



**BIG  
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CENTRE**  
مركز الابتكار الكبير

REPORT  
SEPTEMBER 2019  
Zaabeel Hall 1

# SKILLS AND EDUCATION

## AI EVERYTHING WORKSHOP 2

**Skills and Education** is a report based on the second workshop of AI Everything - held on 30 April 2019 at Zaabeel Hall, Dubai.

This meeting was chaired by Stephen Metcalfe MP, UK House of Commons, and Damian Moore MP, UK House of Commons.

We would like to express our appreciation to the following people for their oral evidence: Professor Manahel Thabet, President of Economic Forum for Sustainable Development; Adam Bonnifield, Airbus, VP of Artificial Intelligence; Christine Nasserghodsi, Mirai Partners, Co-Founder; and Atharv Naik, Unified Cancer Network, Founder.

The evidence presented in the report is not exhaustive but reflects what was discussed at the meeting, and the views and experiences put forward by the people giving evidence. Written submissions by individual expert advisors in relation to this meeting are also included.

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# WORKSHOP OVERVIEW

## *Details*

- Date: 30th April 2019
- Time: 2:30 – 4:00 pm
- Location: Zaabeel Hall, Dubai.
- Participants: 40 registered attendees

## *Speakers*

- Professor Manahel Thabet, President of Economic Forum for Sustainable Development
- Adam Bonnifield, VP of Artificial Intelligence, Airbus
- Christine Nasserghodsi, Co-Founder, Mirai Partners
- Atharv Naik, Founder, Unified Cancer Network

## *Questions*

- How do we prepare, educate and skill our youth for the AI future?
- Are our children future proof? Learning at school – primary and sectors
- What should the national and school strategy be for improving education while advancing the learning experience?
- Are our Universities AI Ready to adopt the use of AI in education, or is it just a research field for the few?
- How should workplaces reskill us or create better learning routines at work?



## INTRODUCTION

As part of AI Everything in Dubai, Big Innovation Centre hosted a multi-stakeholder workshop to discuss the impact of AI on education and, specifically, what skills younger and older generations should equip to reap the benefits of AI technologies.

Stephen Metcalfe MP and Damian Moore chaired the session and the panel included: Professor Manahel Thabet, President of Economic Forum for Sustainable Development; Adam Bonnifield, Airbus, VP of Artificial Intelligence; Christine Nasserghodsi, Mirai Partners, Co-Founder; and Atharv Naik, Unified Cancer Network, Founder.

The audience of the workshop were attendees at AI Everything, representing all sectors of life from government to business and from academia to civil society.

The increasing development and deployment of AI technologies calls for education systems worldwide to be revisited and adopted to fit the context of the modern era. There is a growing criticism that education systems of today do not prepare individuals with the skills and capabilities to survive and thrive in the AI revolution. Policymakers worldwide must address this challenge.

At the heart of this challenge is the need to prioritise the right skills that will empower younger generations to not only work with AI but to live alongside AI. It won't be necessary for every student to be a good coder, much as not every car-driver needs to be a mechanic. But everyone will need a sense of what sorts of things AI systems can do and, more importantly, what sorts of things AI systems cannot do.

AI technologies themselves can be part of the solution, helping transform the learning experience for students worldwide so they can have a high-quality personalised education providing them with the essential digital understanding. AI can reduce barriers to access education, automate management processes, analyse learning patterns and optimise learning processes with a view to improving learning outcomes

As our education systems are transformed by AI, we must also be considering the potential implications. We must work together to address issues around bias and discrimination, understanding and adaptability, data misuse, and likelihood of access to only wealthier members of society. Ultimately, however, the benefits of AI in education will far outweigh the downsides, and we need to pave the roadmap for how to reap the former while mitigating the latter.

## CURRENT STATUS OF EDUCATION

Most of the classrooms and curricula around the world are designed to handle the needs of a previous century, one with traditional jobs and ways of learning. Hence, they are unable to prepare the students adequately for the socio-technological changes unfolding.

Education systems need to redesign what they teach, how they teach, and where the skills are taught. The schools need to overlook the current curriculum and dig deeper into how they can prepare the students for the future uncertainties that they will encounter in the AI era.

We need to move from what many call the 'factory-model' education system given rise during the Industrial Revolution to a new 21st century model. Most agree that memorising massive amounts of facts and being assessed via 'one-size-fits-all' exams should no longer be what we consider learning, especially when most students already have access to those facts right in their pockets. However, our schools are constantly being criticised for doing just that.

Advances in AI have brought back the discussion about whether the current school system is too focused on 'learning by rote' and ignores critical thinking. The reality is that most schools are usually under pressure to boost their academic achievement such that they focus more on remembering and memorizing instead of critical thinking.

This means that the schools are also churning out students with knowledge for jobs that may not exist soon instead of equipping them with skills to handle the jobs that are yet to come. Most school curriculum is yet to meet the standards of future-proofing their students. Future-proofing, however, is essential to prepare students for the future – especially in an agile labour market.

At the workshop, Mr. Athary Naik spoke about the current drawbacks of the education system, highlighting the lack of practical experience and real-world challenges students have access to. He recognized that children lack the ability to become entrepreneurs or problem-solvers simply because they are not prepared for such a role in their schools.

In sum, there are five key challenges in our current education systems, and, with smart policies, AI technologies and innovation can help tackle all five. AI can tackle the excessive workload teachers face nowadays. It can provide students and teachers more flexible pathways to learning, stopping the existing 'one-size-fits-all' model. AI can transform the way students are assessed. It can create a collaborative and open ecosystem in which insights are shared between education systems. And, lastly, AI can help tackle low social mobility and inconsistency of education provision.



**Atharv Naik**  
Founder, Unified Cancer Network

*Talking points from Mr. Naik's presentation*

- As a sixteen-year-old, Atharv sees his generation as a lab for these new technologies
- A marriage between digital and technological advances has to codevelop
- What will the jobs of the future require? Will we be enough as humans to accomplish them?
- Range of domain-specific technologies (narrow AI) are impacting society at the main point
- Education systems need to be tailored, no one is a bigger critique than the people being educated
- A great question being talked about is that education system fits industrial practices; however, this is not exactly true; education system is not industrialist because we do not learn on businesses; we are doing academic, in pursuit of academic excellence (especially in STEM); first 18-20 years are focused purely on academia
- What future needs are thinkers and entrepreneurs
- Incubator programme was very different from what happens in the classroom, it really helps develop the entrepreneurship skills
- Education system needs to realise the importance of building skills
- Change requires time, institutional innovation
- Very promising if we manage to get it done

## PREPARING THE YOUTH

Policymakers need to comprehend the scale and speed AI will transform education and steer their national education systems in a way that truly prepares our younger generations for their futures.

The massive and rapid technological changes show that the world is moving towards intelligent automation. This new world offers numerous benefits to the children and the youth of tomorrow because it is transforming employment, and the future jobs will be quite different from the current ones. At the same time, serious challenges are also surfacing.

Automation, for instance, is one aspect that is transforming various sectors such as education and the employment sector. With the use of AI set to change the future jobs and the skills required to carry them out, schools must focus on providing the students with more skills that will enable them to cope with future AI demands. The nation and the schools should strategize on how the internet and the use of technology improve the quality of education. Universities have made numerous efforts to ensure that they are prepared to move into the AI era. However, these institutions are yet to hit the capacity where AI can replace tutors.

Stakeholders within the education ecosystem must ensure that children are fully prepared to tackle the changes in technology from a young age. Teachers need to tailor their approach to meet the specific needs of each student and enable them to develop the necessary cognitive skills required for the future. Teachers need to ensure that students have both hard and soft skills such as coding to allow them to face future AI with ease.

With the many technologies that are emerging, introducing AI at a young age gives our kids more power in AI in the future. Coding algorithms and compiling data can be used to make the young students familiar with the basic AI elements without knowing it. This is one way that we can use to educate and prepare our young children for the AI future.

For example, classroom-based AI is being utilized by teachers for automatic grading and helping the students understand educational subjects better. This is a way of communicating an idea about AI to the students, which is the first step in preparing them to become better skilled in AI in the future. There is a human talking robot known as NAO that teaches everything in a fun way for students to learn STEM subjects. Students can also program the robot to perform other functions such as hand gestures and emotional movements. Through this early collaboration with AI, the student becomes familiar with technology, better preparing them to train and apply AI in the future.

Skills are critical in this transformation. Students will not only need the skills to work and manage AI systems – skills that include coding, machine learning, advance mathematics, etc. They will also need important skills to live with AI. These skills are commonly known



as soft skills and include creativity, problem solving, critical thinking, and interpersonal skills.

Governments must work with the wider society to ensure individuals possess the right type of skills to navigate successfully through an ever-changing, AI-environment. This will require rethinking the current education systems, identifying skill gaps, and setting up incentive structures for individuals to invest in those skills most in-demand.

During the workshop, thinking schools were offered as the solution if we want our children to survive in the world of uncertainty and technological changes. The advantage of thinking schools is that they can be used across different cultures and ensures that the students are fully prepared to deal with AI in the future.



**Professor Manahel Thabet,**  
President of Economic Forum for  
Sustainable Development

*Talking points from Professor Thabet's presentation*

- The issue of skills in the 4IR is key
- Children have more creativity and problem solving at a younger age, but the education system globally doesn't help enhance this
- If we want to create more 'Einsteins' – creativity and critical thinking have to be prioritized from a young age
- The Middle East has a serious problem in education system as there is a growing challenge in the youth's ability to tap into the knowledge economy
- Middle East is estimated to contribute to AI governance by 0.01% and it is important that this number increases
- We need to develop skills and growing abilities of children, enhancing their critical thinking, creativity and problem solving
- Future jobs will be based on critical thinking, so these skills need to be prioritised in the education system
- Governments are not changing the education system, but they must so our future generations can be more innovative

## RESKILLING INDIVIDUALS IN THE WORKFORCE

Just as important as it is to equip our children and youth with skills they will need in their futures is to also empower older generations.

Technologies are moving at such remarkable speed that it is likely that individuals already in the workforce will be impacted.

AI is already reshaping the workforce significantly. The contours of the Fourth Industrial Revolution are becoming a reality for workers and companies around the world. Progress and prosperity in this new world require the stakeholders to integrate reforms in education, training, and development of new skills to enable the workforce to catch up with the current technological changes.

High-quality jobs are expected to be created with the rise of AI, and these jobs pose a challenge when it comes to the skills that the employees will require. According to OECD, skills are an important aspect of an individual's life and shape their ability to survive or thrive in an environment. Having the right skills is key for a person to succeed in some major aspects of their life, including their work.

Yet, it is expected that most of the skills that the people have today will be lost by 2020. Therefore, any individual joining employment will be required to reboost their skills. For this reason, young professionals are urged to acquire new skills which will enable them to fit in the AI era.

Workplaces should focus on reskilling their employees by investing in training programs in areas related to technology. This will enable them to keep abreast with the changing technology and achieve their individual goals. Technology reskilling involves equipping young professionals with IT skills such as data literacy and application of AI in the solution of daily problems and challenges in the workplace.

Reskilling also requires the effort of all the stakeholders such as the government, the business organizations, and the individual. Each shift in digitization requires employers to invest heavily in retraining to ensure that the employees acquire the new skills needed for a particular job. Therefore, specific training measures should be undertaken by the employers to ensure that all the employees, including the young professionals, are well equipped to deal with AI. Employers and businesses should seek to prepare the young generation of workers with the right skills that they require to navigate in the ever-changing technology world. They should also enable the youth to maintain their skills, upskill, or reskill during their working life.

Since the modern world is experiencing technological changes that occur rapidly, employers must re-skill and retrain their professionals, including the youth, to ensure that they have the right skills for carrying out their jobs.

Individuals need the tools to adapt to a future that's going to change ever more rapidly. People must prepare for the jobs of the future by ensuring that they are equipped with the right type of transferable skills to successfully navigate through their lives, and older generations already in the workforce need to be given opportunities to continuously maintain their skills, upskill and/or reskill throughout their working lives.

The most helpful skill anyone can learn for this future that we're facing is how to keep learning, how to adapt and how to continue to learn throughout life and to do that very effectively. Twenty-first century citizens must have the ability to learn and master new skills. They need to pursue knowledge and constantly climb up the learning curve.



**Adam Bonnifield**  
VP of Artificial Intelligence, Airbus

*Talking points from Mr. Bonnifield's presentation*

- The challenge of getting a 'skilled' workforce prepared to deal with AI needs to be demystified
- Most companies like Airbus don't need that developed skills as most don't go anywhere near general AI
- It isn't hard to get people with PhDs in these areas but it's hard to find people with practical experience in applying these technologies
- Companies should focus on empowering their workforce and providing them with that experience
- Where we are in the evolution of technology; the fact that we focus on STEM skills is that we are still in the early stages; we need to apply creativity and critical thinking skills to tap into the full potential
- The types of skills we will need in the future are soft skills: professional workplace, creativity, etc.

## ADOPTING AI IN LEARNING

AI technologies can transform the learning experience for students worldwide so they can have a high-quality personalised education providing them with the essential digital understanding. AI can reduce barriers to access education, automate management processes, analyse learning patterns and optimise learning processes with a view to improving learning outcomes.

One of the most powerful tools that can be used in transforming education is technology. Schools should be at the forefront of boosting exploration and invention. To fully realize the benefits of technology in the global education system, it is crucial for educators to integrate technology effectively into their practice. One national strategy that can be utilized in boosting the quality of education is the use of the internet. According to Internet Society (2017), the use of the internet improves education quality in several ways. The use of the internet offers more knowledge, a greater wealth of information, and more opportunities for learning beyond the classroom. The use of the internet also gives learners a new learning experience as they learn more than what the textbooks can offer and makes learning more practical and fun.

Teachers can also get more materials from the internet and learn to tailor them to students' needs. Through interactive learning, the teachers can pay more attention to the needs of each student, boosting the learning experience and improving on the quality of education. The use of the internet is also crucial because it prepares the students for future advanced technologies through digital learning. Internet supports programs such as coding, which are the basis of AI and will be essential in the future. Therefore, the government should make the use of the internet a national strategy for boosting learning in schools.

Evidence shows that technology and the use of AI are slowly transforming the learning in our universities. Some universities have already adopted the study of technology-related fields such as computer analytics alongside other courses. This is one aspect that shows that some of the universities are prepared to use AI in education. AI chatbots are another feature that is being utilized in universities in dealing with the students' queries and promoting their overall wellbeing.

For the learner or the student, AI technologies could have the potential to provide individuals worldwide high-quality personalised education, allowing every single individual to discover their own unique character and grow by letting their uniqueness progressively unfold.

For the teachers, these set of technologies can help educators reduce administrative, routine tasks (i.e. assessment, plagiarism detection, administration, and feedback) and

provide them with more time to focus on the students. Furthermore, these technologies can help provide teachers with insights about students and ways to innovate their classrooms.

For the system as a whole, AI technologies can help those who manage our education systems, including education leaders and decision-makers, policymakers, and regulators. They can have a wide range of applications ranging from empowering informed decisions with predictive algorithms to allocating resources more efficiently to understanding best practice. They can be applied at the regional, local, and national levels.

The higher education system has already started enjoying the benefits of AI, although it is still in the early stages. Many universities already have AI programs in their system around the world. Some universities offer advanced degrees in AI, have AI laboratories, or support research that is AI-related. Other universities have highly focused on the development of apps that are related to AI. Such universities seek to expand the knowledge on how AI can be utilized to transform education at the university level. This shows that the universities are ready to use AI in education, and some are already doing so.

AI is also being used in some universities to boost student graduation rates. For example, the University of Florida is using data analytics and automation to track academic progress. This enables the support personnel to be proactive and guide the students towards achieving their academic goals. Some universities have already leaped into the world of AI and are using IBM's supercomputer Watson, an embryonic form of AI. Deakin University in Australia is already using Watson in the provision of student advice. The use of Watson in the universities offers a glimpse of how the administrative workforce will be carried out when AI is fully integrated into these institutions.

Despite the use of AI in some universities, the technology faces various limits in the current world. Hence, AI is not ready to replace tutors but presents a possibility of augmenting them. Schools should always seek to promote student engagement in various ways as a way of improving education while advancing the learning experience. The modern world is changing in many aspects, including education, especially now that technology is taking over most of the educational fields. An increase in critical thinking skills and boosting meaningful learning experiences are among the major results of higher student engagement.

AI technologies have already begun to be implemented in some of our learning environments, producing new teaching and learning solutions that can make education a lot more accessible and personalised. Yet, compared to other sectors such as health, retail, or finance, it is still in its very early stages and an ecosystem of lifelong learning must be built in order to move forward towards a new model fit for today's era.

AI technologies indeed have the potential to address many of the challenges identified above. However, just like every other technology, AI is a tool and hence we first need to set the right structures and policies to ensure that potential is realised. Educators, policymakers, regulators,

students, and parents need to work together to achieve the opportunities and prevent the drawbacks.



**Christine Nasserghodsi**  
Co-Founder, Mirai Partners

*Talking points from Ms. Nasserghodsi's presentation*

- Mirai Partners is a learning innovation group focusing on preparing futures
- Created Gems Education, a youth incubator to enrich student experience in schools which evolved into a proper incubator where students receive funding and mentoring
- How to prepare students for an AI future? We shouldn't think of the future as a predefined way. AI is already here. It is hard to define the future because that's a false sense of security.
- AI is taking away tedious and mundane tasks, especially for educators, and providing them with the insight to do creative type of work
- AI can be magical in learning environments, tutoring assistance, tailored insights, assessment, increase student performance
- Education is one area where future of AI feels very bright
- Research focuses on soft skills for innovation (corporate banking after crisis); the need to reflect deeply is key with the speed of change; asking critical questions; looking at data that can provide insight about ourselves and industry
- Anything you want can be done with data but need to ask right questions
- Data insights can help us focus on soft-skills based teaching





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