

Lessons in critical thinking on the rise of AI

Students need more than programming skills to be 'AI ready'; they need to know about the risks and wider societal impact as well

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Earlier this year, Minister of State for Education Gan Siow Huang launched Singapore's new \$1.8 million AI Student Outreach Programme to equip our youth with programming and coding skills so that they become "AI-ready".

With its National AI Strategy, Singapore is enhancing the nation's artificial intelligence capabilities aimed at increasing productivity, creating more jobs and developing new business opportunities.

As outlined in Tom Davenport's 2019 book, *The AI Advantage*, companies can use AI technologies such as machine learning (ML) or robotic process automation to create and capture new value in the form of innovative services, products and processes.

Against such a techno-friendly backdrop, there is a need to equip young Singaporeans with a

deeper knowledge about the power of dominant platform firms ("Big Tech") and the techno-commercial logic of their online targeted ads. There seems to be ignorance among many young learners about the effects and risks this brave new digital society is generating.

Students arguably need more awareness about the potentially negative impact of emerging AI technology trends on humanity, social relations, data security and so forth, including knowledge about the surveillance features of "smart" phones, "smart" home appliances, "smart" virtual assistants, and social media.

Telegram, for example, is regarded by many digital natives as the de facto messaging service. A shrug is a typical response when I ask students who Telegram's founders are (Russian-born tech tycoons, brothers Pavel and Nikolai Durov) and how secure Telegram is. "You don't trust a new encrypted messaging service to keep communications private (or buy a used car) without proper background checks", is usually how I respond before sharing

more details about the eventful story of the origins and rise of Telegram.

To better attune undergraduates with deeper critical thinking competencies regarding AI technology trends and to make a case for the importance of digital self-determination, there is a need to share with them some of the timeless and timely ideas of both classical and contemporary thinkers pertaining to socio-technological change.

In a technocentric world, such a reflective approach provides learners with opportunities to apply critical insights to contemporary problems specific to AI, such as its disruptive potential (AI is infiltrating every sector) and the risky nature of black box algorithms.

The pedagogical challenge is to select the "right" scholars, given the time constraints and absorption limitations. For this article, I have selected five academic thinkers out of the dozen or so intellectuals featured in my course "Doing Business with Artificial Intelligence", which I co-teach with another instructor.

The first is Austrian political economist and former Harvard University Professor Joseph A. Schumpeter (1883-1950), who popularised the term "creative destruction" in his theory of economic innovation. He saw capitalism as an evolutionary process of continuous innovation, renewal and destructive recreation. Clayton Christensen's (1952-2020) theory of disruptive innovation and Donald A. Schon's (1930-1997) concept of innovation champions relate to some of Schumpeter's ideas which are further discussed in class with reference to AI as a disruptive lever of business model innovation, such as machine learning as a service.

The second thinker is German sociologist Max Weber

(1864-1920), who examined the disenchantment effect of modern science in contrast to the dominance of premodern, incalculable magical forces and religious mystery. While the role of superstitions, magic and religion were replaced by the process of rationalisation, modern society became increasingly dominated by bureaucracies based on the principles of hierarchical authority, job specialisation and formalised rules.

One conditioning effect of Weber's "iron cage of bureaucracy" is human alienation. In class, we relate this disenchantment effect to the metaverse and ongoing efforts of social media giants to digitally "re-enchant" the Internet universe. A critical review of health, abuse and cyber security risks associated with a simulated virtual world, avatars and virtual reality headsets concludes this class segment.

The third thinker is French sociologist Alain Touraine (born 1925), who developed the concept of social movement. He interprets social movements as a response to societal struggles between a dominated, protesting actor and a powerful opponent. Students are tasked to identify social movements they are familiar with, such as global climate strike movement FridaysForFuture, Singapore Youth for Climate Action, or charity group Daughters Of Tomorrow, and to elaborate on their concerns locally and beyond.

The discussion subsequently shifts to so-called "anti-movements", that is, groups which resist AI. Examples include the outcry over the Cambridge Analytica scandal (which revealed that AI had influenced the election of former United States president Donald Trump) and protests ("A-I, say goodbye!") at the annual American SXSW festival where tech, film, music, education, and

culture converge.

Discussion questions include: Why do new social movements emerge and how powerful are they? What are they objecting to? What does moral and social resistance to the impact of AI mean for big tech firms, AI ethics and regulatory policy development?

Students are also urged to reflect on the ethics of whistle-blowing, using the case of American data engineer and former Facebook product manager Frances Haugen, who disclosed hundreds of Facebook's internal documents to the Securities and Exchange Commission and *The Wall Street Journal* in 2021. Haugen claimed that Facebook's leadership knew about some of Instagram's detrimental effects on teen girls but did not act fast enough.

The case forms the basis to contrast different normative views of whistle-blowing, such as the Deontic view (derived from "deon", the Greek word for duty) which relates to duty and obligation. From a Deontic perspective, whistle-blowing can be regarded as a dutiful organisational practice that should be pursued in response to wrongdoings threatening the well-functioning of the organisation. After an overview about the major theories that support and oppose whistle-blowing, students debate whether Haugen "did the right thing" or not.

Finally, we discuss how the new powerful digital elites influence our common future with the help of the works of American sociologist C. Wright Mills (1916-1962), a sharp observer of America's power elites and how they impact society, and former Harvard professor Shoshana Zuboff, (born 1951), author of *The Age Of Surveillance Capitalism* (2018).

One of Zuboff's concerns is that

big tech companies have unchecked access to private personal information which helps them to create profitable "surveillance assets" – for example, by accumulating data which can be used to target ads – and harms consumer welfare.

This sets the stage for a concluding discussion on regulatory efforts to curb the power of big tech firms in the US and Europe, as well as specific legal rules in Singapore such as the Info-communications Media Development Authority Act 2016 or the Personal Data Protection Act 2012. There is also the Model AI Governance Framework by the Personal Data Protection Commission, which aims to promote public understanding and trust in technologies.

While acquiring hands-on AI programming skills is very important, digging deeper into the supposedly AI advantage through the insights of academic thinkers enables youth to better understand what it takes to harness digital technology safely and responsibly, to distinguish right from wrong, and to consider how their actions as Singapore's future digital leaders will impact their followers.

Student feedback suggests that these Gen Z learners are receptive towards the integration of such "scholarly" content in a "business-centric" AI course. As an educator, I am encouraged that this course has strengthened their digital literacy and am hopeful that some, if not all of them, will be more self-aware when they interact with AI technology in the future.

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