CCPS Discussion Brief Number 1

The Fourth Industrial Revolution (4IR) and VUCA

Klaus Schwab, the World Economic Forum's (WEF's) Executive CEO created the name 'Fourth Industrial Revolution' (4IR) to distinguished it from earlier technological, social, and economic revolutions:

> The First Industrial Revolution used water and steam power to mechanize production. The Second used electric power to create mass production. The Third used electronics and information technology to automate production. Now a Fourth Industrial Revolution is building on the Third, the digital revolution that has been occurring since the middle of the last century. It is characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres.[i]

Schwab noted that the speed of breakthroughs today has no historical precedent. In other words, 4IR innovations impact at a faster rate than we have ever seen, and the pace of these changes is accelerating. Artificial intelligence, the Internet of Things, nanotechnology, autonomous vehicles, robotics, and energy storage are some of the terms associated with this revolution.

Extension Activity: Here's a link to a YouTube clip that explains 4IR. It is a little over 4 minutes long: https://www.youtube.com/watch?v=v9rZOa3CUC8. Here's another one produced by the World Economic Forum in 2016. It is about 12 minutes long, but it's worth watching. We encourage you to jot down some key points, including the areas where our graduates might find work and the skills they will require:

Schwab (who appeared in the WEF video) also employed the term 'disruption', which was the focus of a famous theory developed by Clayton Christensen[1]:

> …it [4IR] is disrupting almost every industry in every country. And the breadth and depth of these changes herald the transformation of entire systems of production, management, and governance.[ii]

As with previous revolutions, these changes represent opportunities to some and threats to others. We have seen the effects on employment and the workforce for some time now. There are shortages in some work domains and an oversupply in others. Permanent work is no longer the norm, and young people can expect to have many jobs and several career paths. They will need to be adaptable (agile) and in some cases entrepreneurial. Those who do not start their own businesses will need to be intrapreneurial, exhibiting creativity and a preparedness to take risks that add

[1] Clay Christensen wrote many highly regarded articles and books on the topic of disruption, including one he cowrote in 2008, called Disrupting Class, about changes in schooling.

value to their employer's business. All this means the social contract that was active when we were young (work hard at school, continue to university and get a degree and you will have a secure career path) has dissolved. There are now fewer rules but more expectations. We could liken the experience of previous generations to painting a picture (career) by numbers (rules). Future generations will have a blank canvass and be expected to continuously create and recreate with no numbers to guide them. The picture they create will be unique to them.

'Lifelong learning' is not a new concept, but if people are going to be retrained, upskilled, and redeployed at anything like the rate being forecast, learning throughout life will not be optional. This point was made clearly by the Global CEO of Deloitte:

> In working to keep up with the pace of technological change, business leaders are also beginning to appreciate the need to nurture a culture of lifelong learning, equipping their workforces with the skills necessary to succeed in the future[iii].

Deloitte's 2020 research asked senior executives to identify areas where their organisations have made progress in adapting to Industry 4.0 (another name for 4IR). 56% identified 'attracting and retaining the right talent', 72% referred to 'understanding what skills will be needed', and 75% stated 'training and developing workforce'.[iv]

Clearly, 4IR leads organisations to emphasise recruiting the right talent, but a greater emphasis is placed on the training and development of existing talent. In fact, it rated higher than any other priority in the survey responses[2]. We therefore need to equip our young with a range of skills that can be applied across varied work environments (as will be explained in Discussion Brief 3) and a thirst to learn throughout life. As with every other form of learning, the *will* to learn must come before the *skills* can be acquired. The foundation for lifelong learning is a positive attitude, which is in turn the result of positive learning experiences at home and school, which can only occur when we accept that all people, young and old, have a right to enjoy learning and to understand its relevance. Lifelong learners are keen to embrace opportunities to learn. (We will revisit this concept in Discussion Brief 6.)

Young people who graduated from school in recent years are already grappling with the effects of 4IR in their daily lives. Many of them, including those with tertiary qualifications, have struggled to find permanent work. I can understand why many are disillusioned, particularly given the other disruptions they have experienced (which we will revisit in DB 6). As a society, we implied a promise that we failed to deliver. Getting through school or university is no longer a guarantee for a well-paid job in their industry of choice. Yet, while the economy and society in general change as 4IR continues to gain traction, schools in general continue to deliver a service best suited to an earlier time[3]. (Note: We are not claiming that students should not aspire to study at university

[2] 80% of Chief Experience Officers (CXOs) surveyed by Deloitte said they either have created or are creating a culture of lifelong learning. https://www2.deloitte.com/content/dam/insights/us/articles/us32959-industry-4-0/DI_Industry4.0.pdf P. 11.

[3] I am giving schooling the benefit of the doubt here. I suspect it was not suited to any time where people aspired to achieve their potential.

or TAFE, nor are we suggesting we should ignore ATARs, we are simply stating that schools need to reconsider their priorities. This will be further explored in Discussion Brief 7.)

Our job as educators (which includes parents) is to equip young people with skills and attitudes to thrive as they transition to the world of work and establish themselves as successful adults. For this goal to be achieved they must see 4IR not as a threat, but an exciting array of opportunities. The environment that awaits them is vastly different to the one we experienced when we were the same age. Stability, certainty, simplicity, and clarity of the past have been replaced by Volatility, Uncertainty, Complexity, and Ambiguity (VUCA). This is acutely felt by today's youth, as reflected in the findings from PwC's 2021 survey of 32,500 workers in 19 countries:

> …52% of youth (18-24 years old) either agreed or strongly agreed that traditional employment will not be around in the future, as they will promote their own personal brands and sell skills on a short-term basis to those who need them. Additionally, 62% of youth either agreed or strongly agreed that 'automation would put many people's jobs at risk'.[v]

While there are differences in demand for labour between sectors, we have seen a general shift to more casualisation and less full-time employment. In late 2019 the Centre for Future Work claimed that less than half of employed Australians were in full-time, permanent jobs with associated entitlements such as holiday pay, sick pay and superannuation and the figures for young people were worse, with only one in five in permanent jobs[vi]. A 2021 report by the National Youth Commission Australia revealed that 605,000 people under the age of 25 were either unemployed (keep in mind the threshold for classification as being employed is one hour of paid employment per week) or underemployed (underutilized).[vii]

Thankfully, as you will see in Discussion Briefs 2, 3 and 6, there are experiences we can call upon to guide our young. The technologies with which they engage will be different, but the skills they require are, in the main, new combinations and applications of very human qualities that predate 4IR. Let's therefore ensure our conversations with our school age children convey a sense of determined optimism. Their future can be fulfilling, but they and we must be flexible and keen to embrace new possibilities.

Unpacking VUCA

VUCA is an acronym developed by the US military and now used to describe four elements of the contemporary business environment. The four elements are Volatility, Uncertainty, Complexity and Ambiguity. Bennet and Lemoine advised readers of the Harvard Business Review[viii] to be ready to respond to unexpected and unstable developments of unknown durations. The COVID-19 pandemic was an extreme example of *volatility*[4], although its impact has been global and not restricted to an industry or organisation. Nonetheless, organisations that are light on their feet and quick to reshape their business model are emerging from the pandemic in a much

[4] As is Russia's invasion of Ukraine.

stronger position than their competitors[5]. *Uncertainty* relates to the demise of established truisms, which doesn't have to mean a complete lack of knowledge about the environment. Uncertainty impacts most on those who expect tomorrow will be governed by the rules of yesterday. Old certainties (AKA Sacred Cows) have their place in history, but they cannot be allowed to shackle us to dysfunctional practices. Leaders and their most valued employees need to be constantly collecting, interpreting, and sharing information to shed light on changes as they appear on the horizon. These changes can be seen if we are prepared to look and accept what we see. Having many interconnected variables simultaneously in play no doubt makes the process of sense-making complex. *Complexity* is compounded by changes in community/market values, but many of these changes are also logical and predictable. *Ambiguity,* which Bennett and Lemoine describe as dealing with 'unknown unknowns', becomes a challenge if we cannot identify causal relationships. Ambiguity plagues people whose learning and social networks are too narrow and shallow. People who lack a global perspective, and are not the future oriented, bring VUCA upon themselves.

The WEF video in the extension activity illustrates people's ability to see over the horizon. We may not be able to predict the future in fine detail, but we can certainly predict its dominant themes (which you noted while watching the video, so keep your notes safe as we will ask you to refer to them later). We know that if our graduates have the *will* and *skill* to learn throughout life, high levels of self-efficacy (self-belief) and resilience, they will be able to identify and harvest the many opportunities generated by the VUCA environment.

Properly equipped, CCPS graduates can position themselves as highly valued members of organisations, whose leaders may be struggling with VUCA and need team members who can assist them. According to Odgers Berndtson, whose 2020 report was summarised in the Harvard Business Review:

> 95% of senior executives around the world believe that managing disruption well is vital to the success of their organisations, yet a staggering 85% lack confidence in their own leadership team's ability to successfully navigate through disruptive times. Moreover, only 16% of leaders say disruption has been well managed to date[ix].

There is little doubt that the disruption associated with 4IR and the VUCA environment is having an impact on the employment landscape. In fact, numerous reports have identified where job losses have occurred and where they will occur as the 4IR moves deeper and broader. Credible voices have been sending warning signals for some time. For example, as early as 2015, the Committee for the Economic development of Australia (CEDA) estimated that up to five million Australian jobs faced a high probability of being replaced by AI and automation, and a further 18.4% of the workforce had a medium probability of having their jobs eliminated. They warned that 'jobs that involve low levels of social interaction, low levels of creativity, or low levels

[5] While many schools performed admirably during the shut-down, I warrant most of them reverted to their established mode of operation as they reopened for face-to-face learning.

of mobility and dexterity are more likely to be replaced by automation.'[x] More recently, the Global Business Council for Education noted in its 2020 report that:

> The future of work is uncertain. The Fourth Industrial Revolution (4IR) is set to fundamentally transform the way modern societies are organized, and technological advances — especially in artificial intelligence and automation — may lead to serious job displacement and skills shortages. It is estimated that by 2030, more than half of the world's 1.6 billion youth will not have the necessary skills or qualifications to participate in the global workforce.

(This is already being experienced according to the PricewaterhouseCoopers (PwC) 2017 CEO survey. 77% of CEOs reported that a scarcity of people with key skills was the biggest threat to their business.)[xi] The report continued…

> If youth are not able to adapt to the 4IR and grasp the opportunities that await them, the consequences will be dire not only for them as individuals but also their families, their communities, and wider society.[xii]

The solution to casual and unbalanced labour markets is a workforce with transferable skills that can adapt quickly to changing circumstances. This is a commonly held view, as demonstrated in responses to the 2020 Pearson Global Learner Survey, where 91% of Australian participants agreed with the statement 'People need to develop more of their soft skills, such as critical thinking, problem solving and creativity'. (We should also mention that the scores were as high or very close to the same in every other country surveyed.)[xiii]

While the world economy sees dramatic job losses in some fields, it also faces a skills shortage due to lack of people either equipped with the skills required in an AI/automated world, or people with the capacity to be retrained quickly. According to WEF's Japman Bajaj:

> In a 2020 report, Accenture revealed that G20 countries risk forgoing up to $11.5 trillion in GDP growth over the next 10 years if they are unable to adapt the supply of skills to meet the needs of the new technological era. In the same year, McKinsey revealed that nearly 9 out of 10 executives surveyed are imminently facing skills gaps, and in 2021 the Future Skills Centre in Canada in partnership with Ryerson University and Microsoft expounded that only 1% of nearly 300 Canadian executives surveyed confidently believed that their new hires and recruits had the skills to perform the jobs for which they were hired[xiv].

Ample evidence indicates there is the deficit in both hard skills and soft skills threatens to cripple the world economy. In 2020 Michael Horn[6] noted:

> Employers are confronting sizable skills gaps in all parts of their operations, at all levels, and they can't seem to fill them by simply hiring new people. In today's tight labor market, there are about 7 million open jobs for which companies are struggling to find qualified candidates because applicants routinely lack the

[6] Michael Horn is a highly regarded commentator who co-wrote Disrupting Class with Clayton Christensen. You will see his name again when we explain Blended Learning in Discussion Brief 9.

> digital and soft skills required to succeed. In the face of rapid technological changes like automation and artificial intelligence, helping employees keep pace is challenging. And companies are wrestling with how to retain top talent — a critical differentiator in a hypercompetitive environment. No wonder a staggering 77% of chief executives report that a scarcity of people with key skills is the biggest threat to their businesses, according to PwC's 2017 CEO survey.[xv]

We must remind ourselves and our children that fantastic opportunities are waiting for young people with the right attitude and skills (and these skills involve more than teaching students how to code).

Previous generations may have taken comfort in stability, uniformity, and predictability but future generations must be prepared for something very different:

> To thrive in the future workforce, which is being drastically redefined by technological advances, workers will need to get comfortable with uncertainty, embrace flexibility, and reset expectations about the employer-employee relationship.[xvi]

There are plenty of opportunities available for people with the right skills. According to Burning Glass Technologies[7] opportunities in flagship jobs in the USA (those with 10,000 to 1 million postings) are growing at 20% per annum, fast-growing jobs are growing even faster, high growth jobs (fewer than 10,000 annual postings) are growing at more than 40% per annum, modest growth jobs show the lowest demand, while other jobs are in decline[xvii].

As Hagel, Wooll and Brown noted in a 2019 article:

> Amid continuing skills shortages, a focus on cultivating underlying human capabilities such as curiosity and critical thinking can give companies a sustainable source of the talent they need… while the *skills* to operate any given piece of machinery—or, more broadly, to carry out any given task—will inevitably become obsolete, the *capabilities* to understand the context, to tinker with alternative solutions, and to develop and creatively apply new amalgamations of techniques to achieve better results endure beyond any new technological advance or marketplace shift. [xviii]

Taking a pessimistic view of the future is not justified, nor will it help. Instead, we need to emphasise the importance of developing a set of skills and attitudes that will position young people for success. As caregivers we should adopt an optimistic view of the future, but it must be evidence based. We don't need to whitewash the issue because we have evidence to justify our optimism.

Many businesses are crying out for people with the attitude and skills they need for their enterprise to succeed. (These will be unpacked in subsequent briefs.) Of course, the question we need to answer is 'Can the current approach to schooling

[7] Burning Glass regularly uses AI to scan tens of millions of job postings in the USA and identify the skills required by successful candidates.

equip young people for success in such an environment?'. The OECD answered it this way:

> In the face of an increasingly volatile, uncertain, complex and ambiguous world, education can make the difference as to whether people embrace the challenges they are confronted with or whether they are defeated by them. And in an era characterised by a new explosion of scientific knowledge and a growing array of complex societal problems, it is appropriate that curricula should continue to evolve, perhaps in radical ways[xix]

We have experienced the first two decades of the 21st Century and have witnessed VUCA in politics, commerce, culture, and technology. The only certainty is that VUCA forces will continue to expand their impact, most likely at an accelerating pace. Our job (and by 'our' we mean families as well as the on-campus team at CCPS) is to prepare our graduates for the world that awaits them in the decades ahead. We want to achieve this while keeping those aspects of CCPS that are valued the most. We want to work with you to build on these solid foundations and create something extraordinary.

Extension activity:

Here's a link to an address by one of the world's leading educational commentators, Sir Ken Robinson. There are two aspects of it that could be a problem. It is a bit long, and it consists of Ken talking to the audience. This would not ordinarily satisfy our criteria for good digital content, but we have included it because it is Sir Ken. He is engaging and funny, as well as very knowledgeable. This clip offers an insight into some of the issues facing education today, even though the video was made in 2013, because the education community has failed to address them thus far. We will include links to other presentations by him in later briefs:

https://www.youtube.com/watch?v=BEsZOnyQzxQ

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