Preparing graduates in the everchanging employment market: A New Zealand tertiary case study

Authors: Niranjan Singh, Jone Tawaketini, Prabhat Chand, Gerry Hamilton, Roman Kudin, Anura Bakmeedeniya, Deepinder Sidhu

Abstract

Tertiary education is always heavily implicated in disruptions from global crisis including climate change, improvements in technology and related environmental issues. This research is provocative as it examines the robustness of graduate outcomes in programmes of study offered at Tertiary education institutes. It questions the ability of Tertiary education institutes to update and maintain graduate outcomes that will prepare the future workforce of the country with skills, knowledge and capabilities in an ever-changing work environment caused by global disruptions. A qualitative methodology was used to ascertain how global incidents caused disruptions to the way of work and the changes to skill-sets of employees. Drivers of disruptions were found to be introduction of radical technology, global economic shocks, political upheavals, environmental issues and impact on public health by pandemics. Key findings indicate that tertiary education institutes lack the foresight and funding to maintain and gear up their programmes of study in order to future proof against disruptive changes. The result has been that there is a growing mismatch between graduate outcomes and industry expectation. Discussions are around closing the current and future skills gap as an immediate priority for programmes of study. This research concludes with recommendations for improved funding and resources and a model to enhance validity of student learning experience.

Introduction

The New Zealand Tertiary Education Commissions funds programmes of study in educational institutes to ensure the country has skilled, work ready work force. Students undertaking programmes of study in tertiary institutes select their study options based on their interest and the financial security it will provide for their future wellbeing. Enter COVID-19 and the possibility of a recession, a number of industries have been turned upside down on their heads resulting in major job losses. Any crisis either it be national or global including technology change provides challenges to industry practice and employment security. However, as the nature of conducting business practices changes, there are also new opportunities arising from the ashes of lockdowns and the rising unemployment levels. Jahoda (1982) emphasises that industry needs to humanise employment as unemployment is a serious social problem in economic terms and the actual cost of unemployment. To improve employability, tertiary education is seen as having the fundamental role of educating people for employment. Maintaining graduate outcomes for a disruptive changing work environment depends on the outcomes of research that targets to improve tertiary education.

Educational institutes tend to stick stubbornly to the graduate outcomes resulting in very slow adoption of meaningful beneficial changes that would satisfy the needs of post crisis industry practice. The certainty that is precipitating is a number of graduates qualifying from programmes of study will not be able to secure employment aligned with their graduate outcome level, as the employment market has shifted by the changing business environment. A study by McKinsey and Company (2020) report that as technologies and business models change due to global disruptions, organisations are experiencing step change in the workforce skills and globally it is expected that 375 million workers may have to change occupations in the next decade. Global crisis tends to change how people in businesses operate and educational institutes must foresee to build new resilient capabilities in their graduates. Despite the rising educational attainment of graduates, for the last two decades the gap between graduate outcomes and industry needs has been expanding.

Historical evidence shows that recessions and increased unemployment leads to increased enrolments in tertiary education institutes as those being made redundant from their employment seek to re-skill themselves. These bring challenges in maintaining generic graduate outcomes current as the combination of skills required by industry go through a revolutionary change.

Aim

This research aims to improve tertiary education programmes of study through provocative reflection on practices and policies to keep them current in times of uncharted change hence the aim of this research is twofold:

1. To establish resilient meaningful and impactful student experiences in skills demand due to a global crisis,
2. To create models of evolving graduate outcomes in tertiary education programmes of study.

Literature review

We have attempted to draw key ideas and developments from this literature review to identify and understand what has been researched to date. There are a number of researches focussed on the competency-based skills development and capability development, both having strengths and weaknesses. We have divided the literature review in three themes; the first establishing graduate outcomes and the role it has in programmes of study, second the changes in technology and industry practice and thirdly the impact of global incidents in industry practices.

Graduate outcomes

In a time of revolutionary global change, industry leaders go into introspection business analysis where the focus is on survival. The economic challenges demand that they balance

between maximising profits for their shareholders while at the same time exhibit the organisation as socially responsible. In between these challenges lay role of employees who are the first target of cost saving. Simpson, Zhang and Zhu (2020) suggest that in a crisis stakeholder needs become very acute that the opportunity to make and indelible mark with human support, empathy and purpose is greater than ever. All business organisations will have a rapid evolving need from their employees which may be new skills or adaptive thinking. The key question that industry leaders ask in times of global challenges is what graduate outcomes does the employees possess that can be redeployed to the changing business practice. Oliver (2011) in his report to The Australian Learning and Teaching Council describes graduate outcomes as including knowledge and generic outcomes, the intertwining of discipline knowledge with associated professional practice. Graduate outcomes are generally aligned to employable skills based on industry needs. Roberts (2009) suggests that partnership with industry is an effective way to minimise the gap between graduate outcomes and industry needs. Any disconnect between industry and the education provider leads to students not acquiring the salient knowledge and skills. This may result in either industry not accepting the graduate for employment or the industry investing in retraining these graduates.

According to the World Economic Forum (2018) report, individuals under the risk of displacement, simply to remain in employment will require life-long learning and regular reskilling to seize rewarding job transition opportunities.

 It further reports that while the need for equipping the world's workforce with skills for the future of work and emerging job types is clear, the challenge is what policies and procedures may be used to deliver lifelong learning and reskilling at scale. Manyika (2017) argues that educational institutes have not kept pace with changing nature of work, and many employers cannot find workers with the correct skill-set. Oliver (2011) argues that meeting graduate outcomes is the heart of tertiary education and are designed to produce educated and work ready citizens as they are key contributing to the economy of the country.

Incidents having global impact

UNESCO Institute for lifelong learning define adult learning and education as a core component of lifelong learning and the aim is to ensure that all adults participate in their societies and the world of work. Adult learning and education involve sustained activities and processes of acquiring, recognising, exchanging and adapting capabilities. In response, programmes of study are now designed for global outreach and Premaratna, Rathnayaka, Dilrukshi and Wickremarathne (2020) suggest that for sustainable development, the challenge is in maintaining a balance between social, economic and environmental factors and any change in one factor has an impact on others. They further argue that to have a resilient social standard the quality of the eco-system is significant in sustainable economic development. The current impact of COVID 19 on the global education system is taking shape in three dimensions; first is limiting student movement, second impact is increases in local enrolments due to mounting unemployment and third is the way of serving customers. The introduction of fifth generation communication network brings several new dimensions of

how industries adopt and employees adapt to the new technology. Sung-Wong (2013) define disruptive innovations are technologies that change the order of existing industries to make new markets and progressive industries are always in search of new technologies. Global disruptive incidents provide opportunities to review their operation, however regular telescopic view of the horizon will provide sufficient information for long term future-proofing graduate outcomes of programmes of study.

Global financial crisis

From 2007 the world experienced a financial crisis which saw credit risks rising and a number of financial institutes went into liquidation leading to a global disruption. The global financial crisis redefined how wealth was distributed and the markets went into a recession which resulted in major job losses. Mishkin (2011) argues that uncertainty rises during a financial crisis that leads to hindering the financial markets to allocate funds to households and businesses with productive opportunities. Peters, Besley, and Paraskeva, (2015) suggest that during economic crisis governments go through austerity politics across all services with massive cuts to education in all aspects leading to loss of teachers. They further argue that education remains the prime institutional mechanism for the generation and transmission of values, culture and knowledge and a vehicle for social cohesiveness and justice. Education is also the vehicle for social transformation, leading to a more just and democratic society (Peters et.al., 2015).

Technology and industry practice

Armour, Danks, Johnson, Kennedy, Taylor and Watts (2020) on the current COVID-19 impact report that employment forces that is currently in play is a structural shift as the industries are shifting towards increased automation leading to reduction in labour intensive methods. They further report that industries like tourism and related businesses and education will have a knock-on effect on the providers however will be well placed to recover once the global threat subsides. The lack of embedding resilient sustainable practices has led to unsustainable material consumption resulting in huge environmental and social cost. Athanasakopoulos, Forrester, Marya, and Weddle (2020) report that the current global crisis has exposed employee talent challenges with digital literacy and to jump start efforts to address talent issues organisations need to move now to be prepared for the next normal where work will be profoundly different. Their report further suggests that organisations recognise the benefits of digital literacy and there is now a demand for workers with digital and analytical skills. However most the organisations also reported that they were currently unprepared for shifts in business practices as they had not developed their employees with the skills.

Automation

Automation is seen as bringing resilience to business organisation by reducing labour and bringing efficiency. Rotatori, Lee, and Sleeva, (2020) suggest that the combined influence of globalisation, increased business process automation and need for cognitive technologies within the workplace have led to a transformation in the nature of work and soft skills like

communication, collaboration and critical thinking are seen as key capabilities that every industry now requires. The introduction of automation in business processes is gaining ground as technology is upgraded and natural resources affects business profitability. On one hand automation is seen as improvement in quality, increased speed of production and a reduction of cost, on the other hand automation leads to a reduction in human skills requirement for current employees and leading to unemployment. Automation also brings new opportunities where it needs higher level of knowledge and skill-sets- to operate with fewer employees. According to McKinsey and Company report (2020) reskilling programmes most often focus on building employees' skills in critical thinking, decision making, leadership, managing others and advanced data analysis. They further report that organisations lack skills and talent they will need for the future and the most challenging has been balancing their programme needs with current business operations. Although reskilling by business organisations are now being activated, it is an opportune time for tertiary education institutes to revisit their programmes of study and ensure that the graduate outcomes are pre-addressing the needs of reskilling. Evidence suggests that along with basic digital skills, social and emotional skills demand will grow exponentially.

Introduction of fifth generation communication technology

The introduction of mobile data and smart phones and the desire for better connectivity has created a hyper-connected smart world. Agyapong, Iwamura, Staehle, Kiess, and Benjebbour, (2014) suggest that with evolving demands operators are continuously investing to enhance network capability to support current internet of things by introducing fifth generation (5G) network. Choi, Jung and Noh (2015) define virtual reality as becoming a popular information technology tool that provides indirect experience by creating a virtual space that interacts with the human sensory systems and overcomes spatial and physical constraints of the real world. With 5G capability, virtual and augmented reality have begun to take advantage of its high-speed capability and Baratè, Haus, Ludovico, Pagani, and Scarabottolo, (2019) introduce augmented reality and virtual reality applications in educational applications. They suggest augmented reality allows enrichment of learners surrounding through visual, auditory and haptic interfaces with virtual reality and allows substituting the real world with virtual ones. The technology allows broadcasting high quality content at high speed to students located distantly and able to provide interactive ability between teachers and students in real time. Alliance (2016) report that with the introduction of the fifth-generation communication technology, all industry processes are undergoing transformations to meet improved customer demands and cost efficiency by enabling massive connectivity, cloud computing, data analysis and intelligent automation. This revolutionary change will alter the roles of existing workers and create opportunities for new entrants with relevant higher education. Mircea and Andreescu (2011) suggests that the potential and efficiency of cloud computing in education has already been recognised and management policies of risks adds value with small capital investments.

Geopolitical instability

Penprase (2018) suggests that the fourth industrial revolution is an integration and compounding effects of multiples exponential technologies such as biotechnologies, artificial intelligence and nanomaterials and the need for tertiary education organisations to respond with up to date programmes of study is urgent. Students need to develop capacity in the rapid changing and seamless integration of global concerns including environmental and social justice.

Global events highlighting disparities between different groups has sparked the need to include social literacy in programmes of studies. In today's workforce that uses online communication, traditional boundaries of countries have disappeared and people can work in a team without having to meet each other physically. When included in education, Ayers, Quinn and Stovall (2009) suggest including the principles of equity, activism and social literacy nourishing the awareness of our own identity and our connection with others in education changes lives and the world we live in. Social justice needs to be embedded as part of the subject that includes diversity and multiculturalism. Peters, Besley and Paraskeva (2015) argue that education is the vehicle for social transformation that leads to a more just and democratic society.

Global health crisis

In late 2019, Coronavirus was detected in China and it quickly evolved into a pandemic strangling the entire world. Das and Ramakrishna (2020) state that travel of people, goods and services are severely affected. Physical social interaction depends on containing the virus, strategies for isolation of virus carrier's personal hygiene and preventive measures. For this research, the main demography that are negatively affected are students and teachers hence the unplanned shift from in-classroom education to online education. Al Lily, Ismail, Abunasser, and Alqahtani, (2020) support the statement that due to pandemics, most countries have replaced face to face education with crisis distance education (CDE) and it has turned the traditional distance education on its head. People all over the world have been forced into high containment where there is a restriction in their movement so with the availability of high-speed internet, CDE has been introduced due to the unforeseen need without the pre-implementation skills and knowledge development. The impending recession due to the pandemic will see tertiary education enrolments for local students increase and Bevins, Bryant, Krishnan and Law (2020) report that even though tertiary education leaders do not have the answers given the uncertainty in the epidemiological and economic outlook, they must ask themselves questions about medium and long-term implication to teaching, learning and student experience. Heitz, Laboissiere, Sanghvi and Sarakatsannis (2020) suggest that the frantic rush of transitioning from in-class to remote learning is now behind us, however teachers and students are still adjusting to the new learning environment. Even though students and teachers miss the vibrancy of the campus, teachers are getting creative to maintain standards and are using all available resources that they can lay their hands on.

Environmental crisis

Premaratna, Rathnayake and Wickremarathne (2020) suggest that the quality of the eco-system has become a significant category for the welfare of society and for sustainable development a balance of economic, social and environmental must be maintained. Maintaining a stable environmental quality will have implications for resource availability however as society progresses it is moving towards being resource hungry. Chapman and Piddington (2006) report that concerns about climate change are increasing and some quarters argue that New Zealand government policies are not addressing the issue. Kelly (2011) states that New Zealand is a country which is at the forefront investigating and implementing renewable energy sources and major sources is hydroelectricity. Walmsley, Walmsley, Aitkins, Kamp and Neale (2014) argue that New Zealand has a high political will in the renewable sector and is projected to produce 90% of electricity through renewable sources by 2025. Hence, in response to global climate change, the New Zealand government approved the Climate Change Response (Zero carbon) Amendment Act 2019 and set new domestic targets of net greenhouse gases to zero by 2050 supported by funding for long term targets. As pressure to climate change increases, many sectors have to play a role to meet climate change mitigating targets. One key driver is renewable energy technologies are now becoming cost effective. All these new technologies require development, commissioning and maintenance and as tertiary education institutes plays a key role in workforce development, graduate outcomes need to by focussed towards these new and emerging technologies.

Understanding and shaping the graduate outcomes for the next normal

To review the graduate outcomes, a variety of terminology has been used to reflect the many different approaches in setting the graduate outcomes. The challenge that faces programme developers is how to include vocational education which embeds entrepreneurship towards a positive impact on society and the graduate outcomes could withstand the test of global upheavals. Rizvi (2004) suggests that education is best understood as an industry trapped within contemporary capitalism subject to economic cycles and market conditions hence it needs to be dynamic and open to innovation to meet student and industry needs. The World Economic Forum (2018) report concludes that the main limiting factor for job transition opportunities is the willingness to make reasonable investments in reskilling that will bridge workers into new jobs. Peters et. al., (2015) further support with the statement that after the global financial crisis, public education has undergone a profound transformation and it is unlikely to revert to its former status. Manyika (2017) argue that many activities that workers carry out today have the potential to be automated and the speed of automation for disrupting the world of work is unprecedented.

Consolidated literature review

Any sector of the industry will have variance from one business unit to another so meeting every business units needs may be difficult. From a graduate's perspective when in work, their

programme of study may have gaps in regards to content, design and delivery hence their perceived value of their qualification.

For leaders of tertiary educational institutes, it is challenging to reshape the portfolio and develop resilient graduate outcomes that encompasses equity, social justice, economics and the technology that is yet to be developed. In an everchanging industry landscape educational institutes can better meet student needs by developing resilient graduate outcomes that accommodates innovative technologies as they are introduced to the industry.

Research question

How can tertiary education providers maintain graduate outcomes perpetually current in their programmes of study?

Methodology

In this research we have used a qualitative approach triangulating information from literature as foundation evidence, reviewing programme review processes and personal experiences. The review process of programmes of study was also analysed to understand restrictions on graduate outcome change.

The methods for data collection was document analysis, as Salmein, Kauppinen and Lethovaara (1997) suggest a great deal of collective knowledge is stored in documents. Documents used in the research were:

1. Tertiary Education Commission's resources for funding,
2. Tertiary Education Organisations' investment plans,
3. Range of programme of study documents.

Data analysis was by establishing a coding scheme intuitive where themes were highlighted in the literature and document analysis. The primary coding was descriptive, example; global disruptive incidents, graduate outcomes and future business practices.

Findings

The findings are structured in 4 sections to maintain clarity.

The New Zealand Tertiary education institutes operate in a very regulated environment so change management is a complex process. Any change is subject to consultation with industry, academics and general guidelines set by New Zealand Qualification Authority. Funding for staffing to carry out reviews, rewrite programme documents, develop learning material and procure learning resources are inadequate.

Business organisations get affected by changes in regulations, environmental effects, improvements in technology, political stability and other manmade or natural crisis. These imposed changes require workers to adapt or acquire new skill sets to operate in the new normal. The current practice is reactionary rather than being proactive or having crisis ready skillsets.

Business organisations tend to make strategic decision and take a direct role in skilling their workforce rather than leaving for educational institutes to transform education to meet industry needs. However, the industry focuses only on the operational skills and employee personal attribute like social and emotional skills are ignored.

Tertiary education institutes tend to wait and see how the crisis pans out focussing on financial risk management and profitability rather than investing in preparation of the next upward demand and future proofing programmes of study.

Discussion

There is relatively large literature on the types of global disruptions with respect to industry implications, there is an absence of literature on its impact on preparation of graduate outcomes. This may be due to assumptions by tertiary education policy makers that institutes are proactive and provide a smooth pathway to mitigate any global disruptions. Education has moved from bringing and balancing social justice towards more of an international trade. Codd (2005) states that historically New Zealand education has directly contributed to social democracy through literacy however as many western countries have adopted neo-liberal policies and governments have gained greater control by placing it within the orbit of economic policy. The expenditure on education is seen as an investment in human capital relating it to economic growth. Successive governments have moved tertiary education as an entrepreneurial activity and opened to fee paying international students. This change has led to institutes being depended on revenue generated through provision of education to international students. Peters et.al. (2015) suggest that education is a central aspect of the global world and is now a more of an economic good and not limited to social good. The change in government policies for tertiary education and other global crises has exposed tertiary institutes to disruptions.

The world is getting riskier as a result of political upheavals, trade disputes, introduction of revolutionary technology, financial disruptions, natural disasters and health crisis. As a result, business entities including educational institutes have the dilemma of how to assess and manage the resulting risks and prepare their business models to counter these disruptions. For tertiary educational institutes that understand the vulnerabilities imposed by the impact of global crises, there is now an opportunity to prepare for future shocks and build resilience in their graduate outcomes. Creating strong links between the dynamics of industry practices and student learning benefits both the graduates, industry and society as a whole during times of survival.

Model for contributors of graduate outcomes
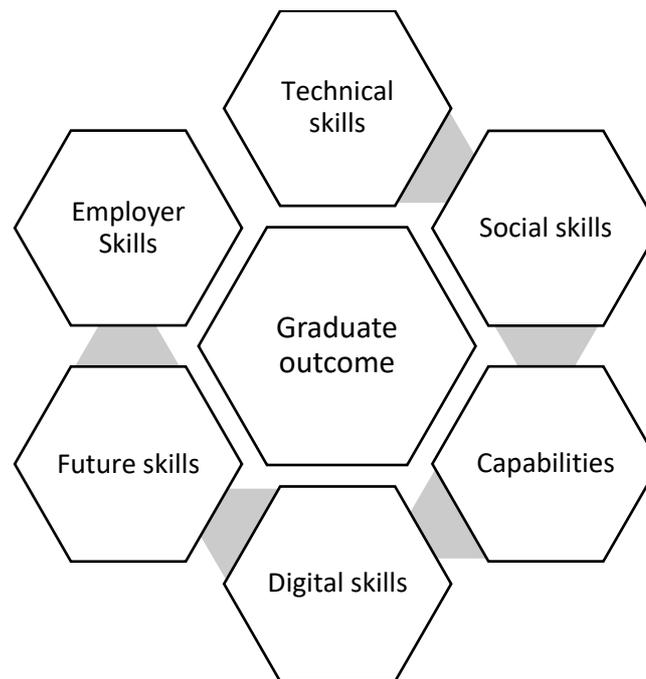
Conclusion

As the pace of change caused by global disruptions accelerate towards blurring of different business operating models, tertiary education organisations need to manage programmes of study to harness the potential of innovation and have continuous evolving graduate outcomes. A multi-dimensional review to existing programmes of study with input from educationists, current former students and visionary educational advisors needs to be undertaken. One of the key takeaways from this research is programmes of study must include transferrable skills that are evolving as industry practices progress, able to accommodate changes in technology and global incidents that cause disruption to business practices. In the face of innovation and rapid change in use of technology in industry practice, a fast-paced alignment with industry practices must be maintained by academic programme managers by being nimbler and more accelerated in making change decisions. With limited transformational investment, there is always a mismatch with the expectation of managers to make change and the ability of the programme reviewers to future proof graduate outcomes. We need to be future-focussed and present-ready with the changes thrown by global impact incidences. Not taking heed of the warning signs will result in economic dislocation as graduates are not able to secure of hold jobs. Without strong stewardship and governance of the tertiary education organisations, lack of future focussed graduate outcomes will relegate graduates to low paid jobs.
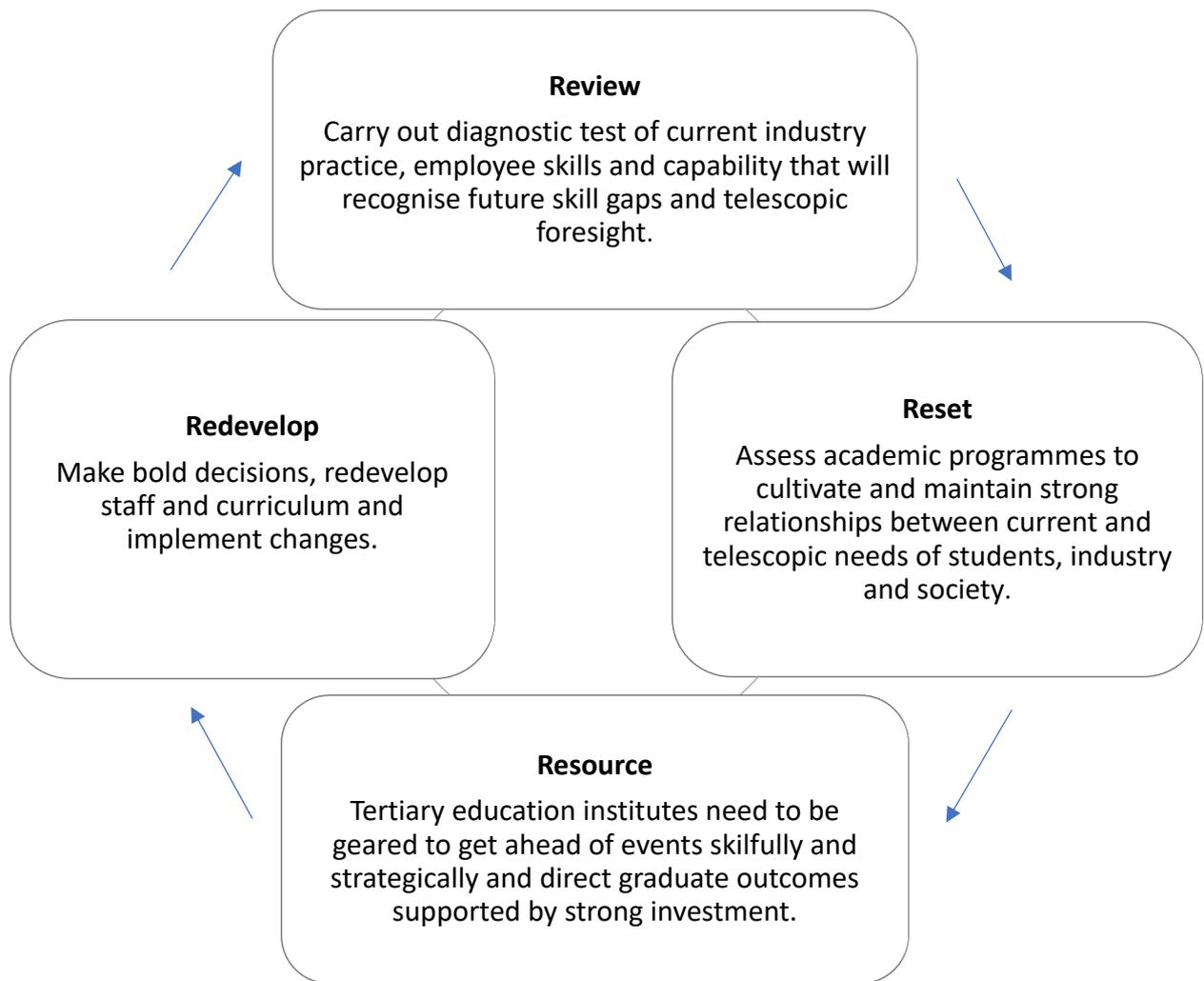
We believe implementing fast paced future focussed graduate outcomes in programmes of study require long term vision of programme designers, institutional courage and generous investment.

Recommendations

As the actual needs of learners after graduating from programmes of study will have multiple variations, the provocations from this research may provide some guidance to programme renewal. The following recommendations are made from evidence gained through literature review, document analysis and personal experiences.

1. The review of graduate outcome has to be a holistic, top priority exercise and requires focus from programme management, teaching staff and relevant industry leaders.
2. Strategically reallocate resources to revenue growth promoting programmes keeping agility of graduates at the centre of redevelopments.
3. Tertiary education organisations management need to increase staff empowerment, accepting rapid decision making and encouraging sustainable, creative and trusting work environment.
4. Programmes of study to include state of art technology and transferrable telescopic skillsets that are fundamental capabilities to crisis management.
5. We recommend that for continuous improvement and validity of graduate outcomes of programmes of study the following programme renewal process is undertaken.

Programme renewal model

Review

Carry out diagnostic test of current industry practice, employee skills and capability that will recognise future skill gaps and telescopic foresight.

Redevelop

Make bold decisions, redevelop staff and curriculum and implement changes.

Reset

Assess academic programmes to cultivate and maintain strong relationships between current and telescopic needs of students, industry and society.

Resource

Tertiary education institutes need to be geared to get ahead of events skilfully and strategically and direct graduate outcomes supported by strong investment.

References

Agyapong, P. K., Iwamura, M., Staehle, D., Kiess, W., & Benjebbour, A. (2014). Design considerations for a 5G network architecture. *IEEE Communications Magazine*, *52*(11), 65-75.

Al Lily, A. E., Ismail, A. F., Abunasser, F. M., & Alqahtani, R. H. A. (2020). Distance education as a response to pandemics: Coronavirus and Arab culture. *Technology in Society*, 101317.Distance education as a response to pandemics: Coronavirus and Arab culture. *Technology in Society*, 101317.

Alliance, N. G. M. N. (2016). Perspectives on vertical industries and implications for 5G. *White Paper, Jun*.

Armour, C. D. (2020). *The next normal for Australian indsutries and workforces.* Sydney: McKinsey & Company.

Athanasakopoulos, G. F. (2020). *Call to action: How A&D companies can build the workforce of the future.* Waltham: McKinsey and Company.

Ayers, W., Quinn, T. M., & Stovall, D. (Eds.). (2009). *Handbook of social justice in education*. Routledge.

Baratè, A., Haus, G., Ludovico, L. A., Pagani, E., & Scarabottolo, N. (2019). 5G Technology for Augmented and Virtual Reality in Education. In *Proceedings of the International Conference on Education and New Developments 2019 (END 2019)* (pp. 512-516).

Bevins, F. B. (2020). *Coronavirus: How should US higher education plan for an uncertain future?* New Yark: McKinsey and Company.

Chapman, R., & Piddington, K. (2006). New Zealand's energy future: a review of A Sustainable Energy Future for New Zealand by 2050 and Future Currents. *Policy Quarterly*, *2*(1).

Choi, S., Jung, K., & Noh, S. D. (2015). Virtual reality applications in manufacturing industries: Past research, present findings, and future directions. *Concurrent Engineering*, *23*(1), 40-63.

Codd, J. (2005). Teachers as 'managed professionals' in the global education industry: The New Zealand experience. *Educational review*, *57*(2), 193-206.

Das, O., & Ramakrishna, S. (2020). Education and Research during Pandemics: Illustrated by the Example of Experimental Biocomposites Research.

Heitz, C. L. (2020). *Getting the next phase of remote learning right in higher education.* Washington, DC: McKinsey and Company.

Jahoda, M. (1982). Employment and unemployment. *Cambridge Books*.

Kelly, G. (2011). History and potential of renewable energy development in New Zealand. *Renewable and Sustainable Energy Reviews*, *15*(5), 2501-2509.

Manyika, J. (2017). Technology, jobs and the future of work.

McKinsey and Company (2020). *Beyong hiring: How companies are reskilling to address talent gaps.* Zurich: McKinsey and Company.

Mircea, M., & Andreescu, A. I. (2011). Using cloud computing in higher education: A strategy to improve agility in the current financial crisis. *Communications of the IBIMA*.

Mishkin, F. S. (2011). Over the cliff: From the subprime to the global financial crisis. *Journal of Economic Perspectives*, *25*(1), 49-70.

Mourshed, M. F. (2013). Education to employment: designing a system that works. *McKinsey on Society*, 1-111.

Oliver, B. (2011). Assuring graduate outcomes. *The Australian Learning and Teaching Council. Retrieved May*, *26*, 2012.

Penprase, B. E. (2018). The fourth industrial revolution and higher education. *Higher education in the era of the fourth industrial revolution*, 207.

Peters, M. A., Besley, T., & Paraskeva, J. M. (2015). Global financial crisis and educational restructuring. *Citizenship, Social and Economics Education*, *14*(1), 15-18.

Premaratne, S. R. (2020). Impact of Ecological and Socio-economic Factors on Sustainable Development in Developing Countries: Econometric analysis of panel data from South Asian, African and Latin American Regions. *Sri Lankan Journal of Banking and Finance, Vol. 3(1)* , 1-21.

Rizvi, F. (2004). Theorizing the global convergence of educational restructuring. *Educational restructuring: International perspectives on traveling policies*, 21-41.

Roberts, E. (2009). Mind the gap: Aligning learning and graduate outcomes through industry partnerships. *Journal of hospitality and tourism management*, *16*(1), 130-138.

Rotatori, D., Lee, E. J., & Sleeva, S. (2020). The evolution of the workforce during the fourth industrial revolution. *Human Resource Development International*, 1-12.

Salminen, A., Kauppinen, K., & Lehtovaara, M. (1997). Towards a methodology for document analysis. *Journal of the American Society for Information Science*, *48*(7), 644-655.

Simpson, B. Z. (2020). *Demonstrating coroporate purpose in the time of Coronavirus.* Toronto: McKinsey and Company.

Sung-Won, J. A. N. G. (2013). Seven disruptive innovations for future industries. *SERI Quarterly*, *6*(3), 94.

UIL (2020). *Adult educVirtualation and the challenge of exclusion.* UIL Policy Brief 10. Hamburg: UNESCO Institute for Lifelong learning. Retrieved 27 May2020 from https://unesdoc.unesco.org/ark:/48223/pf0000372904.

Walmsley, M. R., Walmsley, T. G., Atkins, M. J., Kamp, P. J., & Neale, J. R. (2014). Minimising carbon emissions and energy expended for electricity generation in New Zealand through to 2050. *Applied Energy*, *135*, 656-665.

World Economic Forum Boston Consulting Group (BCG). (2018). Towards a reskilling revolution: A future of jobs for all. World Economic Forum, Geneva, Switzerland.