

Publication: Today Online

Date: 28 November 2017

Headline: The struggle to prepare workers for a fast-changing world

The struggle to prepare workers for a fast-changing world



Barriers among disciplines in universities must be torn down and students must give thought to how their skills can be applied in any area, says the author. TODAY file photo

The main task of education and research is to train people to perform in future economic and technological environments with many unknowns. Workers prepare to tackle unknown problems using instruments yet to be developed. In truth, we know embarrassingly little about tomorrow's jobs.

Interdisciplinary and holistic education and research are indispensable as the workplace combines cognitive skills with teamwork and debate with focus on adaptability, replacing silo thinking with a flexible approach that applies knowledge from multiple sectors that at first appearances may not seem relevant.

The World Economic Forum's Future of Jobs, 2016 offers two observations:

- In many industries and countries, the most in-demand occupations or specialties did not exist 10 years ago, and the pace of change is set to accelerate.
- On average, by 2020, more than a third of the desired core skill sets of most occupations will be comprised of skills not yet considered crucial to the job today. In essence, technical skills must be supplemented with strong social and collaboration skills.

Education and research are increasingly out of touch with demand for skills. The tendency to focus on cognitive skills, including the STEM topics of science, technology, engineering, and mathematics, cannot preclude the productivity benefit of soft skills – applying knowledge and finding opportunities offered by technology.

In recent decades most countries have fallen into the trap of overextending cost-benefit analyses while training students to solve yesterday's problems. Governments enforce short-term fiscal planning on education programmes, yet measuring social skills is not as easy as calculating STEM competences.

Much attention is devoted to high-calibre education and research and for good reason, but demand trends suggest that human factors may be more essential than normally assumed. For example, health, non-stop improving of skills and entertainment may prove to be the growth sectors of the future – and main job providers.

Human maintenance will grow almost exponentially steered by demographics and a growing proportion of elderly citizens. Human improvement, the ability to try new technologies should not be overlooked as higher productivity embedded in new technology only blossoms if humans have the skill to manage technology.

Publication: Today Online

Date: 28 November 2017

Headline: The struggle to prepare workers for a fast-changing world

Entertainment follows from a shorter work life and longer retirements. Elderly people are more active than previous generations and demand health care, entertainment, social networks and communication. They need coaches, presenting huge job openings.

For students to learn to adapt requires motivation and self-confidence via autonomy, mastery and purpose: Autonomy means that students learn how to learn, perform, do research on their own without seeking instructions or guidance.

In the industrial world, guidance was normal as those societies were not evolving very fast. The “we used to do it this way” approach was useful for the previous era but is obstructionist today.

Students today must prepare to work for situations with no paradigms. Mastery requires an individual to feel in control of a subject or craft, ready to renew abilities to win respect and acquiescence from others when canvassing for new paradigms.

Purpose is understanding of what must be done, why and how. Every enterprise must communicate purpose to their staffs and expect two-way feedback: Staff must show initiative, informing managers of improvements and new methods; managers must inform staff about objectives while keeping an open mind.

Modern workplaces constantly challenge the notion of “this is how we have always done it.” Autonomy, mastery and purpose are rarely practised in education or form a core in research, yet these are indispensable for coping with change.

The new workplace requires trust among leaders and staff. The key is sharing knowledge allowing technology, research and innovation to fulfill potential. Sharing only takes place if individuals feel they operate in a reciprocal system.

Universities must catch up. Amid chatter about the impact of artificial intelligence, quantum computing and the internet of everything, these are but messengers revolutionising education and research. The transition from the industrial to the technological age includes moving from:

- narrow disciplines and specific approaches delivering reproducible scientific results to options and the possibility of comparing different options, which entails searching for solutions across disciplines
- waiting for results to focusing on asking the right questions.

This is a shift from more than 200 years of deduction to induction as the plinth for education and research. Formerly, as the preferred method, deduction required forming a theory and, from there, working to solve a problem and seek an answer.

Big data, quantum computing, and artificial intelligence deliver complex systems that may require emphasis on correlations, interactions and interrelationships without needing theories. More than one best solution may be possible, and the end goal should be systems or use of current language models that adapt themselves. This is induction.

CAN UNIVERSITIES CHANGE?

Education and research have reached the point of reckoning with the edifice of mechanistic thinking behind the industrial-age based on how to manufacture, use energy and depend on materialistic consumption. This has not yet sunk in for many global leaders.

Still, this is the logical consequence of the complementarity principle for quantum mechanics as formulated by Danish physicist Niels Bohr that rejects the axiom of classical physics stating that mutual exclusivity is necessary to deal with atomic entities.

Publication: Today Online

Date: 28 November 2017

Headline: The struggle to prepare workers for a fast-changing world

The complementarity principle, on the contrary, stipulates that depending on experimental situations objectives may exhibit several characteristics, any of which could be observed or measured though not simultaneously.

Physicist and philosopher of science Arun Bala analysed Bohr's thinking and draws two conclusions applicable to interdisciplinary education: First, the complementarity principle applies beyond physics and is relevant for social sciences.

Second, thinkers like Buddha and Lao Tse wrestled with these epistemological problems, and Asian philosophers realised complementarity and its application over a range of disciplines from a philosophical worldview long before the Europeans did so.

European universities confront this massive change with basically two models. The Anglo-American model is the analytic pattern of moving from the parts to the whole, and the whole is the sum of its parts. The Continental model reflects a pattern of moving from the whole to the parts and then from parts to the whole in a cyclical process to understand a system.

Asia's universities, apart from the top layer, are relatively new, and Asia has the chance to start from scratch forging its own university model. It is by no means certain that, despite the race for top spots on international ranking lists, Asia will be best served by universities in the mold of Europe and the United States.

Interdisciplinary, holistic education and research call for a new paradigm. Technology opens many windows, but human skills determine how it is used. Instead of digging deeper to understand a narrow discipline, individuals can grasp interactions.

Societies must understand that what worked well until a few decades ago in education, research or business may not work anymore. Universities must play a more direct role in forging societies and interact more with government, business and societies.

So far, universities have welcomed interdisciplinary and holistic thinking but with limits – special courses or a small subset to existing curriculum. This is better than nothing, but still reflects an industrial-age response. Barriers among disciplines must be torn down and students must give thought to how their skills can be applied in any area.

Among the lessons for educators and workplaces: focusing on the ability to use knowledge and how to adapt; questioning cost-benefit analyses looking for fiscal results here and now; engaging in long-term thinking, emphasising the need to meet human needs rather than materialistic demands; providing feedback to education and research on how to interact with other human beings while resisting the trend of dehumanisation; and relying on a combination of individualism, creativity and teamwork to develop societies. YALE GLOBAL

ABOUT THE AUTHOR:

Joergen Oerstroem Moeller is a visiting senior fellow with ISEAS Yusof Ishak Institute in Singapore. He is also an adjunct professor at Singapore Management University and Copenhagen Business School and an honorary alumni of the University of Copenhagen.