines	Cohort
resource	Maker spaces	Befriend the machines	Cohort
resource	Mobile phone	Befriend the machines	Cohort
resource	Spaces and places	Build your crew	Cohort
resource	Elders	Build your crew	Age
resource	Digital money transactions	Build your crew	Cohort
resource	The city	Build your crew	Period
resource	Bridges & border crossings between social worlds	Build your crew	Period
resource	Community hubs & groups	Build your crew	Period
resource	Contests	Build your crew	Period
resource	Global online communities	Build your crew	Period
resource	VR hub	Build your crew	Cohort
resource	VR to scale globally	Build your crew	Cohort
resource	Six Seconds: emotional intelligence network	Build your crew	Cohort
resource	YouTube as a companion to overcome loneliness	Build your crew	Period
resource	Creative and performance spaces	Build your crew	Period
resource	Apartment complex with a maker space	Build your crew	Period
resource	Validating narratives	Make sense	Period
resource	Generational intervention & translation	Make sense	Age
resource	Storytelling opportunities (as a means of self-expression)	Make sense	Period
resource	Restaurants & bars as learning environments	Make sense	Cohort
resource	Quiet places	Make sense	Period
resource	Adults who believe in me	Keep it going	Age
resource	Mentors	Keep it going	Age
resource	Trash	Keep it going	Period
resource	New geographies	Keep it going	Period
resource	Family financial means	Keep it going	Age
resource	Time	Keep it going	Period
resource	Scholarships	Keep it going	Age
resource	Free educational infrastructure	Keep it going	Age
resource	Parental advocacy	Keep it going	Age

VRB		performance zone	age-cohort-period
resource	The privilege of privilege	Keep it going	Period
resource	Personal role models	Keep it going	Age
value	Comfort with having multiple public personas	Make yourself known	Cohort
value	Personal "presence" (not personal "voice")	Make yourself known	Cohort
value	Authenticity	Make yourself known	Period
value	Celebrity	Make yourself known	Cohort
value	Inner work	Make yourself known	Age
value	Self-knowledge	Make yourself known	Age
value	Self-awareness	Make yourself known	Age
value	Self-improvement through diversity of conversations	Make yourself known	Age
value	Personal agency	Make yourself known	Age
value	Responsibiiy to share what I know with others	Make yourself known	Cohort
value	Artistic integrity	Make yourself known	Cohort
value	Spectrums of identity	Make yourself known	Cohort
value	Respect (vs. fame)	Make yourself known	Cohort
value	Human GANs (human adversarial networks)	Befriend the machines	Period
value	Real social contact (vs. social media, which is depressing)	Befriend the machines	Period
value	Open systems (eliminate IP)	Befriend the machines	Cohort
value	Simulation as a teaching tool	Befriend the machines	Cohort
value	Conversation as a social change strategy	Befriend the machines	Period
value	Empathic design	Befriend the machines	Period
value	Future of tech-enabled freedom where I don't have to work	Befriend the machines	Cohort
value	Robots that can do everything for us	Befriend the machines	Cohort
value	Reliability--"show up"	Build your crew	Age
value	Cooperatives & collectives	Build your crew	Cohort
value	Family as community & community as family	Build your crew	Age
value	Ways to avoid loneliness	Build your crew	Period
value	Creation and "making" something	Build your crew	Cohort
value	Creativity	Build your crew	Cohort
value	Open communities	Build your crew	Cohort
value	Everyone as a source of practical information	Build your crew	Cohort
value	Giving people a good time	Build your crew	Period
value	Collaborative learning in large systems	Build your crew	Cohort

VRB		performance zone	age-cohort-period
value	Community spaces	Build your crew	Period
value	Systems thinking	Make sense	Period
value	Alignment with regional or national vision (larger vision)	Make sense	Period
value	"Experiences" more than "things"	Make sense	Period
value	Direct connection between learning and work (or other application of knowledge)	Make sense	Period
value	Curiosity	Make sense	Age
value	Openness to new frameworks and models	Make sense	Age
value	Openness	Make sense	Cohort
value	Ability to hold conflicting concepts to understand systems	Make sense	Period
value	Youth talking to youth to teach the world	Make sense	Period
value	Artistry	Make sense	Cohort
value	Imagination	Make sense	Cohort
value	Intersectional thinking/acting	Make sense	Period
value	Resilience from systems thinking	Make sense	Period
value	Radicalism	Make sense	Period
value	A science of humanity (based on genomics)	Make sense	Period
value	Every experience as both a teaching and learning experience	Make sense	Cohort
value	Critical analysis	Make sense	Period
value	Optimism as a strategy	Keep it going	Cohort
value	The greater good (overcoming self-interest)	Keep it going	Cohort
value	Global + local perspectives	Keep it going	Period
value	Focus	Keep it going	Cohort
value	"Granito de arena"--doing my part to make the world better, no matter how small that part is	Keep it going	Period
value	Nature	Keep it going	Period
value	Meditation	Keep it going	Period
value	Inner peace	Keep it going	Period
value	Climate change strategies based on collective living	Keep it going	Period
value	Home schooling	Keep it going	Cohort
value	Sharing for sustainability	Keep it going	Period
value	Responsibility to others if you "make it" ("big man" model)	Keep it going	Cohort

VRB		performance zone	age-cohort-period
value	Creating infrastructure for other coming up behind me	Keep it going	Cohort
value	Changing the educational system	Keep it going	Period
value	End of classism (learning should not be tied to class system)	Keep it going	Period
value	Overcoming corruption	Keep it going	Period
value	Innovation based on the art of remixing	Keep it going	Cohort
value	Appreciation of opportunities that parents didn't have	Keep it going	Cohort
value	A job that supports me for life	Keep it going	Period
value	Learning for the sake of learning	Keep it going	Age
value	Money and power FOR SOMETHING (ability to make an impact)	Keep it going	Period
value	A new future	Keep it going	Period

INSTITUTE FOR THE FUTURE

Institute for the Future (IFTF) is an independent, nonprofit strategic research group with 50 years of forecasting experience. The core of our work is identifying emerging discontinuities that will transform global society and the global marketplace. We provide organizations with insights into business strategy, design process, innovation, and social dilemmas. Our research spans a broad territory of deeply transformative trends, from emerging media and digital technology to the workplace and human identity. IFTF is based in Palo Alto, California.

THE MISK FOUNDATION

Prince Mohammed bin Salman Bin Abdulaziz Foundation (the MiSK Foundation) is a nonprofit, philanthropic foundation established by H.R.H. Crown Prince Mohammed bin Salman to discover, develop and empower Saudi youth to become active participants in the knowledge economy. MiSK specifically focuses on four key areas: education, creative and digital media, technology, and culture and the arts. MiSK pursues this agenda both through its own programs, and through partnerships with local and global organizations.

ACKNOWLEDGMENTS

We are deeply appreciative of the many local partner organizations, individuals, and interviewees in each global city that made our research possible. We'd like to especially thank our local affiliates who helped us discover individuals and organizations that signal the future:

Patricio Buenrostro Gilhuys
Alan Don Jones
Jack O'Dwyer
Jesse Oguntimehin
Pelumi Oguntemehin
Silas Okwoche
Christina Rupp
Subuhi Yousuf

In addition, this research was piloted in multiple locations in Saudi Arabia, and we extend our thanks to the organizations there who assisted us:

Badir
Glowork
KAEC Education Team
King Abdulaziz Center for World Culture
Qotuf
SABIC
Vibes Co-Working Space

PROJECT DIRECTOR

Othman Almoamar

PROJECT TEAM

Sarah Alkhedheiri
Ravi Bendi
Sultan Almusallam
Naif Alsuwailem