# Education

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EXPERT VIEW

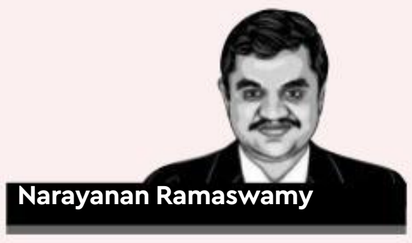
The three workplace trends this year are hyper-social, hyper-productive and intimately-personalised; two new employee categories will be gig workforce and virtual employees; and one big strategic imperative for this year is 'Skill, Reskill, Repeat'.

—Aditya Kohli, chief HR officer, Clix Capital

UNION BUDGET FY21

# Thrust is on employment generation

**But are we doing enough for education and skill development—the key enablers for employment?**



Narayanan Ramaswamy

**AS A NATION** that is set to be the world's largest supplier of workforce by the end of this decade, much was expected from this decade's first Budget with respect to education and skill development reforms. The finance minister seems to have acknowledged it, which reflects in the reforms thrust towards employment generation.

At KPMG, we have been vocal about bringing apprenticeship, industry involvement and vocational training in professional education, especially engineering. There is a big fillip towards this endeavour with the announcement that 150 higher education institutions would now offer quality vocational education through embedded diploma courses. Also, urban local bodies will now have apprenticeship programme for engineers. This, I hope, will be a beginning of the journey to make engineering education more effective in solving local and national priorities, and, more importantly, increase job prospects.

Another area of cheer is the mention of higher education financing—with references to foreign direct investment and external commercial borrowings to improve education quality and building new institutions (National Police University, National Forensic University), and prospects for new medical institutions. While this is commendable, a big source of financing—in the form of funds accumulating with the trusts and societies running education institutions in the private sector—has been ignored. In a recent white paper with FICCI, we had made an appeal to streamline the effective usage of surplus funds that get accumulated in educational institutions, which, according to our estimates, are to the tune of Rs 80,000 crore in a five-year period.

Online education has been given a thrust with the big step of allowing 100% online degree courses in top 100 NIRF institutions. This is the beginning of a revolution that could happen in the online, digital space for education, and could benefit millions of youngsters in India—who can't afford the traditional format of education. Although we had expected more incentives in the edtech space—an emerging area where India could have become the hub of innovations and adoption, given the need in this country.

The Prime Minister expressed confidence in the integrated approach towards agriculture creating more jobs. So would be the massive Rs 100 lakh crore investment proposed in 6,500 projects, the National Logistics Policy and the creation of 100 airports. Smart cities, data centre parks, electronic manufacturing and proposed initiatives in biotechnology and quantum technology (with an outlay of Rs 8,000 crore) are also bound to generate more jobs. There is a mention of thrust and focus on new-age skills such as AI, VR and big data. Having said that, skill development has not been given much attention in this Budget, with an allocation of just Rs 3,000 crore. Maybe this is embedded in sectoral initiatives, which we will get to know as they unfold.

Continuing from the previous Budget, the finance minister announced further strengthening of Study in India scheme with more than doubling the budget at Rs 65 crore. Ind-SAT is a great initiative to streamline and attract students to India. Along with the allocation of Rs 400 crore for developing world-class institutions, there is a clear signal of the will to make India a hub of higher education. I was privileged to be part of the EQUIP—which draws detailed and practical plan for higher education in the next five years—and it is heartening to see an allocation of Rs 1,413 crore for this, which includes various forward-looking initiatives.

The focus on school education, particularly the much-expected reforms on learning outcomes in schools, is completely missing. With India agreeing for PISA evaluations, this is absolutely crucial. Among other big misses are reforms in teacher development and training, and early childhood education.

Overall, it is a mixed bag when it comes to education and skill development. The thrust of increasing employability and creating new institutions is promising. We do eagerly expect the New Education Policy, reinforced with all the recommendations. Similarly, we believe the reforms with respect to the private sector and foreign institutional participation combined with suitable reforms will bring the much-needed funds for higher education.

*The author is national head, Education & Skill Development, KPMG in India*

## Greater push towards jobs

The focus is on furthering the employability of Indians

IRWIN ANAND

**WE WELCOME THE** focus on education, skill development and new-age technologies in this year's Union Budget, which focuses on furthering the employability of Indians through the government's Skill India Mission launched in 2015.

The step to facilitate educational needs of the growing working-age population and students who do not have access to higher education by offering online education programmes from top 100 institutions of the country is commendable. It will allow students from around the country to access quality education.

The optical fibre programme, connecting 1 lakh gram panchayats in FY21, will provide an opportunity for students to learn new skills online at affordable rates. Also, the upcoming policy to set up data centre parks throughout the country will help in providing more jobs for the youth.

The attempt to address the huge demand of teachers, nurses, paramedical staff and caregivers abroad by focusing on skill development is also good, and it will help create more job opportunities.

*The author is MD, Udemy India*

# The three, two, one for 2020

This year will see three workplace trends, two new employee categories, and one strategic imperative

ADITYA KOHLI

**IT HAS BEEN** an unusually quiet start to the new year, with most organisations showing caution against the backdrop of a weak economy and liquidity pressures. While that may be the case, emphasis on creating radical productivity shifts at the workplace will continue in 2020. So, what will change at our workplace?

I call these the 3-2-1 of 2020—three workplace trends, two new employee categories, and one strategic imperative:

The trends are hyper-social, hyper-productive and intimately-personalised.

**Hyper-social:** Facebook has 336 million, YouTube 265 million and WhatsApp 400 million users in India. While these are astounding numbers, the usage is largely limited to individuals; most companies are yet to create a meaningful footprint here. Organisations that can leverage this network for customers, influencers and employees will realise immense value.

**Hyper-productive:** For traditional companies, 2020 will be the year of driving hyper-productivity, with many technology tools becoming mainstream and relatively cheap. The shift from 'people interfacing with machines to get work done' to 'machines driving machines' will unleash significant employee productivity.

**Personalisation:** With 75% of workforce as millennials, Gen-Z, our approach towards employee engagement, L&D and compensation management is going to need a overhaul with a strong bias towards 'employee experience'. Gone are the days of broad brush policies and cohort-based development programmes.

Two new employee categories will be gig workforce and virtual employees.

**Gig workforce:** Talent in many specialised areas is in short supply and most organisations don't have enough work to keep this talent permanently engaged. I see corporations becoming more open to engaging with the gig workforce. Policies will need to be realigned and compensation rejigged to make this happen.

**Virtual employees:** This year 'digital' will not be an exception but a core part of all organisations' business strategy. Virtual employees with personalities of their own will become commonplace. These bots will have a defined life cycle—a fixed set of KPIs at the beginning of their term, sufficient investment to ensure they operate at full efficiency, planned updates to keep them relevant, and a phase-out plan.

**One big strategic imperative for this year is 'Skill, Reskill, Repeat'.**

Amidst a multi-generational, highly-dispersed and cross-cultural workforce, skills are becoming a strategic imperative for organisations. The half-life of professional skills is shrinking drastically. Organisations will have to get more aggressive in building and updating the technical skills of their employees. Also, organisations will need to emphasise the culture of learn-unlearn-relearn amongst their employees.

*The author is chief human resources officer at Clix Capital*

# Science & tech

EAVESDROPPER

## Healthy gains

**Microsoft and Google are going big on medical research, but they need people support**

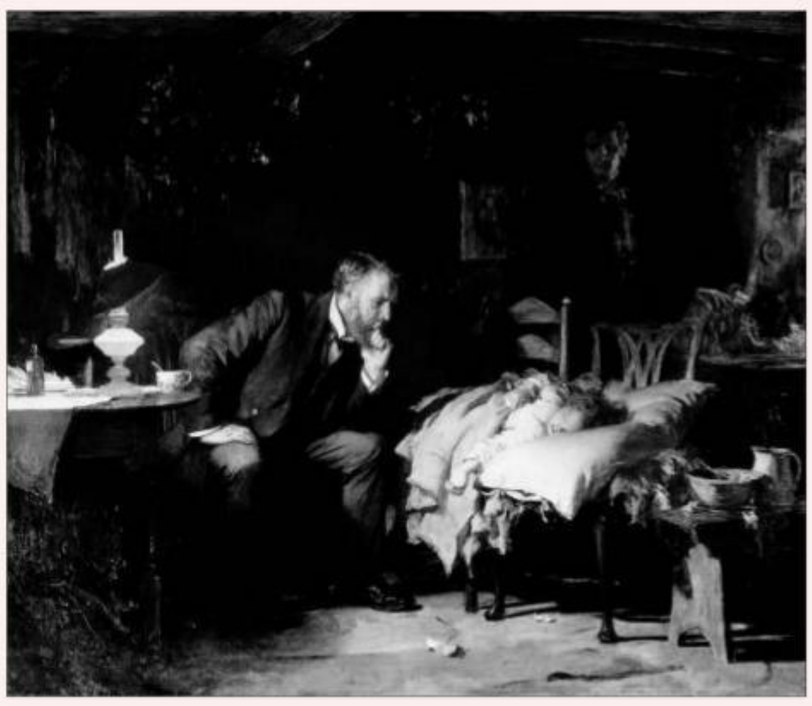
ISHAAN GERA

**WHEN GOOGLE IN** 2016 released a paper showcasing its research in diabetic retinopathy, not many had imagined that use of AI products could go far beyond beating humans in games for another few years. Until then, Google's DeepMind was being used only for such purposes. But Google's paper changed the dynamics. Not only did the company realise the potential of artificial intelligence and machine learning in research, it also spurred others to try out new fields in AI development.

That is one of the reasons that AI has grown to become one of the major game-changing innovations in medical industry. Microsoft last week announced, that it shall be investing $40 million to harness the power of AI for health. While Microsoft will be emulating Google's work on diabetic retinopathy, the company plans to do much more than that.

One of the benefitting countries from Google's application of technology was India, while Microsoft has not declared where it intends to use this technology, it will certainly be in developing and least developed economies, where technologies can overcome challenges of non-availability of medical practitioners.

Meanwhile, Google has moved beyond. The company in 2017 announced that it has been aiding pathologists to detect signs of cancer—using its AI techniques it was able to detect cases of breast cancer—and said that it will be further using its brain project to provide predictive healthcare, and answer questions like whether a patient needs hospitalisation, how long will they stay in hospital and whether their situation has improved since.



The Doctor Luke Fildes crop painting circa 1891 (Unnamed)

Microsoft's focus is child and maternal mortality rates, where such instances need to be tracked much more diligently.

Enter personal tech. While predictive healthcare is one part of the approach another one requires collection of data. Data forms the basis of research in any of the fields. And, this is where the likes of Apple Watch, Fitbits and other devices can help. Although they have their limitations, most such limitations only arise due to paucity of data. Last year, Apple announced that it shall be tying up with three medical institutes and WHO to collect data. Fitbit, in a recent paper, has indicated that it has been able to detect common flu patterns in people. The study, published in *Lancet*, using 47,000 data points was able to predict influenza outbreaks amongst users.

Fitbit is not the only company; Samsung has also tied up with Universities to spur research in the field. But analysis and linking to real world scenario also means tracking of health profiles, and this is where most companies are lacking. Users do not wish to give data to companies, and rightly so. Companies are gung-ho about research because they are trying to capitalise on it. Diseases and treatment are a growing market, and no one wishes to miss out on that. Unless companies can guarantee that the data shall stay safe, and will only be used for non-personal case studies, not many will be willing.

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## Quantum of achievement

**LAST YEAR GOOGLE** announced that one of its machines had reached quantum supremacy, people had started deliberating on the use cases of technology. Now, the Indian government has also announced steps towards building a quantum base in India. On Saturday, the finance minister, in her Budget speech, said that India would spend ₹8,000 crore over five years towards National Mission on Quantum Technologies and Applications.

**What is quantum computing?**

The idea of quantum computing first originated in the 1980s, when an American physicist, Paul Benioff, proposed a quantum model of Turing machine, used in the World War II period to crack codes. But the breakthrough in technology did not come till 1994, when Shor, developed a polynomial-time algorithm that may be able to break any cryptographic protocols. Since, then companies like Google, IBM have been engaged in developing a quantum machine that can operate Shor's algorithm. In 2012, John Preskill coined the term quantum supremacy.

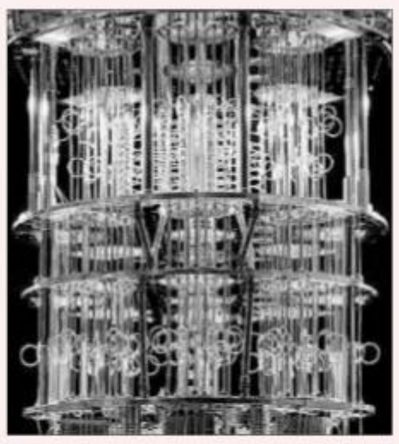
**What is quantum supremacy?**

In simple terms, it means a stage where a computer will be able to do calculations that a regular supercomputer will take a billion years to complete. While Preskill had said it would take decades to reach that stage, Google has been able to inch closer within a few years. Its quantum machine, Sycamore, was able to do calculations in 200 seconds, what a conventional supercomputer would take 10,000 years to complete. While IBM is contesting Google's claims, its computer was able to do this in 2.5 days.

**How is this possible?**

The mechanics of a quantum computer are quite different from a regular supercomputer. Till now computing is bound by Moore's law-the law describes the rate of increase in the number of transistors (read computing power) that can be integrated into a silicon microchip-a shift to quantum changes that. While companies have been able to fit more computing power on smaller chips, quantum can provide even more power without relying on transistors and trying to fit more on a chip. Quantum computing works on something called qubits, where is a regular computer is guided by bits. The difference is that while a bit can only take one of the binary states either 1 or 0, a qubit can take any form depending on position or state.

Moreover, it can also appear in a state, where it is both 0 and 1. So, the number of states with each qubit is doubled. And, each additional qubit leads to exponential growth. Using our example, if one qubit is equal to two, the second qubit would be 4, the third would 8, and so forth.



**Why is it so important?**

Google machine that was able to achieve somewhat of quantum supremacy was 53 qubits. Shor's algorithm requires more power to break cryptographic protocols. Imagine, WhatsApp has at present a system that has 256-bit encryption, although it never reaches its potential, but if it were to do so, that would mean 2 raise to the power 256 or 115 quattuorvigintillion (a 78 digit number) combinations. So, breaking such protocols is difficult. Once quantum supremacy is reached, computers will be able to break such protocols easily. Two, this would also mean that they would be able to present limitless opportunities. Government's would be able to process data and provide real-time information. It would also enable them to forecast data much more accurately and with many different models. It shall also make space explorations and other tasks easier with computers able to handle a lot of scenarios at once.

**What does India wish to do with quantum computers?**

Most of the research in quantum computing is being carried out in the US. Google's project, for instance, was with US space agency NASA. India wants to develop native quantum computing capabilities, which will help it further research in the field and assist in the delivery of services. The ₹8,000 crore plan is focused on doing so. Although the amount is low, to begin with, but given the advances in technology and India's ability to create low-cost solutions, the money may suffice. Besides, with companies like D-WAVE offering quantum computers for $15 million (₹113 crore), India can surely achieve these capabilities at lower costs. Once, this is possible; it will aid the government in fraud detection and data analysis, which the government is already doing and that too in real-time.

BUDGET REACTIONS

### There's too little for education sector

There was too little for education sector in the Budget, said Sumeet Jain, co-founder, Yocket edtech start-up. "The FM did emphasise on education and employability, but there was no clarity on how it will achieve employability," he said, adding while online courses is a good step, why is it limited to only top 100 institutes? "The FM didn't mention anything about education abroad or loans. But FDI in education sector could be a big game-changer," Jain adds.

### Budget allocation is good news

The whopping Rs 99,300 crore for education sector is good news, said Abhishek Kumar, regional director, Onvu Learning. "The FM also announced positive reforms including Study in India scheme, establishment of Police Academy and Forensic Science, and integration of medical institutes with district hospitals. Perhaps all these reforms will go a long way by including video-analytics-based edtech solutions to them as well," added Kumar.

### Welcome the intent in this Budget

The Rs 99,300 crore allocation for education sector is appreciable, said Rupal Dalal, ED, JD Institute of Fashion Technology. "I welcome the intent in this Budget of a new India that attempts to make the country a leading destination for higher studies in the world, as well as the place for cutting-edge innovation," she added. "Being an educationist, I welcome the novel educational policy implemented by the government of India."

### A forward-thinking Budget for skilling

"I call it forward-thinking Budget," said Sanjay Goyal, business head, TimesJobs. The Rs 6,000 crore to boost internet connectivity is big news for internet, e-commerce industries. "The announcement of a single investment clearance window for entrepreneurial projects will boost the 'Startup India' mission," he added.

### The impetus is on online learning

It is great to see the impetus on online learning as the medium of choice for skilling, said Mohan Lakhamraju, founder & CEO, Great Learning. "We welcome the move to allow top 100 NIRF institutions to offer degree-online courses. As an edtech firm that has helped thousands of professionals upskill successfully via the online route, I believe an initiative like this can play a disruptive role in making quality higher education accessible to everyone," he said.

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