TRANSFORM

THE HON. FELIX MUTATI
Minister of Technology and Science
Republic of Zambia

DOREEN MBHALATI-MASHELE
CEO, Derliz Investments

THE DIGITAL EAGLE HAS LANDED

"IF YOU'RE DIGITALLY ILLITERATE, YOU'LL BE LEFT BEHIND"

JUNE
2023

#DigitalSkillsShortage

HUAWEI

Talent development

IN THIS ISSUE,
WE LOOK AT THE SHORTAGE OF DIGITAL SKILLS.

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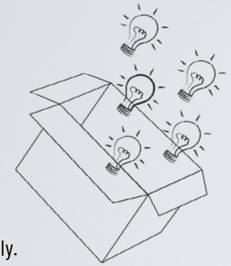
Editor's Note:
THE INFECTIOUS BUG YOU NEED TO CATCH



"No," said the TSMC executive decisively.

"No, no, no," he added. "The solution is still far away."

Not that the repetition was required to drive home the point; his own emphatic sense of pessimism had been clear enough from the first word. The question that prompted this downbeat reply from the world's most advanced semiconductor foundry was:

"Are you confident that you're starting to solve the digital skills shortage?"

Not that TSMC is alone. Every business leader at the industry event at which we met recently appeared to bemoan the same issue. The dearth of tech skills—from entry-level to advanced, and particularly among girls and women—is a core challenge facing almost every tech company worldwide.

And that's why it's the theme of this edition of *Transform*, Huawei's global thought leadership magazine. The skills required to maintain the ongoing innovation revolution are in continuously short supply. As the TSMC exec explained, "The tech industry is booming so everyone is fighting for the same specialized experts."

This skills logjam produces a digitalization logjam with potentially damaging economic and societal impacts.

In this issue, Zambia's Technology Minister, the Honorable Felix Mutati, told me that the "digitally illiterate" would be left behind: "If you want to build the future for yourselves, you've got to embrace technology. Whether you like it or not, digital is infectious. It is a bug without a cure. It will catch you."

The minister said there was a fear of digital among some students and that Zambia was also urgently tackling teachers' "inadequate" skills.

German entrepreneur Miriam Theobald agrees that educating the educators is critical.

"Students will ask if education is relevant to them or not. Universities have to find answers for that. They'll need to teach skills that are super relevant and can be applied immediately after graduation."

Professor Pedro Santa-Clara, a Portuguese social entrepreneur and economist, pointed the finger at education systems more widely. He accused them of still being stuck in an 18th century assembly-line approach.

"There's a mismatch between what the education system is producing and what is required," he said. "We've succeeded in shutting down the two mechanisms that create quality and value in any industry, which are competition and innovation."

Laurie Pearcey, Associate VP at The Chinese University of Hong Kong, insists that universities such as his are adapting rapidly: "ChatGPT caused a moment of existential panic among academics... But now, universities and schools are thinking about how we can embed this technology into our educational model. We need to cultivate future leaders who can use it as an enabler, rather than something to be scared of."

David Atchoarena, until recently Director of UNESCO's Institute for Lifelong Learning and now Executive Director at the World Health Organization (WHO) Academy, urged us not to neglect the power of inter-generational learning, passing knowledge and skills down from older workers to younger colleagues. In a conversation with the general manager of Huawei's global training center, Jason Liu, they both agreed that developing the skill of learning autonomy was essential to enable constant reskilling and upskilling, regardless of age.

In Europe, where 2023 is officially the European Year of Skills, a Huawei-sponsored report by EY suggests a skills mismatch is as problematic as the skills shortage, with even ICT professionals often proving underqualified. That combined lack of skills is identified as the main barrier to investment.

One skill that perhaps cannot be taught is a dogged determination to learn. That's what helped Doreen Mbhalati-Mashele transform herself from a grocery store clerk to the CEO of her own 500-person company.

Hers is just one of the many stories you'll read in this month's edition. We hear from academics, policymakers, industry leaders, and technologists: so there's certainly no shortage of expertise to explore the skills challenge. We'll likely need all of them, working together, to help turn that definitive "no" at the start of this note into, at least, a tentative "yes."

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DON'T BE AFRAID TO BE DIGITAL

Interviewed by Gavin Allen

Honorable Felix Mutati

An interview with Zambia's Minister of Technology and Science, the Honorable Felix Mutati.

> "You can't begin to train somebody who is totally reluctant to be trained."

Gavin Allen: How is Zambia responding to the global talent gap?

Felix Mutati: You're right, it's a global challenge, and from an African and a Zambian perspective it's even bigger. Last year, we carried out an assessment of our digital preparedness as an economy. We found that we are at just 54% preparedness.

But most of that was around building the infrastructure. When you looked at the digital skills pillar, we were at 34%. That gives you the extent of the heavy lifting we've got to do.

Key challenges are getting connectivity right across the country, devising the infrastructure to support the delivery of skills, and addressing the inadequacy of those who are supposed to impart the skills to kids and everybody else.

But what I find much more interesting is the issue of just being afraid to be digital. You can't begin to train somebody who is totally reluctant to be trained. And that is a bigger problem that we have got to solve, particularly when it comes to girls: the suspicion of digital – being afraid and hanging onto the status quo.

Gavin Allen: What are the societal and economic impacts of so many girls and women not getting those skills?

Felix Mutati: The impact is telling. You're getting kids who come out of the education system digitally illiterate. In most of our schools, absence of devices such as computers is obviously a major challenge. But much more critical is to have adequate and well-trained teachers who can impart those skills at an early age. So, working with colleagues at the Ministry of Education, and supported by one of the UN bodies, this year we are re-training about 3,500 teachers across the country, equipping them with the tools they need to impart the skills to the kids. We are connecting all the secondary schools in Zambia to the internet. And all the fees required to be paid to go to secondary school have been extinguished. So, it's free education.

Interestingly, we are seeing that most transactions now, like money transfers, are being done digitally.

People are upgrading their skills. They have no choice but to retool themselves in order to access government services, banking and so on. We are narrowing the spaces where you can avoid digital.

We're also doing something on the innovation side. Yesterday, we were giving an award to a young lady who has developed a payment platform for peer-to-peer lending and investment, cutting out the banks in the middle. If you invest, you get higher returns, because there's no bank in between.

She launched the platform a year-and-a-half ago with only 100 people on the books. By yesterday she'd got over 25,000. That exponential growth is part of the exposure you need, to demonstrate that digital actually benefits you and to encourage people to say, "I'm going to join this digital world."

Two weeks ago, after one of our big regional banks in Africa advertised for the best innovation ideas, they had over 300 young kids pitching to compete for five places. It just shows you what a great opportunity we can give to people. When we celebrate these innovators – real people you're able to connect to – we are publicly sending a message to everybody that it pays for you to be skilled because you can make money. It is hard work. It requires patience. It requires persistence. But at the end of the day, you'll be able to reap the dividends.

> **In the innovation space, you cannot succeed without public-private partnership.**

Gavin Allen: How important are public-private collaborations in encouraging people to innovate, such as President Hakainde Hichilema's Talent Innovation Fund sponsored by Huawei?

Felix Mutati: In the innovation space, you cannot succeed without public-private partnership.

It combines the strength of government as an enabler, with the resources, creativity and speed of the private sector. The HH Fund gives $1,000 each to 50 kids, and that type of inspiration is very contagious and pulls a lot more people into the digital space. In addition, we're creating a digital hub sponsored by Huawei to nurture and train this talent.

Government alone doesn't have the capability and resources to deliver innovation in-house. But our intention is that the first center of excellence, this innovation hub, must deliver appropriate technology. First, deliver Web 3.0 and second, artificial intelligence and the tools that are required, because that's where the future is. And working with Huawei, I think that is a cup of tea.

But equally important is the opportunity this scholarship gives for those talented kids to go and be trained in China with the best. When they do come back, goodness basically rubs off. So, it's an outlet of hope: a practical lift-off of talent. And the fact that it's been endorsed by the president gives it much more impact.

Gavin Allen: Does having these partnerships with companies such as Huawei make you feel optimistic about Zambia's ability to close this digital skills gap?

Felix Mutati: It gives me confidence. Confidence derived from the numbers who applied to join the competition – huge, huge numbers. Confidence that they are able to see practical outcomes if the kids are given $1,000 each. Confidence that the very good ones will be taken into China for further in-depth learning. It gives me confidence that we are on the right track, that we have a partner that is clear in their direction and putting back into the economy and lifting up our innovation talent. We haven't had this type of initiative before – it's the first one that is delivering on a practical basis. We have had intentions and plans, but this has landed. The digital eagle has landed and it's about to fly.

> **We are narrowing the spaces where you can avoid digital.**

> **We have had intentions and plans, but this has landed. The digital eagle has landed and it's about to fly.**

Gavin Allen: Finally, what is your message to young Zambians out there on the importance of being the skilled workers of the future?

Felix Mutati: My message is very clear. In the future, if you are digitally illiterate you'll be left behind. My message to the kids is that the jobs of tomorrow are going to be digital. My message to the kids is that if you want to build the future for yourselves, you've got to embrace technology, and you can't embrace technology if you don't have the tools that are available through digital. So whether you like it or not, digital is infectious. It is a bug without a cure. It will catch you.

“I WANT TO SEE MYSELF AS A PART OF *CHANGING* SOUTH AFRICA”

Doreen Mbhalati-Mashele
CEO, Derliz Investments

Born and raised in the small village of Myakayaka in Limpopo, South Africa, Doreen Mbhalati-Mashele graduated from university with a Bachelor of Science degree in Mathematics and Chemistry in 2001.

Despite her qualifications, she couldn't find work. The economy was bad, and she lived in a rural area where jobs were scarce.

So was internet connectivity, which made job-hunting harder. She checked newspaper ads and mailed her resume to prospective employers.

But the post was unreliable. “You don't even know if they'll receive your letter,” she says.

Staying at home was frustrating, especially with a STEM degree that everyone assumed would help her land a job right away.

“People laughed at me. They said, ‘Look at that girl. She studied math and science, but now she can't get a job. Why didn't she become a teacher, or a nurse?' I was depressed, always sleeping. I didn't even want to go out.”

What made it worse was knowing that, if she'd had access to the internet, she'd have boosted her odds of finding something - the first glimmer in her mind of why connectivity was important.

Doreen Mbhalati-Mashele

She worked as a grocery-store checkout clerk before starting her own 500-employee company installing fiber in South African homes.

“I want to be one of the people bringing technology to South Africa.”

Her father worked as a butcher at Pick and Pay, a big local retail chain. He helped her get a job packing groceries. Eventually, in 2006, she landed a position in Johannesburg at Transnet, a freight company. But she remained fascinated by connectivity.

What are you guys doing?

"One morning, coming off the night shift, I noticed some guys working next to my house. They said they were doing a project for the local telecom company, installing optical fiber."

Wanting to know more, Doreen asked to see their supervisor. She met him, but didn't get much information. She then got contact information for the owner of the company that was working on the project and received a fuller explanation of what network connectivity was all about.

> **Today, Doreen's company employs 500 people.**

"I said, 'I'm interested in this. I want to be one of the people bringing technology to South Africa.'"

Although she had a full-time job and was working nights, Doreen wanted to do something new. The owner of the company she was talking to was a contractor for Telkom, one of South Africa's largest providers of telecommunications services. He said, "We can give you a small project, but you need to get skilled, experienced technicians to do the work. Do you know anyone?"

She did not. "I told them, 'I need to use your guys. They can train my guys.' And the CEO was like, 'You want me to give you work, and now you also want me to give you my staff?'" Doreen laughs. "They said they'd give me two guys. I needed three, plus tools, plus a car. But within four days, I had everything, and I went back to them and said I was ready. They said 'Wow, you really want this thing.' I said, 'Yes, I do.'"

Doreen's men had done construction, but they had never laid fiber. Doreen told them, "I'm relying on you."

That first job as a subcontractor in 2012 went well, and the company started giving Doreen contract work doing maintenance and repair to damaged telephone lines. But eventually she decided maintenance was boring. "They weren't giving me enough of the high-end work. I wanted to work on optical fiber."

"My first bid, I didn't win. They saw that I didn't know anything, so they rejected me. I eventually did get to work on fiber projects, but not before I failed at least three times."

Doreen realized she needed to get personally involved in the work, so she negotiated with her employer, Transnet, to work only nights. That left her days free to be on site, supervising workmen who were laying the cables to bring connectivity to local homes.

Telkom had contracted this work to Huawei, which had subcontracted it to several local companies. These, in turn, passed part of the work on to Doreen.

Huawei eventually noticed that Doreen's name kept popping up on their projects. They also noticed that at Doreen's sites, work was done on time, and to a high standard of quality.

They asked why I was sleeping in the car ...

One morning in 2015, after coming off the overnight shift, Doreen drove to a site and fell asleep in her car. She figured her crew would be more diligent if the boss was nearby, even if she was asleep.

Some Huawei people showed up at the site. Doreen awoke with a start, expecting them to be angry with her for sleeping on the job.

"But I could see in their faces that they were feeling pity for me," she said. "They asked why I was sleeping in the car, why I hadn't simply gone home after working all night. I said, 'When I go home, my guys don't work! So I do this every day.'"

Huawei asked who Doreen worked for, and she named five companies – all of them Huawei subcontractors. "The Huawei people said, 'You're doing work for five different companies. Why don't you just get your own contract with us?' I said, 'I guess because I don't qualify.'"

But Huawei wasn't sure this was true. Through an interpreter, Doreen talked to a Mandarin-speaking Huawei executive from China. He asked, "If we can give you a contract, will you work for us?"

> **Huawei asked who Doreen worked for, and she named five companies – all of them Huawei subcontractors.**

By now, you can probably guess her answer.

Huawei gave Doreen five trial sites. It was Christmas holidays, and she didn't leave the sites until the work was completed in January. Not long after the holiday ended, Huawei gave Doreen a contract and a purchase order. Soon she was managing dozens of sites.

Later, Huawei consolidated its supplier base from 60 vendors to five. Doreen's company made the cut. Finally, Huawei appointed her to be one of the main contractors supplying fiber-to-the-home (FTTH) in the Gauteng region.

Today, Doreen's company employs 500 people. "My goal is to make life better by providing WiFi connections used for communications, transport, connectivity—and ultimately eliminating waste," she says. "I want to see myself as a part of changing South Africa from the old, traditional ways to more advanced ones."

This change isn't just about better tech, it's about using tech to protect the planet. "We'll become more environmentally aware," she says. "We will change our lifestyles, reducing pollution and waste, and enhancing productivity. I want to see South Africa change and go green, so people are leading more environmentally friendly lives."

THREE LEVELS OF TALENT DEVELOPMENT AND HOW THEY CONNECT

David Atchoarena

A conversation with the former Director of the UNESCO Institute for Lifelong Learning and now Executive Director at the UN's World Health Organization Academy.

Young talent is, of course, essential. But it's also important to look at the inter-generational dimension of learning - how you pass knowledge, skills, and culture from older workers to younger ones. This develops in young people the capacity to be an independent learner, and learn throughout one's life.

We are adopting a three-dimensional approach, intervening at three levels. First, when it comes to policy development, we work with countries to assist them in developing comprehensive, holistic lifelong learning policies, including looking at the role of technology in facilitating and developing access to lifelong learning.

The second component is about building capacity. In particular, we have ministries of education and other concerned ministries, but we also have civil society. We do that through the development of learning materials and the organization of capacity development programs, both in person and online. This is precisely where we are developing this new partnership with Huawei, and we are glad to benefit from not only the expertise in technologies of Huawei, but also the expertise in terms of ICT Academies and the expertise that you have in organizing such programs.

Finally, the third level is research and knowledge production. To give you an example, we are currently finalizing research on the use of emerging technologies for adult education. That includes artificial intelligence, VR, AR, as well as blockchain. We are looking at how new technologies are changing the game in the field of adult education and lifelong learning.

Scan QR code to watch the full interview

ACADEMIA, INDUSTRY AND GOVERNMENT:

THE ESSENTIAL ALLIANCE TO TACKLE THE GLOBAL TALENT GAP

Pallavi Malhotra

Director, Huawei Talent Alliance, Europe

Gavin Allen: Can I just start by asking you: Is there a digital skills gap?

Pallavi Malhotra: Governments, vendors, and a range of independent and detailed reports all agree we have a global digital skills shortage. And the gap continues to increase. Even professionals working within the digital sector need to upskill in line with technological advances. So, yes, there is a lack of basic digital skills, but due to rapid development and new technologies, we also have a shortage of cutting-edge skills within the digital sector.

Gavin Allen: But why is there such a skill gap?

Pallavi Malhotra: It's not simple to get staff trained at the same rate as technologies develop. Every company has to carefully balance business and staff training requirements. Due to the lack of qualified digital professionals, businesses find it difficult to recruit people with the required skills. Most businesses invest heavily in

> **"Even professionals working within the digital sector need to upskill."**

training, but face a retention challenge as, once trained, their staff tend to move companies for higher salaries.

Commercial training can be expensive, and for a range of reasons, people don't necessarily have time to attend university or college. If industry knowledge was readily available and affordable and individuals could study flexibly to suit their lifestyle, then it would be much easier for the talent pool to grow.

Gavin Allen: So how can industry help more?

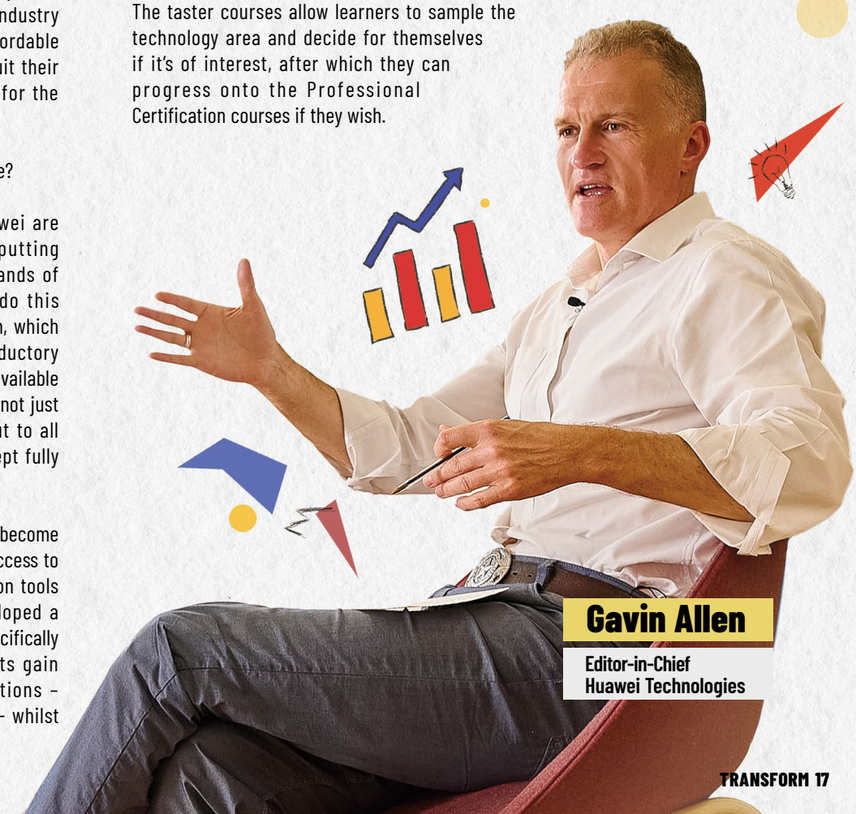
Pallavi Malhotra: Companies like Huawei are addressing some of these issues by putting industry knowledge directly into the hands of teachers and students. We currently do this through our Huawei ICT Academy Program, which offers technology training at both introductory and certification levels. All resources are available online too, which opens up the courses to not just computing and engineering students but to all students. They're accessible 24/7 and kept fully updated by Huawei.

All universities and colleges can register to become a Huawei ICT Academy member and gain access to the free learning resources and simulation tools for practical lab exercises. We've developed a complete and robust talent eco-system specifically for academia in the hope that students gain globally recognized industry certifications – alongside their academic qualifications - whilst they are at university or college. These certifications inform employers about the skills and knowledge gained by the students and that opens up job opportunities when the young people apply for work. We have over 2000+ ICT academies globally, with 200+ located within the Europe Region offering Huawei Certification training to their students.

Gavin Allen: What areas of expertise and skills does the Academy focus on?

Pallavi Malhotra: We offer a range of training courses which include Artificial Intelligence, IoT, OpenEuler, OpenGauss, Big Data, Cloud Computing to name a few. Our courses are selected based on the technology's maturity in the market and upcoming technologies with a growth trend where more jobs and new jobs will emerge.

The taster courses allow learners to sample the technology area and decide for themselves if it's of interest, after which they can progress onto the Professional Certification courses if they wish.



Gavin Allen

Editor-in-Chief
Huawei Technologies

> **Technology is developing at such a rapid rate that to a certain extent we will always be playing catch-up.**

Gavin Allen: When it comes to filling this skills gap, are educational institutions playing catch up?

Pallavi Malhotra: Yes, I would definitely say they are. Educational institutions don't have the flexibility to change course structures quickly. It's a lengthy process and has to go through many stages. By the time course changes are approved, technologies have moved on, so academia is still playing catch-up.

There is also a lack of teaching staff able to deliver training in up-coming technologies, similar to professionals working within the digital sector.

Many lecturers spend hours researching and creating their own materials for teaching, but this also creates inconsistency across the board.

Gavin Allen: Do we have to educate the educators as well?

Pallavi Malhotra: Yes, everyone requires training, and everyone needs to keep updated on the latest technological developments.

Gavin Allen: Why is there a particular shortage of girls and women with those digital skills? And again, what can companies such as Huawei do to address that problem?

Pallavi Malhotra: Half of the world's population is female - a huge resource pool to tap into - but I don't believe girls are encouraged to study STEM subjects at school. And by the time they move on to either college or university, they lack confidence in moving into STEM.

Huawei actively addresses the gender imbalance through various initiatives, such as showcasing female employees in technical and managerial roles, and encouraging female Huawei employees to take on higher-level management roles. In Africa, Huawei supported female business owners in learning digital technologies to support and grow their businesses, and in Bangladesh, Huawei supported a "Technology Bus," which visited remote villages and provided digital training to women.

I'm passionate about getting young women into the digital sector. When I started my career in telecommunications engineering in 1976, after the UK sex discrimination act of 1975, everyone thought the ball would start rolling and more women would take on male-dominated job roles. But here we are 47 years later saying, "Where are the women?"

We still have a lot more work to do to encourage women into STEM.

Gavin Allen: What would you say to young women about tech careers and digital skills today?

Pallavi Malhotra: If I could make it in the 70s and 80s, when girls were actively discouraged from taking STEM subjects with a lack of support from teachers, career officers, and society in general, and with no female mentors to turn to for support and advice of any kind... it was very, very difficult. Luckily for me, my parents were fantastic; they gave me all the encouragement I needed to persevere and not give up at any stage, and my father fought for me to be allowed to take STEM subjects at school. Without their support, I may not have made it. Who knows?

I would say we need more encouragement for girls at all levels and by all key people in their lives: parents, teachers, careers advisors, mentors, and especially from women already working in STEM.

Gavin Allen: So, you believe there's an onus on companies to take the lead here? They can't leave the digital skills ecosystem to governments or educators; they've got to get on the front foot themselves?

Pallavi Malhotra: Yes, absolutely. Employers need to take the lead and this is exactly what most large vendors are doing now.

Vendors are investing in Academy-type programmes to make resources available to academia and tapping directly into the student population in order to increase the digital talent pool.

There is also a requirement to upskill digital professionals, to ensure they're up-to-date with emerging technologies. And to reskill unemployed people and those seeking a career change into the digital sector. We all need to approach this problem from all angles.

Millennials are very familiar with using devices and apps and feel comfortable with technology; it's not just about knowing how to use it but also understanding how it works and being able to troubleshoot and solve problems.

Gavin Allen: Are you confident that we're really addressing this skills gap?

Pallavi Malhotra: I feel optimistic because these issues are now being actively addressed by governments, academia, and industry. Technology is developing at such a rapid rate that, to a certain extent, we will always be playing catch-up. But we will also have a larger digital talent pool and choice for employers.

Gavin Allen: What is your message to policymakers, because a lot of this is probably a long-term investment?

Pallavi Malhotra: Well, I believe governments around Europe have already recognized the need for not just academic skills but also vocational skills at all levels of education for learners aged 14+ at schools, colleges, and universities.

Apprenticeship-type programs were very big in my day. We were able to do our academic studies at college as well as learn on the job in the workplace to gain practical skills and build confidence and ability. These vocational types of programmes worked and now seem to be making a comeback.

For example, in the UK, the new T-level program is a vocational alternative to A Levels and requires learners to complete 315 hours in the workplace gaining hands-on practical skills.

Huawei took five T-Level learners over a 2-year period, due to end in the academic year 2022-23. The placement was successful, and we have received good feedback from both learners and the college staff.

We also invest in our Seeds for the Future program, which takes students to China, helps them understand how a multinational company like Huawei works, and provides technical and management training to support their future career choices.

Gavin Allen: Last question. If you had a magic digital wand and could change one thing in an instant, what would it be?

Pallavi Malhotra: The main thing I would encourage or change is the level of engagement between academia and industry. More collaboration means we could provide the best of both worlds: supporting students into excellent careers within the digital sector and supporting employers with a larger talent pool, with the skillsets they require.

Academia and industry working hand-in-hand is the best way forward.

> **Governments in Europe have already recognized the need for not just academic skills but also vocational skills at all levels of education.**

OVERCOMING THE SKILLS GAP – POLICY CHOICES IN A WORLD COMPETING FOR GLOBAL TALENT

Simon Lacey

Senior Lecturer in International Trade
University of Adelaide

Government leaders often say they want to replicate the world-class innovation ecosystem of Silicon Valley. But it's easier said than done.

Like other locations that have hatched innovative start-ups and technological breakthroughs, Silicon Valley is less a place than a complex interplay between different but complementary factors. There's no magic set of policy prescriptions that guarantees the ability to spawn a thriving tech sector.

Yet there are steps governments can take to help innovation take root and flourish. The most important is to create and maintain institutions of higher learning: places where future generations can obtain the skills needed to thrive in a global economy beset by rapid technological change.

> "There's no magic set of policy prescriptions that guarantees the ability to spawn a thriving tech sector."

Silicon Valley's pool of technical knowledge was initially provided by the engineering schools of nearby universities like Stanford and the University of California at Berkeley. Both went on to establish world-leading computer science and business schools as the tech boom got underway.

But another driver was the fact that Nobel Prize winner William Shockley, founder of Shockley Semiconductor, had grown up in Palo Alto, California. He wanted to move back to the area from Cambridge, Massachusetts, to be closer to his ailing mother, leading him to establish his company in the same town where Stanford is located.

There are other examples of universities and technical institutes making certain locales attractive for the establishment of tech firms that go on to become household names. When Jeff Bezos chose Seattle as the location for an online bookshop called Amazon in 1995, he made the decision partly on the basis of U.S. tax laws.

But there was already a deep pool of tech talent available in Seattle thanks to the presence of older companies like Microsoft and Boeing – which, in turn, had benefited from the presence of institutions such as

> **Create and maintain institutions of higher learning—places where future generations can obtain the skills needed to thrive in a global economy.**

the University of Washington, established in 1861. As with Shockley Semiconductor, Microsoft co-founders Bill Gates and Paul Allen had ties to the Seattle area, leading them to move the company there after initially launching it in Albuquerque, New Mexico.

There are many other examples of innovation clusters forming around universities. Innovation ecosystems in biotechnology, software, and electronics formed around the University of Cambridge in the United Kingdom. Or take Munich, Germany, which has seen a strong technology ecosystem emerge in industries such as automotive, biotechnology, and software, thanks to the presence of the Technical University of Munich and the Ludwig Maximilian University.

But other factors also provided the enabling conditions for the emergence of these ecosystems. In the case of Cambridge, it was various government initiatives and funding programs, such as those provided by Innovate UK (Britain's national innovation agency), the European Union's Horizon programs, and those of other regional development agencies.

Similarly, Munich hosts many well-established global companies, particularly in the automotive, electronics, and aerospace industries. Companies such as BMW, Siemens, and Airbus led to the creation of positive feedback loops between universities and multinational companies.

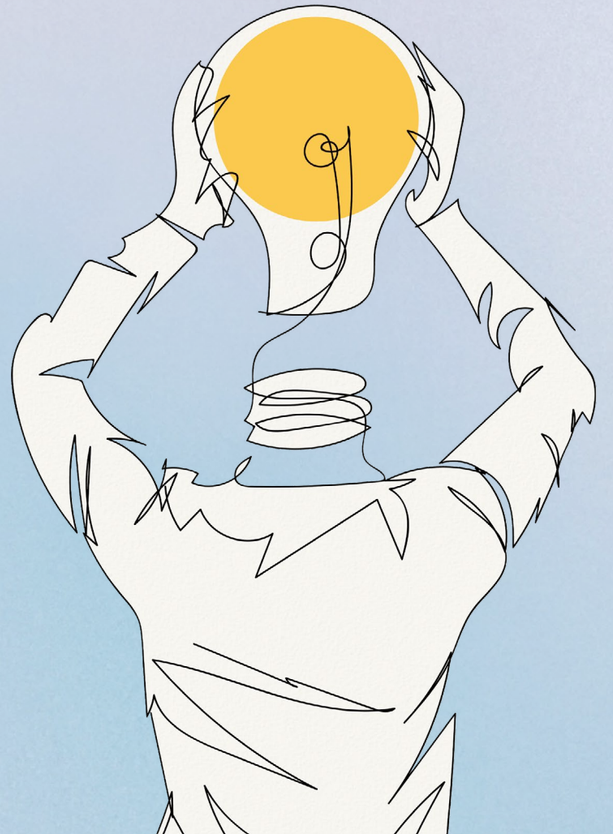
And it didn't hurt that Cambridge and Munich offer a good quality of life, making them more attractive to highly skilled global talent and their families.

This dynamic applies not just in advanced industrialized countries, but in emerging markets as well. For example, the thriving technology ecosystem in Bangalore, India, is centered on institutions such as the Indian Institute of Science (IISc), the Indian Institutes of Technology (IITs), and the National Institutes of Technology (NIT).

In China, Beijing's Zhongguancun district is home to a vibrant technology ecosystem fueled in large measure by its proximity to some of China's oldest and most prestigious universities, including Tsinghua University and Peking University.

Indonesia's thriving app developer community has sprung up around the Bandung Institute of Technology. As a consequence, some of the world's largest technology companies, including Apple and Facebook, have chosen to open R&D centers nearby.

But it's not just in technology that we see this symbiosis of talent pools and entrepreneurial success. Paris is the center of the global fashion industry thanks to prestigious institutes such as École de la Chambre Syndicale de la Couture Parisienne, the Institut Français de la Mode (IFM), and École Duperré. Milan is a global hub for design, particularly in the field of furniture and industrial design, thanks to the presence of institutions such as the Politecnico di Milano, Domus Academy, and NABA (Nuova Accademia di Belle Arti).



For governments looking to replicate these success stories, the lessons provided by other ecosystems are clear:

First establish and fund institutions of higher learning, particularly in those disciplines you're looking to cultivate.

Second, create a business environment and investment climate that make it easy and attractive for entrepreneurs to locate near these centers of learning.

Finally, provide a good quality of life for the tech talent you want to attract, including their families.

Again, this is all easier said than done, and it takes time – usually decades – to accomplish. But for governments with the necessary determination and a long-term time horizon, the rewards are well worth the effort.

> **Provide a good quality of life for the tech talent you want to attract, including their families.**

Want to increase your company's skills base?

PUT OLDER EMPLOYEES TOGETHER WITH YOUNGER ONES

Prof. Dr. Ulrike Fasbender

Prof. Dr. Ulrike Fasbender is Professor of Business and Organizational Psychology at the University of Hohenheim in Stuttgart, Germany. In a recent project with Huawei, she studied knowledge exchange between older and younger generations, surveying more than 21,000 respondents in seven countries.

Prof. Dr. Ulrike Fasbender speaks with Dr. Rene Arnold, VP Public Affairs Strategy at Huawei about her generation research project.

Your research looks at age diversity and digitalization in the workplace. Why did you choose these two themes?

Because they have real-world ramifications. As people live longer, fewer babies are being born. As the world's population structure changes, workplaces will, too. The average age of workers will increase, and consequently, workplaces will become more age-diverse. We need to figure out how companies can leverage this diversity to produce collaboration among age-diverse colleagues.

As the composition of the workforce has changed, so has the way we work. That's largely because of digitalization, which affects what we do and how we do it.

What opportunities will result?

Diversity sparks innovation. Age diversity can be a particularly strong driver of new ideas since employees from different age groups tend to possess their own distinct knowledge.

While older employees often have more professional and industry experience that they can share with younger colleagues, younger employees are more likely to possess knowledge of new technological advances. Organizations benefit greatly from knowledge exchange between employees of different ages.

So, what did you find about the differences in digital technology use between generations?

We learned that age has a tremendous impact on how, and whether, employees use digital technologies. In a research project between my team and Fabiola Gerpott at WHU Otto Besheim School of Management, we found that the closer someone is to retirement, the more their perception of the usefulness of new digital technologies decreases.

This effect is somewhat balanced out by older employees' superior ability to organize their work. So, interestingly, they actually find new technologies at work easier to use than younger employees.

In the coming years, SMEs will struggle to attract new talent. What can they do to retain older employees in these challenging times?

A major challenge that SMEs face is a shortage of skills and talent. With global populations aging, there will be fewer people entering the labor market and more people retiring, which increases competition for talent. Larger companies can promise career stability and personal growth, while SMEs may struggle to guarantee such benefits.

SMEs will have to demonstrate that they care for employees. This could potentially be done by providing training and education, and investing in new technologies that make employees' lives easier and better.

Diversity sparks innovation. Age diversity can be a particularly strong driver of new ideas.

To find out if older employees will embrace new technologies such as artificial intelligence, we put the question to AI's current flavor-of-the-month, ChatGPT.

It coughed up the answers below, which we've edited for concision.

ChatGPT

Can old(er) dogs learn new tricks?

Here are a few factors that can influence the adoption of new technologies by older employees:

Attitude. Employees with a positive and open mindset toward technology are more likely to embrace new advancements, including AI.

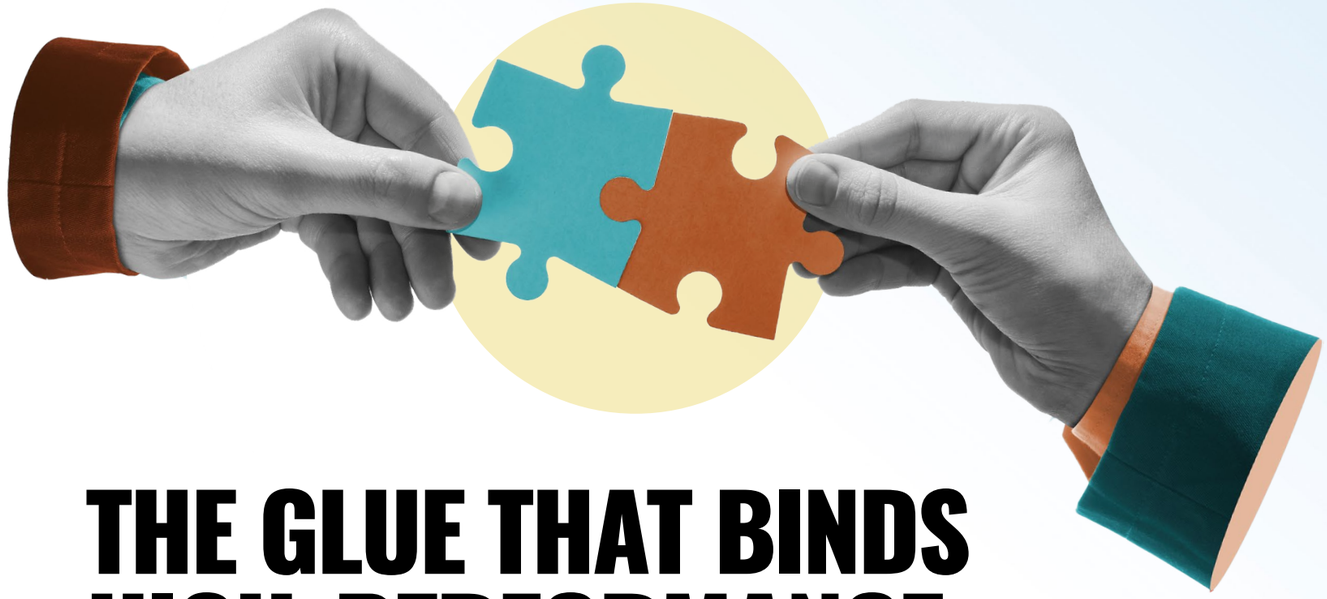
Training and support. Providing adequate training and support is crucial for encouraging older employees to embrace new technologies.

Relevance and applicability. When older employees can see how AI can directly enhance their work or provide solutions to challenges they face, they are more likely to embrace it.

Individual learning preferences. Tailoring the learning experience to suit individual learning preferences can increase the likelihood of adoption.

Peer support and collaboration. Encouraging collaboration and creating a supportive environment where employees can learn from and support each other can foster technology adoption.

Not all older employees will be ready to adopt new technologies. But with the right approach, support, and opportunities for learning and growth, many can successfully embrace and integrate AI and other emerging technologies into their work.



THE GLUE THAT BINDS HIGH-PERFORMANCE TEAMS TOGETHER

Brad Hall

Managing Director
Hall & Company

So many articles have been written on the importance of hiring and retaining world-class talent that one may wonder what is left to say about the topic.

It is true: good DNA in strategically critical positions is necessary to secure a company's competitive advantage. But talent alone is like epoxy, a two-part adhesive consisting of a resin (basically liquid plastic) and a hardener. Epoxy exits the tube in two streams, neither of which has any value by itself. But when mixed together, they form an incredibly strong adhesive.

Similarly, talent alone has little economic value. It must be mixed with "talent utilization" to produce industry-leading performance.

I worked closely with one large Chinese global company that paid substantially above-market rates in order to hire world-leading talent. The strategy worked, of course: with enough economic incentive, recruitment is easy. We hired the #2 executive for the training function of a leading tech company, and the Chief Information Officer for the government of a major western country.

But that extraordinary talent was largely ignored. The newly hired high-end talent (HET) did not integrate into business processes. They were not invited to key meetings or involved in important decisions. They existed outside of the company's mainstream activities.

These new high-end hires were recruited to infuse global best practices into the Chinese company. They were excited to join, and to help build an industry-leading team of professionals.

Many of them saw opportunities for improvement, but were never given a chance to talk about them. They learned that their real job was to sit on the sidelines and watch colleagues make the same mistakes they had been making for years.

Would an All-Star footballer be satisfied with higher pay if he had to sit on the bench and watch?

Felix was an Account Director in France. He told me he was a "Ghost Account Director."

I said, "A ghost? What does that mean?"

"It means," he replied, "that my Chinese team members go to the Chinese country manager for instruction and approvals. They don't know if I spend my day at work or at a coffee shop. To them, I'm invisible."

I asked, "Do we pay you well?" He answered, "I make far more money than I have ever earned."

"More money and less work," I said. "You should be happy."

"No!" he said. "I hate it, and I'm leaving."

Resin, without hardener.

This story was common among new HET hires. Within that elite group, staff turnover rose to 40% per year: the average new hire left after 18 months.

> "Talent alone is like epoxy: it must be mixed with 'talent utilization' to produce industry-leading performance."

> They learned that their real job was to sit on the sidelines and watch colleagues make the same mistakes they had been making for years.

What was our solution?

First, hiring managers were held accountable for retaining and fully utilizing high-end talent. New hire failure was recorded, and used as evidence that the manager could not be trusted to manage high-end talent. It was made clear that the role of the manager was to do the following:

- Get the information and the tools the new hire needed to do the job.
- Introduce new hires to critical stakeholders within the organization.
- Ensure that HETs were integrated into the company's business processes.

Second, each new hire was given a 90-day plan to learn the business and build relationships with stakeholders inside and outside the team, as well as with key country executives and also customers. The plan included weekly coaching sessions for the first month, and bi-weekly meetings thereafter.

Third, at the end of the 90-day period, new hires presented their learnings in a formal 30-minute presentation to their team colleagues. They described how they saw their role, and listed the standards by which they would be measured in order to be considered successful. They talked about areas where the team could improve. Finally, they explained how they planned to create unique value for the team.

The result: staff turnover plunged from 40% to between 21% and 24%. That's not fantastic, but for a global Asian company at the time, it was quite good. The company also became the #1 most desirable employer in China and the #16 IT employer in the world.

Performance is the goal

In the end, the goal is not to hire great talent, but to achieve great business performance. That requires two things: industry-leading talent in key positions, and full utilization of that talent.

Like epoxy, success requires both ingredients.

Buying talent is necessary, and it is easy. Utilizing talent is far more difficult. When utilization succeeds, managers are at the core of that success. They must ensure that new hires work on tasks that leverage their strengths, enabling them to become great assets to the team. Furthermore, they must ensure that talented employees have the decision-making power they need in order to innovate and grow.

How to make the best use of your talent?

Surprisingly, using talent properly is actually harder than finding it in the first place.

To assess talent utilization, consider these questions:

- Is your talent using their strengths every day?
- Is your best talent deployed on your most important projects?
- Does newly hired talent work well with their own team and members from other business functions, such as Sales and Marketing?
- Do the people who manage talented employees feel threatened by their talented subordinates?
- Are managers accountable for the success of the people they hire?
- Is talent effectively integrated with business processes?
- Does your high-end talent know what decisions they can make independently? When they do, are their decisions appropriate?

> Performance requires two things: industry-leading talent in key positions, and full utilization of that talent.

IF YOU BUILD IT, WILL THEY COME?

Laurie Pearcey

Laurie Pearcey, Associate VP at The Chinese University of Hong Kong (CUHK), talks about why cultivating an entrepreneurial mindset is the foundational talent development skill.

Tell us about your background.

I've worked in higher education for more than a decade. Before that, I was CEO of the Australia China Business Council.

Now I'm in Hong Kong, an interesting place where talent is concerned. It's a financial hub, but when you look at the development agenda of southern China over the next 10 to 20 years, the region will live or die by the talent it can nurture, attract, sustain, and retain.

So Hong Kong will need to import talent?

It has 7.5 million people and an aging population. The competitiveness of its universities is built on people coming in from outside. If we're going to compete in the knowledge business, we need a borderless approach. We want to attract people from the rest of China and from all corners of the world.

After three years of COVID restrictions, and with a government that is placing talent recruitment at the heart of its vision for the city, there has never been a better time to reactivate our networks and say to the world that Hong Kong is back in business.

We have to ask: Where does AI fit into this picture?

A recent study looked at how vulnerable different workforces were to AI and robotic intelligence in various parts of the world. HK was ranked #1 globally for being at risk for workforce redundancy, and 30% of the city's workforce could lose their jobs over the next 20 years. That's mainly because financial services are such a big part of the economy here, and lawyers, bankers, and accountants make up such a large percentage of the workforce. Many of them will be replaced by AI.

So what to do?

The whole territory's got to go back to school. Reskilling and upskilling are absolutely critical for long-term competitiveness.

In cooperation with private and public sector partners, CUHK has created an AI education program that's being rolled out in 70% of the Hong Kong high school system. It gives students the chance to learn the basics of AI tech, to program a robot, to play with robotic cars. They also learn about ethics and the responsible use of AI. Our "utopia" is that this will be embedded into the school curriculum and that mastery of AI will one day be thought about in the same way we demand young people finish school with a grasp of chemistry, mathematics or physics.

> **"We've created an AI education program that's being rolled out into 70% of the Hong Kong high school system."**

If people have interacted with and thought about artificial intelligence from a very young age, we as a society will stand a better chance of navigating this period of disruptive but potentially transformational challenges.

Is there a digital skills gap? Given the rise of AI and "no-code" software, might we actually need less tech talent in the future?

A decade ago, people in education were saying, "Everyone must learn to code. It was going to become part of the core curriculum. The idea was, "If you can't code, you can't work."

But given the rapid rise of AI, this may no longer be true. The basics of AI tech are one way today; a year from now, they will look very different. Being able to sit alongside a ChatGPT-style intelligence and be able to discern whether it is "hallucinating" – this may be the kind of skill people will need to hone.

How are schools adapting to ChatGPT?

ChatGPT caused a moment of existential panic among academics, one centered on integrity and the potential for plagiarism. There was this knee-jerk reaction to ban it in the classroom.

But now, universities and schools are thinking about how we can embed this technology into our educational model. It's not going to disappear. We need to cultivate future leaders who can use it as an enabler, rather than something to be scared of. We need to re-envision the curriculum and the way students interact in the classroom. If they don't understand AI by the time they reach the workplace, they're going to be in trouble.

Besides integrating AI into the school curriculum, what else can governments do? Should they try to create centers of excellence – little Silicon Valleys that act as talent magnets?

> **ChatGPT caused a moment of existential panic among academics.**

For the last 10 years, governments and universities around the world have invested heavily in the idea of innovation and entrepreneurship. They had this "If you build it, they will come" model: if you invest in incubators and create an environment where VCs want to come in, you'll get the results you want.

Governments have KPIs for how many unicorns they can create. Everyone wants to incubate the next Jack Ma or Mark Zuckerberg.

That's fine. But there needs to be a pragmatic reassessment of what entrepreneurship is. The road to being a unicorn is riddled with failure. Ninety percent of tech startups fail. We need to be realistic about how many unicorns we can cultivate.

So the real change is in the mindset?

Exactly. Developing a disruptive mindset is incredibly important for the development of traditional industries. Employers want people who understand disruption. We've seen so many industries disrupted over the last 20 to 30 years. The private sector really understands that to be competitive, companies need people with an entrepreneurial mindset embedded throughout their business. Companies understand that they need to disrupt or be disrupted – it's a question of survival.

Building this capability means recognizing that not all people will necessarily launch successful start-ups, much less unicorns, but they will have an entrepreneurial way of thinking – and that's got value. That should be front-and-center when we talk about technology and entrepreneurship. So far, no one's really been brave enough to call that out, mainly because so much political and financial capital has been spent developing these ecosystems that mimic Silicon Valley.

And we should be encouraging the proliferation of Silicon Valleys. Low taxes, good universities, a high quality of life - all these elements help. But we should also think about how to provide an educational system that encourages people to cultivate an entrepreneurial mindset.

> **A decade ago, people were saying, Everyone must learn to code. But given the rise of AI, this may no longer be true.**

FIXING THE EU'S DIGITAL SKILLS GAP

Tony Jin

Vice President, European Region, Huawei

In a speech given last year, Ursula von der Leyen, President of the European Commission, announced that 2023 would be the European Year of Skills, which officially began on May 9. Many new EU initiatives have been launched, including a Cyber Skills Academy to train the 500,000 cyber professionals Europe currently needs but does not have, plus several "net-zero industry academies" to train people on clean-tech developed in Europe.

Any country that hopes to thrive in the digital world must educate its people in a way that produces a digitally skilled workforce. Finland, for instance, has provided digital skills training at different educational levels, putting it near the top of the European Commission's Digital Economy and Society Index (DESI). Half of all Finnish enterprises use cloud services, and 19% use big data; in Germany, by comparison, the respective numbers are 12% and 15%. The high level of digital skill has made Finland fertile ground for entrepreneurship: each year, Finnish tech start-ups receive private equity investment equivalent to 1% of the country's GDP—three times the level in Germany.

Measuring the gap

Despite these and other successful cases—and although the EU has laid out a vision for digital transformation by 2030—skill gaps remain. The DESI shows that every third person working in Europe lacks basic digital skills, while the European Investment Bank (the EU's lending arm) says a lack of skills is the region's most significant barrier to investment.

To better understand the digital skills gap, EY and All Digital teamed up with Huawei to investigate this phenomenon. Published in April 2022, their report aims to highlight key components of the EU's digital skills gap and identify areas where government and private industry can narrow it in the coming decade.

Mismatches vs. shortages

In the EY report, skill gaps are understood to be a combination of skill mismatches and skill shortages. A mismatch is an imbalance between the supply of and demand for different skills, even in a highly qualified workforce. For example, a country might have a large number of workers who are skilled in manufacturing technology, but lack the workers needed for a services-based economy.

Skill shortages, on the other hand, refer to a lack of qualified professionals. Shortages are easy to measure by looking at unfilled vacancies. And skill shortages can lead to skill mismatches if employers hire underqualified (or unqualified) candidates because no skilled applicants are available.

This seems to be the situation facing the EU at the moment. In a 2014 letter to EU education ministers, former Commissioner Androulla Vassiliou predicted that, unless the EU taught children basic coding in school, the EU could face a skills shortage of up to 900,000 ICT professionals by 2020. The EY analysis concluded that, although the skill shortage was considerably less than predicted (353,592), the mismatch was much larger (1.4 million). "This suggests," the report's authors conclude, "that much of the shortage in ICT professionals has been addressed through the hiring of underqualified ICT specialists."

Using EU data on digital skills proficiency levels for ICT professionals, the authors reach the remarkable conclusion that in 2019, 18% of employed ICT

> **"Every third person working in Europe lacks basic digital skills."**

Key indicators on digital skills in the EU vis-à-vis third countries

Indicators	EU-27	USA	Canada	China	Japan
Population with at least basic digital skills	57%	61,5%	66,5%	61,0%	54,3%
Workforce lacking basic digital skills	37%	30,1%	32%	28,3%	49,2%
ICT specialists in workforce (2016)	3,7%	3,12%	3,0%	2,2%	3,8%

professionals across the EU (about 1.4 million people) had low overall digital skills. Perhaps even more surprisingly, the analysis found that, during that same period, 15% of "manual workers" possessed above-average digital skills. These include skilled agricultural, forestry and fishery workers; field crop and vegetable growers; craft-related trade workers such as bricklayers; plant and machine operators; and domestic helpers. The report estimates that the EU has about 9.6 million digitally overqualified laborers.

Combine that stunning mismatch with the estimated digital skills shortage of more than 353,000 people, and you find that the 27 EU member countries suffered from a collective digital skills gap of approximately 1.8 million ICT experts in 2019. This gap reflects both missing talent and underqualified ICT specialists. The mismatch in "needed vs. available skills" accounted for almost 80% of the gap.

The report concludes that, although the EU needs more ICT professionals, it faces an even more urgent need to upskill its currently employed ICT professionals and other personnel across much of the occupational spectrum.

The EY report provides a detailed analysis of measures that can be taken to narrow the EU's digital skills gap. But at a high level, several immediate steps suggest themselves.

> **A lack of skills is the region's most significant barrier to investment.**

The Digital Economy and Society Index shows that 4 out of 10 adults and every third person who works in Europe lacks basic digital skills. Women are under-represented in tech-related professions and studies, with only 1 in 5 ICT specialists and 1 in 3 science, technology, engineering, and mathematics (STEM) graduates being women.

77%	Of EU companies report difficulties in finding workers with the necessary skills
20 million	ICT specialists should be employed in the EU by 2030
60%	Of adults should participate in training every year by 2030

First, enterprises should maintain programs to reskill and upskill their people. While companies instinctively understand the need for skilled talent, many lack an upskilling strategy. Yet it is crucial to remain aware of how skills evolve, as well as what skills are available (or not) in the labor market. Digital competence training in particular can enhance employees' employability and foster their professional advancement.

Second, and more specifically, women should be encouraged to choose careers in ICT and supported when they do. In most countries, they have difficulty training, attracting, and developing the ICT talent they need. Women represent an untapped talent pool. By creating the right conditions, industry can reduce the need for digitally skilled workers while reducing the gender imbalance in the labor market.

Governments can also invest more in digitalizing public services. The general population needs a basic level of digital skills in order to access such services, so their widespread adoption encourages upskilling in the general population.

Talent development is a responsibility shared by every country, business, and university. As a region representing more than 15% of the global economy, the EU bears a considerable share of that responsibility.

The extent to which the digital skills gap affects the competitiveness and development of companies, countries, and regions is still difficult to measure accurately. But the EY report makes clear that both government and private industry have leading roles to play in shaping the current and future ecosystem. By redoubling its commitment to growing digital skill levels in its current and future workforce, the EU can reinforce its capacity to address the digital skills gap, improve competitiveness, and reach its strategic objectives for the next decade.

> **Any country that hopes to thrive in the digital world must educate its people in a way that produces a digitally skilled workforce.**

Helping Europe "skill up"

Huawei is keenly focused on the issue of digital skills in Europe. In partnership with the Global Enabling Sustainability Initiative (GeSI), it organised a session during this year's EU Green Week. The session held on June 8th, looked at ways of "Bridging the sustainability skills gap."

Huawei is also working on a paper on which new digital skills will drive the green transition in a digitalized world.

GOVERNMENT AND INDUSTRY

MUST WORK TOGETHER TO GIVE STUDENTS FUTURE SKILLS

By Miriam Theobald, Co-founder of DONGXii

Based in Berlin, Miriam has been a coach and ideathon designer for Huawei's Seeds for the Future talent development program in China, and for its Digital Seeds program in Europe.

You advise businesses on digital strategy and investment in China. What skills do students need to do business successfully in East Asia?

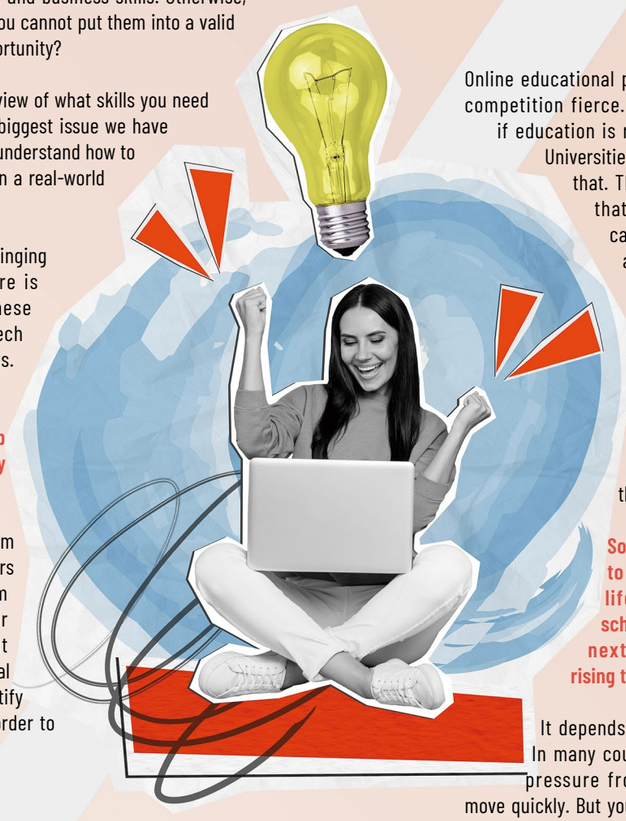
Students need technical, cultural, and business skills. Otherwise, what use are technology skills if you cannot put them into a valid business model or identify an opportunity?

Today, the key is having a macro view of what skills you need in order to make an impact. The biggest issue we have with young talent is helping them understand how to apply their university knowledge in a real-world setting and in an agile way.

For example, when it comes to bringing technology to the streets, there is a lot to learn from China. Chinese companies know how to bring tech to market that's relevant to users. That's a great skill.

Are universities equipped to help with that? Or do they inevitably always lag behind?

We've had many inquiries from universities in the past three years to help them set up a lean program to teach students to design their own skill set. It was not about teaching them particular technical skills, but about helping them identify the skill set they would need in order to create their own career path.



Online educational platforms have made the competition fierce. Soon, students will ask if education is relevant for them or not. Universities have to find answers for that. They'll need to teach skills that are super-relevant and can be applied immediately after graduation.

We are not there yet. But universities are certainly actors in the economic system, and they need to think about how to make their teaching more agile, and more connected to the real world.

So it's about "learning how to learn" throughout one's life. Are universities and schools teaching this to the next generation? Are they rising to the challenge?

It depends on where they're based. In many countries, universities face pressure from the market and will move quickly. But you also see a lot of private players who are rising. For instance, a friend of mine in China is creating a school where they teach young students not only to code, but to practice design thinking as a tool, a method for designing their life path.

> If you don't understand data, you don't understand the currency of the future. There is no physical product any more that will work without data.

Whose responsibility is it to address the skills gap?

We're working a lot with international companies that are keen to invest in digital education for young people. They see the need and the lack of vision in new digital business models, even though the future economy will be built on those models. If you don't understand data, you don't understand the currency of the future. There is no physical product anymore that will work without data.

This is a job for policymakers. In some countries, you can see that they don't understand that the digital economy is here to stay.

How in particular would you like to see industries push the agenda?

For years, we've been working with Huawei's Seeds for the Future program, and with Digital Seeds in Germany. Every year, we ask ourselves about the relevance of the program for the students: What are the skills they need to learn this year in order to still be relevant next year? Every year, we change the curriculum. It's a national campaign where young people get the basic skills of designing a business model, applying the technological skills they learn in university, and then creating a pitch at the end of the program to actually communicate and implement their ideas.

> The biggest issue we have with young talent is helping them understand how to apply their university knowledge into a real-world setting.

This is a great approach because they do it in the Huawei ecosystem, and obviously Huawei is a very competitive company with a lot of insights from all over the world that can give the students realistic feedback on their ideas. This means they're well prepared to implement those ideas in the market.

This connection to the real-world economy is something that only industries can bring to the table. Politicians cannot, and universities cannot. So it's up to industries to go into universities and share their experience, and share what skills young people need. Currently, industries are not incentivized to do that at all. In most countries, it's very hard for them to get involved in the very slow process of creating a university curriculum.

Is the reality that we simply cannot future-proof education? We need to constantly change and adapt, and we had just better get used to it?

Yes, and that's a skill in itself. It's a skill set to be agile, to listen, and to be relevant to the market. Also, not to be frustrated or depressed by a fast-changing world. It will just change faster, and we need to develop the skills to make us mentally relevant in a rapidly evolving world.

PLANTING NEW SEEDS TO GROW DIGITAL SKILLS

"*Seeds for the Future*" is a global talent program Huawei launched 15 years ago to train young engineers and, more broadly, to make young people more resilient by helping them better understand tech.

In the real world, success is not guaranteed; you have to earn it. In a recent interview with *Transform*, former UNESCO Director-General Irina Bokova said that education is about giving hope.

I agree completely. And getting the right education is often the key to success.

As a major player in the technology sector, Huawei feels a responsibility to educate young people around the world by giving them the technology skills they need to succeed.

By the end of 2022, Huawei's global ICT talent development efforts had benefited as many as 2.2 million people in over 150 countries. Reaching this milestone is concrete proof that we're fulfilling our promise to invest US$150 million in digital talent development before 2026. And it encourages us to do more on a greater scale.

Recently, we launched an expanded SEEDS talent framework, a new set of principles that will guide our worldwide talent cultivation programs. SEEDS will now stand for Surpass, Exploration, Employability, Daring to challenge, and Sustainability.

Vicky Zhang

Vice President, Corporate Communications, Huawei Technologies

Surpass

> With Surpass, we aim to foster leadership. We offer a number of programs to help participants cultivate their ability to lead.

I can offer two examples. In 2022, Huawei held three sessions of its flagship European Leadership Academy program. I attended one session at the Women's Academy for Rural Innovation, along with 15 students. I was amazed by their energy, and how our training helps them shine brighter.

Second, in recent years, we have trained about 180,000 people from Indonesia, Thailand, and Malaysia at the Huawei ASEAN Academy.

Exploration

Selecting the right career path, adapting to changes, and continuing to grow are critical for fresh university graduates. Our Seeds for the Future and ICT Academy programs help thousands of students worldwide explore new life paths, strengthen their digital skills, and form friendships that last throughout their careers.

In our initial version of the Seeds for the Future program, we partnered with over 500 universities and helped more than 15,000 students in over 130 countries. By the end of 2022, we had partnered with more than 2,200 universities to establish ICT Academies that train more than 200,000 students each year in the fields of AI, telecommunications, and cloud technology.

Employability

We provide online education to ICT professionals so they can stay competitive in the job market long after they finish their studies. The programs enable participants from various technical fields to obtain certifications and gain experience with new technologies.

> One particular aspect is "Train the Trainers," which focuses on keeping the knowledge of ICT teachers up-to-date.

Huawei Cloud Developer Institute offers many online ICT training courses to entrepreneurs around the world. More importantly, we award Huawei Career Certifications, showing that trainees have obtained certain skills, boosting their employability in the ICT industry.

Daring to Challenge

We organize and sponsor a wide range of tech competitions worldwide, some of which involve solving real-world problems. Competing encourages university and high school students to obtain cutting-edge industry knowledge in a fun way.

Huawei was honored to be the Diamond sponsor of the International Collegiate Programming Contest (ICPC) for the fifth time in 2023. Our own Tech Arena competitions are also booming in Europe, with more than 1,000 student contestants participating in 2022.

Sustainability

Although technology plays an increasingly central role in our lives, many people don't use it - either because they lack the skills, or because they don't have access to devices.

We try to bridge this digital divide by offering basic tech training to women and men of all ages. Among Huawei's many signature projects promoting sustainability, two stand out: our digital bus project and our Women in Tech initiative.

In Thailand, Huawei's digital bus is bringing modern equipment and educational resources to rural parts of the country, helping children gain up-to-date ICT knowledge. In France, these buses teach the elderly how to use ICT devices to make their lives easier.

Huawei believes women are at the core of the digital age. To amplify their contributions, we offer scholarships, training, and leadership programs to cultivate participation and leadership for women in the tech industry.

For example, Huawei has partnered with the Rebecca Foundation, a non-profit in Ghana, and local governments to offer ICT skills training to 100,000 students and traders. In the past two years, more than 70,000 Ghanaian women have benefited from this initiative.

For the past two years in Ireland, Huawei has supported more than 100 top Seeds graduates for their great tech ideas. Last year, a winning team designed a tech solution to make it easier for wheelchair users to travel by train. The project reflects Huawei's philosophy of using tech for good.

We have also been forming strong bonds with UNESCO to improve global ICT talent education. This year, we will join the Global Alliance for Literacy, a key project run by the UNESCO Institute for Lifelong Learning. The main focus will be on providing ICT skills to adults.

By now, it should be clear that Huawei is committed to dedicating resources to fostering talent. We sincerely hope young people never stop exploring, never stop learning, never stop challenging, and never stop growing.

THE CATALYST CATAPULTING EDUCATION INTO THE 21ST CENTURY

Surging free from an educational dead-end

Professor Pedro Santa-Clara

A Portuguese economist and social entrepreneur, Professor Pedro Santa-Clara is Director of the ground-breaking computer programming schools 42 Lisboa and 42 Porto.

Education needs are changing. We're still stuck in the model of education of late 18th-century Prussia: teach the same thing to everybody, memorizing for exams, in an assembly line approach. Huge infrastructures of education, centrally planned and managed, have been very successful in achieving very high rates of education, but in many countries we've shut down the two mechanisms that create quality and value in any industry, which are competition and innovation.

If we want to take education to the next level, we need to open it up. We really need to develop skills in problem-solving, creativity, communication, cooperation, as well as technological skills. And a broader method skill, which is learning to learn. We have an opportunity to change education and have broader human skills, a diversity of knowledge, and use technology rather than stick with one-size-fits-all.

We launched School 42 in Lisbon and Porto in the last three years. This is a school where there are no classes and where you really apply the fundamentals of learning by doing and learning with each other. The school has a platform like a big social game that leads students through various challenges. In the last three years, we have had more candidates in these schools than any single university in Portugal.

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> We have an opportunity to change education and have broader human skills, diversity of knowledge and to use technology.

The intersection of creativity and technology

Now we feel there is a need to bring this education model to younger students too. So the first Tumo center will be launched in Coimbra in October. These are centers for creative technology for kids 12-18, where they spend four hours a week developing a portfolio project in the three areas that they themselves choose out of 14 possible areas. Our curriculum covers a range of artistic disciplines, including creative writing, music, photography, animation, programming, and robotics. We are always at the intersection of creativity and technology, using technological tools and creative tasks.

The learning model is project-based and peer-to-peer. The goal is to develop the creative technological skills but also to develop their human skills of problem solving and cooperation. It's totally funded by philanthropy. Our goal is to be the catalyst of change in education and bring in a much more personalized and effective education model for personal development.

There's really no reason why kids should be more excited about playing online games than about learning. They spend enormous amounts of time playing sometimes very complex games. If education was equally as exciting, I think that their time could be applied much more effectively. Education is still very expensive, very rigid, with very high drop-out rates, and there's a mismatch between what the education system is producing and what is required. All these are symptoms of a system that can be made better.

> There's no reason why kids should be much more excited about playing online games than about learning.

A new model for lifelong learning

We need to experiment, innovate, and allow many different systems to compete with each other until we improve.

We're also still stuck in a model where we have an education until we're 22 or 23, work until we're 70, and then retire. It doesn't make any sense. The reskilling and upskilling needs are huge, and our traditional educational institutions are not geared to doing that at the required scale. We need to figure out new models - a responsibility for societies as a whole - but ideally we want people to see themselves as managers of their own human capital.

We need to provide them with the tools to enable them to assess whether their human capital is up to speed with what they want to be doing. We need to provide educational experiences to improve their capacity for lifelong learning, and again, technology can help. Finally, we need governments to create the environment that leads to these outcomes.

Urgent adaptation to a societal challenge

Online education is still very limited; you have practically all the knowledge available to you, but a lot of the courses are very lonesome journeys. It takes a lot of will to succeed. You learn better when you're motivated by a mission, by a problem you want to solve, by a challenge, because learning is also a social phenomenon. You need to be learning with other people. A tiny fraction of people are able to sit by themselves with a book or learn online. It's very tough.

There's a sense of urgency now. The way we work is going to change rapidly, profoundly - just from playing around with ChatGPT and other AI engines, you can see that it's going to change quickly, so people need to adapt quickly. There really is a societal challenge that we need to address.

> There's a mismatch between what the education system is producing and what is required.

TALENT IN THE *TRENCHES*

Michael Lee

A seasoned executive coach looks at the skills needed to thrive in the upper echelons of management.

Michael Lee had already retired when he unexpectedly stumbled onto a second career: coaching local executives at large multinational corporations in China.

He had spent more than three decades at DuPont and Honeywell, plus a year helping a Chinese tech company expand overseas. He uses all that experience in his current job.

"I work with pretty senior executives - GMs, VPs," he says. "I have clients in luxury retail, at industrial companies, and in the automotive sector, so I don't specialize in a particular industry."

Despite the breadth of his client base, most people come seeking help in several common areas. Strategic thinking, communications, empowerment, and delegation are at the top of the list.

Lee says these are closely related. "Clients say, 'How can I improve my communications with my peers, my boss, my direct reports?'"

Bosses tend to communicate by giving orders that subordinates are expected to carry out. "There's a top-down culture in China and some other Asian countries, and that's the root cause of why many Chinese leaders don't have strategic thinking: they've never been asked to think. They just follow instructions. Strategic thinking is the boss's job."

What is talent, anyway?

"When people want to talk about talent development or talent management, I'm almost tempted to say, 'Define what you mean by talent,'" Lee says. "Especially in China, lots of managers define talent as, 'Whoever works hard, follows my orders, doesn't challenge me, and executes well, that person is talented.'"

Lee says he has seen small pockets of more Western-oriented thinking emerge during his time as a coach. "Sometimes people are valued when they have fresh ideas, are good at collaborating

> **"How can I improve my communications with my peers, my boss, my direct reports?"**

with other team members, and execute well. Unfortunately, that way of thinking about talent is probably a minority view in China. If a subordinate has a different idea, a traditional boss might wonder, 'Are you challenging me?'"

Most clients come to him with a particular challenge. For example, a senior director from a major international sporting goods brand told Lee, "My boss has consistently told me that I need to improve my strategic thinking. But I don't know what he means."

The executive went on, "I work very hard, give each of my team members clear directions and deadlines, follow through, and monitor their progress closely. I'm not sure what my boss means when he says I'm not strategic enough."

Lee said to him, "In your career, or your life, has anyone ever described to you a future, a dream, or a vision that excited you so much it gave you goosebumps?"

The client was silent for a minute. Then he said, "Yes. About 10 years ago, we had a team-building activity. People were sitting around the table chatting. Suddenly, my boss said, 'You know, we really need to think about bringing the NCAA college basketball March Madness concept to China.' [March Madness is an extremely popular men's college basketball tournament in the US and highly relevant for a sports brand.]

"When my boss said that, it was as if everyone at the table was hit by lightning. Everyone started to brainstorm what that idea might look like. Some people talked into the night because they were so jazzed up."

Then Michael asked the client, "Did your boss give you a detailed plan, or detailed instructions for how to make it happen?"

"No," the client said. "The boss just sketched out a vision, and that got everyone thinking about how to execute it."

That was the key, Michael explained to the client. "You want to paint a picture of your team's future, where you want to take the team. If you're giving them instructions, which they then scramble to execute, you've taken away the 'How.' More importantly, you've taken your people's ability to create the 'How' to achieve that dream vision."

> **There's a top-down culture in China that's the root cause of why many Chinese leaders don't have strategic thinking: they've never been asked to think. They just follow instructions.**

"What do you think?"

Working regularly with senior talent has given Lee an opportunity to observe patterns of behavior, some of them less than helpful, in the corporate world.

"One thing companies need to improve is their approach to directive leadership," Lee says. "For example, a direct report will come to the boss with a problem. The Chinese boss feels that he or she is supposed to have all the answers, and so they will say, 'Here's what you do: follow Steps 1, 2, 3, 4, and 5.'"

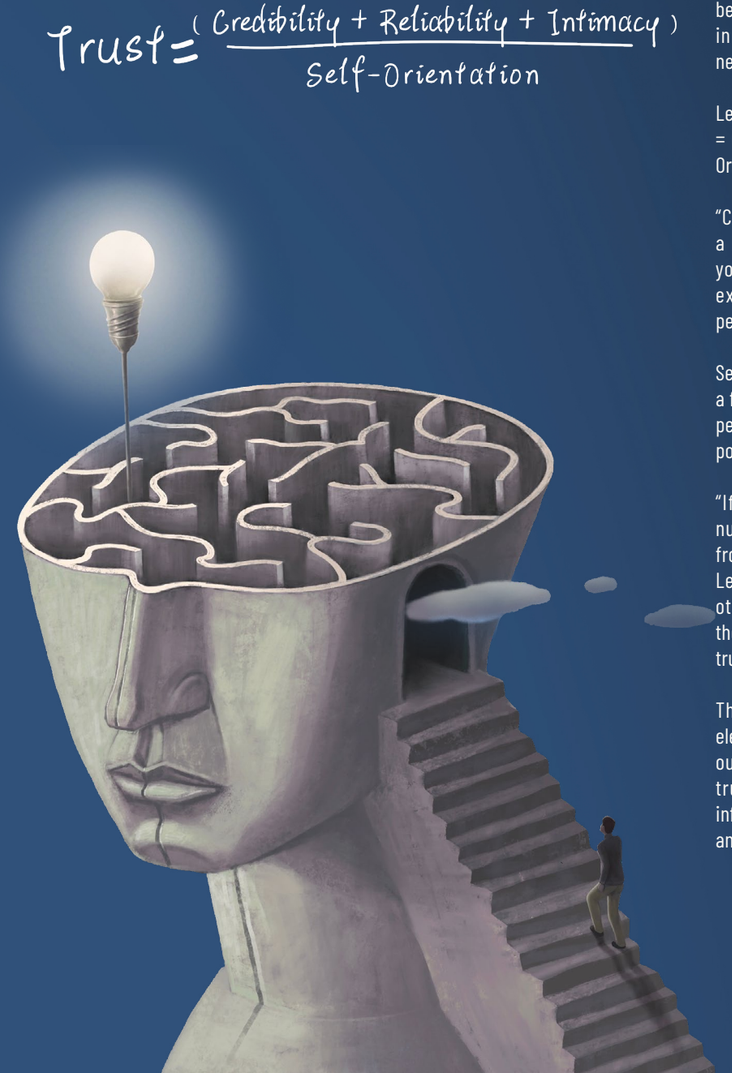
"After that, everyone comes to the boss for answers. Bosses spend all day telling people what to do. Then they go home and answer emails all night. They tell me, 'I'm losing control of my time and my life.'"

"I ask if they've simply tried asking people, 'What do you think?' Some of them are stunned by this. They say, 'No, I don't ask what they think. I'm supposed to have the answer!' I say, 'Yes, and you probably do have some answers. But you should give people the opportunity to use their brains.' They say, 'But that will take too long.' And I respond; 'Give it a try.'"

Recently, Lee says, he gave this advice to one of the executives he was coaching. A week later, he received a text message saying, "Michael, these four words are magic! 'What do you think?'"

It turned out that people had some pretty good ideas, the executive told Michael. "Now," she said, "I have more time because people come up with answers themselves. I can add some points to their solutions, but I've regained control over my time and my life."

Maybe best of all, Lee observes, "People feel like, 'Hey, the boss actually cares about what I think.' That can be very powerful."



The Trust Equation

Based on repeated observations, Lee shares another bit of advice: ultimately, trust is the bedrock of success. If you don't have enough trust in a relationship, there's very little potential for negotiation or shared solutions.

Lee uses what he calls 'The Trust Equation': Trust = (Credibility + Reliability + Intimacy) / Self-Orientation.

"Credibility: Do you know your subject? Are you a bona fide expert?" says Lee. "Reliability: Do you deliver on time at a quality level that meets expectations? Intimacy means, 'Do I like this person? Do I feel safe with him or her?'"

Self-orientation is the denominator, rather than just a fourth element. If you can put yourself in the other person's shoes and think about the issue from their point of view, they will trust you more.

"If the denominator, self-orientation, is a big number, meaning you only think about the issue from your own point of view, then trust goes down," Lee says. "If you think about the issue from the other person's point of view as well as your own, the self-orientation value becomes smaller, and the trust level goes up."

That makes self-orientation the most important element in the equation. "We should practice putting ourselves in the other person's shoes to develop trust. If we do, we will ultimately become more influential, and more effective in managing conflict and communicating strategically."

VIDEO GALLERY

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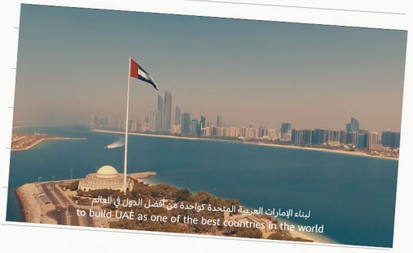
Young tech students gather in Paris to design a smart factory.



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