

# The Future of Higher Education in the Knowledge Economy

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The Future of Work and Education



**WORLD  
GOVERNMENT  
SUMMIT 2022**

in collaboration with



# To Inspire and Enable **The Next Generation of Governments**

The World Government Summit (WGS) is a global platform dedicated to shaping the future of governments worldwide. Each year, the Summit sets the agenda for the next generation of governments with a focus on how they can harness innovation and technology to solve universal challenges facing humanity.

The WGS is a knowledge exchange center at the intersection of government, futurism, technology, and innovation. It functions as a thought leadership platform and networking hub for policymakers, experts and pioneers in human development.

The Summit is a gateway to the future as it functions as the stage for analysis of future trends, concerns, and opportunities facing humanity. It is also an arena to showcase innovations, best practice, and smart solutions to inspire creativity to tackle these future challenges.





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# Foreword

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This KPMG research paper is published in collaboration with the World Government Summit (WGS). The paper uses original research, interviews with global experts and industry leaders to identify what the next generation of education ecosystems needs to meet the current and future challenges of the workplace and broader economy.

The focus is on long-term research and trends to ensure that the findings and recommendations have a long, interactive life. Complemented by continued debate in the media, regular updated reports and thematic panel discussions this collaborative effort takes the conversation to the next level, building on smaller and strategic events.

We address this context and these following questions, particularly as they relate to post-secondary education:

Our rapidly changing reality presents the need for future-proof fields of study to provide a framework in which to manage these changes. The education system will need to be fluid, agile and not deeply rooted in the principles of the last century. What will the ideal education system of the century look like?

1. How can we determine if a field of study is future-proof?  
What are the criteria of assessment?
2. Do future-proof fields of study exist within the current education model?  
If so, what are they?
3. Can combining existing fields of study give birth to future-proof fields of study?
4. How can governments nationally implement future-proof education programs?
5. What reforms to education systems would enable future generations to find employment?

We explore the significant changes in this sector in recent years by synthesizing current research and analysis by KPMG, complemented by external expertise in the form of interviews with two global leaders in education. We look at the decline of the 'golden age' of universities in the developed world and the new demands being placed on the education sector to meet employer requirements driven by digital disruption.

Our analysis addresses the overarching themes of geopolitical change, environmental pressures, pandemic impact and the ongoing development and application of digital technology. We then explore the future proofing of work and education in different fields of study. We investigate higher education models, multi-disciplinary approaches, government policies/programs, and education systems.

We also take a deep view, leveraging longitudinal research and case studies, tracking shifts over multiple decades.



# Executive Summary

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The global environment surrounding work and education has been changing rapidly in recent decades. This has created new patterns of work and demands on the education system. Our latest analysis indicates these changes have been accelerated by the recent COVID-19 pandemic.

The **uptake of digital technology** across the entire education landscape has moved quickly in the last 2 years with rapid up skilling of faculty in online teaching and assessment. However, not all digital change is positive. The consensus from substantive studies, some running for more than 20 years, has highlighted several compelling points requiring reflection and discussion:

- Online course uptake has increased dramatically in the last decade, though this is heavily weighted to business and technology subjects
- Non-completion rates on online platforms are very high<sup>1</sup>
- Leading institutions are balancing the teaching of digital and technical skills with more agile and enduring skills such as creativity, critical thinking and communication. Multi-disciplinary approaches are being used to prepare students for multiple careers and shifts in the technology landscape<sup>2</sup>
- Forward-thinking government policymakers in advanced economies like Japan have a long-term focus on a similar balance: embedding creativity and communication skills across the education ecosystem<sup>3</sup>

In parallel, **educators struggle with questions of cost and value**. In KPMG's recent paper The Future of Higher Education in a Disruptive World we investigated these questions.<sup>4</sup>

**The 'golden age' of universities in the developed world is passing** and life is becoming tougher for them. Rising costs no longer appear to be matched by a willingness of governments and students to pay for them. Yet the traditional operating model of a university cannot produce sufficient productivity gains to cover the gap.

**Digital platforms potentially offer a low-cost alternative** to high-cost, face-to-face, on-campus education. They offer more accessible modes of education that align to workplace demand for continuous learning and re-skilling to address disruptive trends, particularly digital technology.

**Higher education leaders and policy makers need to create a framework for blended and multi-disciplinary programs** in order to meet the demands of the digital economy and continually changing workplaces.

With a particular focus on the three key themes treated in this research paper – *digital myth and reality, cost versus value and the role of government and regulatory reform* – we propose the following:

## Recommendations

**1**

Invest in technological infrastructure and well-structured data repositories.

**2**

Shift the mindset of institutions to place the student at the center and provide focus and flexibility.

**3**

Strike a balance in funding models between market demand and investment in the broader set of soft skills.

**4**

Form partnerships between governments, higher education institutions and industry to develop courses and curricula.

**5**

Work continually with local leading universities, international partner nations and institutions to invest in the original research and basic science.

**6**

Differentiate and specialize in targeted areas of strength based on national priorities.

**7**

Provide citizenship and financial support programs for talented foreign nationals to compete effectively for global education talent, students, teachers and researchers.



# Context: The Changing Landscape of Work and Education

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“By 2030, more than half of the world’s children and young people (800 million) would not have the skills or qualifications necessary to participate in the emerging global workforce.”

- The Education Commission





The recent seismic change in the education sector demands agility from all stakeholders but, as in all crises, there is an equal and balancing requirement for some solidity and continuity. There are no simple solutions to this complex and rapidly changing landscape.

For example, our recent discussions with leading engineering colleges indicate online learning is less effective than face-to-face in communicating complex concepts in fields like physics. Full understanding of these concepts is essential for developing the required professional competencies. Education system failure in this area would have substantive negative impact from a safety and financial perspective. There similar implications in the fields of medicine, applied biology, genomics and chemistry.

However, digital technology, and the related demand for governmental and institutional transformation, continues to develop at an exponential rate. This is impacting both the education sector and the employment market.

What was science fiction in the late 20th century is rapidly becoming the reality of human-computer interface in the labs of leading research institutions around the world. Global education leaders like President Joseph E Aoun from Northeastern University (see interview below) have developed methods like ‘humanics’ to describe these new approaches to work and education.

This combination of forces has resulted in a world of contradictory trends, creating challenges but also **significant opportunities, for governments, education and research institutions, corporations, communities, and individuals.**

The transition to remote working and online learning has become the dominant paradigm almost overnight. Recent studies by the World Economic Forum, supported by Ipsos survey data covering 29 countries and over 27,000 adult survey participants, indicate that half expect education “by 2025 to be as much online as in person.” As of 2019, “there were 110 million learners and 900 universities using MOOCs (Massive Open Online Courses) with most online courses in the business and technology disciplines.”<sup>5</sup> And this is only seven years after the 2012 launch of Coursera, the market leader in this space.<sup>6</sup>

From a work-preparedness perspective, the Education Commission (a global initiative encouraging greater progress on Sustainable Development Goal 4 – ensuring inclusive and quality education and promoting lifelong learning for all), “estimated that by 2030, more than half of the world’s children and young people (800 million) would not have the skills or qualifications necessary to participate in the emerging global workforce.”<sup>7</sup> This was prior to the pandemic. Post-pandemic ‘modeling’ indicates “students currently in school are estimated to face a \$10 trillion reduction in lifetime earnings.”<sup>8</sup>

These are disruptive changes at unprecedented levels. The challenges and opportunities span the environmental, social and economic domains.

# The Future for Higher Education has Arrived Ahead of Schedule

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Higher education will move from relative uniformity to great diversity.





KPMG's recent report, *The Future of Higher Education in A Disruptive World* (November 2020)<sup>9</sup>, looks at the impact of the COVID-19 pandemic, and related disruptive trends, on the higher education sector:

*The business and operating models of many universities were exposed as critically reliant on the good times continuing. Real and painful as all this has been, most of the consequences of the pandemic were at least evident as emerging trends. The future has just arrived inconveniently early.*

*Of all the claims and predictions that follow, perhaps the one most-confidently made is that **higher education will move from relative uniformity to great diversity**. Different types of providers and forms of provision will proliferate.*

- **Physically**, we will see a mix of actual campuses, augmented campuses (where mixed reality and the analog world fuse) and virtual learning environments.
- **Educationally**, we will see much more experimentation with content and delivery. And of all the forces impelling this diversity, the most powerful will be the search to meet the needs of individual students. The quality of personalized student learning will be key to institutional success.<sup>10</sup>

## Diversity in a World of Digital Education

When we look at emerging diversity in global education there have been several significant developments in recent decades:

- Mass open Online education
- Modularized courses
- Micro credentials
- Policy frameworks that link related areas like education, employment, finance and risk management

As our interviewees highlight, the challenge for educational institutions and governments is understanding what to keep and what to change. From an employment demand perspective, where demand for up-skilling and re-skilling is growing, these new modes of education offer the potential for more accessible, flexible and lower-cost professional development suited well to the demands of the digital economy.

## Top Trends Impacting Higher Education

In March 2020, KPMG commissioned Forrester Research to investigate trends in higher education and demand drivers in the knowledge economy<sup>11</sup>. The survey was based on interviews with 410 senior leaders in higher education institutions and the education technology (EdTech) sector across Canada, US, India, UK, Germany and Australia.

At a thematic level, the top trends are summarized here:

## 1. Demand for Online Education Will Skyrocket

- The global economic downturn and continuing health concerns will boost an already-growing enrollment in online education programs. They provide the flexibility that non-traditional students, or adults who are trying to distinguish themselves in a tight job market, need. Further, individuals who have lingering concerns about public health will prefer to avoid classrooms, even after the acute phase of the COVID-19 pandemic passes.
- This rapid rise in online education will test the abilities of educational institutions, their online course management systems, and other partners. Online program management companies will thrive as more educational institutions partner with them to build, manage, and market their online offerings. More institutions will also try to distinguish their online programs by incorporating cutting-edge augmented reality (AR) and virtual reality (VR) elements into their classes.

## 2. Alternative Educational Models Will Proliferate

Alternative education models — like micro-credentials, stackable credentials, competency-based education, and achievement tracking — have been around for years. However, it is not until now that these models will finally receive their due recognition and be thrust into the limelight by the following agents:

- The growing number of non-traditional students and their needs
- The power of new technologies
- The widening skill gaps in tech, health care and other professions that increasingly will require employees to work alongside AI

Many educational institutions will struggle to realign their faculty and operating models around these types of offerings, which require different structures and skill sets.

## 3. Schools Will Struggle with the Promise and Peril of Cutting-edge Marketing

In their search for more applicants and alumni donors, institutions will make greater use of marketing technologies that allow them and third-party companies to build data-rich profiles of customers and personalize outreach. Although this may increase applications and donations in the short term, it will also cause the same problems that it has for other organizations:

- The ‘creepiness’ factor in modern marketing and high-profile data breaches that can turn off customers

- Inaccurate profiles that can cause embarrassing mistakes and an over-pivot to marketing technology at the expense of differentiating creativity

Schools that succeed with personalized marketing will take their cues from the wisest businesses, gather only the data they really need, use customer insights to understand where the bar for creepiness is for different customers and keep human creativity at the center of their marketing efforts.

## 4. Cutting-edge Tech Will Drive Better Student Outcomes – and Profound Bias

Using machine learning technologies to gather and analyze data automatically from a range of sources will allow educational institutions to do three things:

- 1) Reach out to struggling students proactively with personalized resources and instruction — before they or their instructors realize they are struggling
- 2) Predict each student’s performance in upcoming classes and suggest additional resources or alternatives
- 3) Provide AI-based, real-time feedback on assignments and personalized resources for further study. Although the algorithms that underlie these technologies have the potential to help marginalized students, they can reproduce existing biases and create new ones if the algorithms are not trained properly. Institutions that succeed with this technology will ensure their technology vendors use AI testing best practices.

As cited earlier in this paper, research from the Organization for Economic Cooperation and Development (OECD), Massachusetts Institute of Technology (MIT) and others support these trends, while highlighting the importance of context and application.

This important point around context and application is highlighted in our recent interview with one of the global leaders of this discussion, Joseph E. Aoun, author of the groundbreaking book *Robot-Proof*. We asked him to address the five WGS-focused questions relating to ‘agile education systems.’ His reflections are illuminating and offer a cautionary tale to those who think digital solutions are a quick fix or a panacea.







## **Interview with Joseph E. Aoun, President, Northeastern University and author of Robot- Proof: Higher Education in the Age of Artificial Intelligence**

### **1. How Can We Determine if a Field of Study is Future-proof? What are the Criteria for Assessment?**

It is unlikely any field is future-proof. A ‘field’ is merely a lens through which one looks at the world. Every lens is limited and must be combined with other lenses to create a full and accurate picture of whatever one seeks to understand. It is therefore only through an **interdisciplinary approach** that one can begin to think about being ‘future-proof.’

The criteria to consider will depend on the issue or problem being addressed. What fields (what lenses) are the most incisive and revealing of the issue or problem? How can they be combined to generate the most relevant and impactful insights and solutions?

### **2. Do Future-Proof Fields of Study Exist Within the Current Education Model?**

A field that may come closest to being future-proof is **network science**, because it is by definition interdisciplinary. Network science—which is essentially the study of how things connect—can be applied to any issue or problem. It can generate solutions drawing upon fields of epidemiology, economics, law, psychology and beyond. Because it is agnostic to discipline, network science is unbound by the constraints that limit most other fields. Other comprehensive fields are now emerging where the human and technological spheres overlap—at the nexus of human and artificial intelligences.

### **3. Can Future-Proof Fields of Study be Born from Combining Existing Fields of Study?**

To plan for our future and to solve the challenges we face, we must constantly adapt and create new fields tailored to our reality. One field is not the answer, but rather many fields that each focus on a specific problem and incorporate the perspectives most relevant to it. These new fields must be born constantly as the contexts in which we live continue to evolve. For certain problems, we will need economists, biologists, ethicists, and engineers **to blend their disciplinary lenses and generate multifaceted solutions.** For others, we will need computer scientists, chemists, psychologists and designers.

#### 4. How Can Governments Nationally Implement Future-proof Education Programs?

Governments have long been the primary funders of research aimed at solving the challenges facing society. Government support for both fundamental and translational research is critical to private and public institutions alike. To ‘future-proof’ education, governments could direct funding for learning in a similar manner, **promoting the development of educational programs** and systems that are defined not by notions of field and discipline, but by the real-world problem to be solved. For example, rather than framing a curriculum around the study of, say, marine biology, build it around the multifaceted question of how to improve the sustainability of a coastal environment through science, policy, and engineering.

Governments should also promote education that equips learners with the core skills that will be essential for professional productivity and success in the Age of AI: the skills to work with AI and machines (tech literacy), the skills to use and understand data (data literacy), and the **skills that are uniquely human** and cannot be replicated by robots, such as **creativity, cultural agility, empathy, and entrepreneurship (human literacy)**. Governments should have a vested interest in building workforces with these skills – called Humanics – to ensure the sustainability and success of their economies in the face of the frequent disruptions that AI and rapid technological change will cause.

#### 5. How Can Educational Systems be Reformed to Prepare Future Generations for Future Employment?

The world is moving faster than ever before, and the problems we face are increasingly complex and multifaceted. Educational programs struggle to keep pace when they are bound by traditional structures and notions, such as disciplines, departments and degrees. Education systems must break free from these traditions and embrace the role of preparing humanity to address societal challenges using an array of skills that may not fit neatly within one discipline or field. When such an unbounded approach is grounded in real-world contexts, learners translate knowledge into lived experience—often called **experiential learning**. This cultivates the habits of mind and resiliencies—**creativity, adaptability, critical thought, empathy, and leadership**—that prepare them to meet any professional challenge, regardless of context.<sup>12</sup>



# Online Learning Myth and Reality

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Reflecting on the interview with President Aoun and KPMG research, it is important to challenge the hype and look at reality versus myths, in the digital arena, particularly in the area of online learning.

What is certain is that the emerging suite of digital platforms is quickly covering all aspects of education and learning, including administration, international student recruitment, proctoring and assessment. We anticipate **in the coming decades these platforms will coalesce, align and create new online education ecosystems.**

In education's 'flat world,' superstar academics with scores of students are emerging, as evidenced by a recent study on the top ten courses on the Coursera learning platform. Three are led by Andrew Ng, from Stanford University.<sup>13</sup> This should not be surprising as it reflects 'flat world' trends in social media platforms where stars and influencers quickly emerge and attract huge followings.

**In the platform space, there are contradictions and reality checks.** MIT has tracked a dropout rate of 96% over a five-year period in Open Online Courses.<sup>14</sup> Most of the courses being taken online are in the business and technology disciplines.

## Australia: Online Delivery

In a recent report, based on over 20 years of longitudinal research, prepared by the Melbourne Centre for Higher Education at Melbourne University, it was observed that investment in sophisticated modes of delivering wholly online programs is emphasized. For instance, universities now partner with MOOC (Massive Open Online Courses) platforms (e.g. Coursera, EdX, FutureLearn) or dedicated online program managers (e.g. 2U, Wiley, Pearson, Keypath Education) to support wholly online program delivery.

Education providers in Australia have quickly embraced more powerful processing capacity, robust networks, synchronous rich-media collaboration tools, social media, and adaptive computing based on learning analytics to support online learning. This has enabled individual universities to develop mature offerings in wholly online programs that target both domestic and international students (e.g. Swinburne Online, Graduate Online Melbourne, universities partnering with Open Universities Australia). More recently, universities have partnered with external, private organizations in the provision of online delivery, such as Keypath Education.<sup>15</sup>

As we have seen earlier (in references to recent OECD reports), this proliferation of platforms is impacting education across all geographies. In addition, the COVID pandemic has tended to force domestic and international students to move to online learning models.

The Melbourne team has been tracking this development for over 20 years. Their recent report takes a deep look at long-term use of online delivery, particularly within the context of 'transnational education (TNE)', defined as programs "in which learners are located in a country other than the one in which the awarding institution is based."

There are two overarching modes of delivering TNE:

- **Offshore TNE:** describes campus-based education, for which there are number of different models and arrangements.
- **Online TNE:** purely online courses explicitly designed for students in a specific country or market. This recognizes that just because a degree is delivered wholly online, it does not mean it is suitable for students in all countries and contexts. Many wholly online courses are suitable only for domestic students, despite being accessible by students outside Australia (in this case the location of the originating institution).<sup>16</sup>

These long-term observations provide important insights for many countries that are relatively new to online education and can assist in avoiding past mistakes, as outlined below:

**International Branch Campuses (IBCs)** – were initially at the forefront of TNE provision during the 1990s as they appeared "to give the home university more control over academic quality than a licensing arrangement." In the subsequent decades, however, it appears that as a TNE model, IBCs have become progressively less desirable. They are increasingly negatively perceived as the "financial investment may be significant," and there is potential for tension between "the academic goals of the university and the more overtly commercial objectives of its joint venture partner."

**Full Online Global Delivery** – based on the expectations of the late 1990s, "fully online global delivery failed to capture the imagination of students and teachers in the same way it excited senior administrators." As a result, there has been a tendency to develop smaller scale and more targeted courses that more clearly reflect the demands of specific countries or markets.

To compete in this type of global education market, curricula, teaching, assessment and even group work, needs to be enabled by digital technologies. This is complex when it is considered that such platforms have yet to replicate all aspects of university academic systems, nor are they fully linked to operational systems and processes covering financial matters, personnel, student support services, procurement, risk management, etc.

These critical leadership considerations have been closely investigated in the March 2020 Forrester Research commissioned by KPMG to investigate the themes of digitally 'connected universities' and the related theme of student/customer centricity:

There are some notable findings in the report:

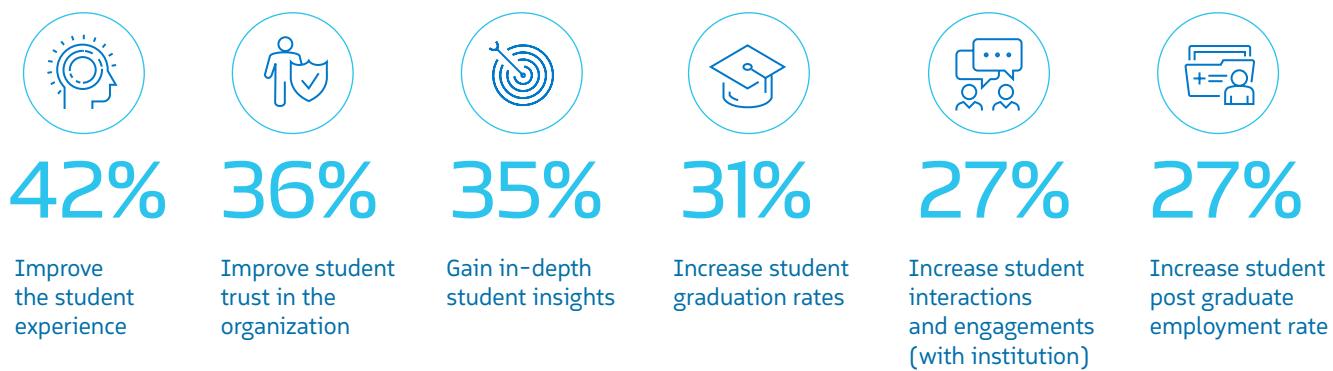
1. **Eight out of ten higher education institutions are putting customer centricity front and center.** Twenty-five percent of surveyed higher education decision makers count their customer-centric strategy among their institutions' top priorities; and 51% are making it a high priority. Institutions in India (84%) are more likely to be placing a high or top priority on this effort, while those from Australia (68%) are least likely to be placing this level of priority.
2. **Traditional organizational drivers take a back seat to more student-focused objectives.** Customer-centric strategies are driven largely by objectives centering on the student, rather than by more traditional institutional drivers, such as an increase in grant/donation funding and cost cutting. Improving the student experience (42%), improving student trust in the organization (36%), and gaining in-depth student insights (35%) top the list. These top drivers were largely consistent across all measured countries.
3. **The majority of institutions consider their customer-centric capabilities average at best.** Over half of higher education institutions rate their customer-centric capabilities as less mature (14%) or about average (42%), compared with peer higher education institutions. Institutions in India (50%) are somewhat more likely to rate their capabilities as more mature compared with their counterparts in Canada (44%), the US (43%), the UK (42%), Australia (36%), and Germany (32%).
4. **Few are going above and beyond in delivering on the student experience.** Just four out of ten institutions report that the experience they provide students consistently (9%) or even occasionally (28%) exceeds student expectations. Institutions in the UK, Germany, and Australia lag behind the other countries in the study, with only respectively, 29%, 28%, and 24% indicating that student experience exceeds expectations.
5. **Security, technology, and people/process hurdles stand between institutions and the successful execution of customer-centric strategies.** While higher education institutions face numerous obstacles to success, their lack of qualified staff is the number one barrier to the successful execution of customer-centric strategies, cited by 33% of respondents. In addition, 29% of institutions say that students who arrive lacking key skills are a top obstacle. Institutions are also dealing with several other security and technology challenges, including concerns over data security and privacy (31%), difficulty sharing student data and analytics between channels, countries, and locations (28%), and a lack of integrated communication channels (27%).<sup>17</sup>





The report also looks at service priorities, by surveyed country, demonstrating there are cultural and geographic nuances in these priorities that need to be considered by higher education leaders contemplating substantive change programs.

### What are the Primary Objectives Driving Your Institution's Customer-Centric Strategy?



Source: KPMG Connected Enterprise: Higher Education Data Review, KPMG, March 2020

To support these changes, institutions, faculties and departments need aligned brands and consistent quality standards across academic and professional areas, to build the presence and trust required for success in the flat, digital world.

It takes particularly skilled leadership to both run a business-as-usual (BAU) higher education institution and lead a transformative, large scale change program in parallel. Robot-proof highlights the capabilities needed to lead successful transformation – a unifying visionary, inclusive processes that engage key stakeholders in shaping the change, blending existing skills with specialist skills to build the right capabilities, respecting BAU imperatives and setting realistic timeframes and priorities for change programs.

KPMG's paper on The Future of Higher Education in a Disruptive World<sup>18</sup> provides a framework for this transformation journey based on our 'connected enterprise' research, methods and tools.

# What Does Disruption Mean for the Relationship Between Work and Education?

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After looking at the impact of disruption on education, logical questions then arise in relation to the relationship between work and education in our changing world. In our research, we found some very interesting perspectives on the demand side in an intriguing interview by the Wharton Business School with the president of Infosys Technologies, Ravi Kumar S.

The discussion, entitled How the Digital era is Nudging Universities to adopt a B2B model, is particularly interesting as it was conducted in January 2020, just prior to the onset of the COVID-19 pandemic.

The themes of lifelong and experiential learning feature in the conversation. Within that context, Kumar emphasizes the role of technology as the great leveler and the importance of experiential and componentized learning ‘just in time’ to supplement the traditional ‘just in case’ learning that schools provide to prepare students for all the things they may need — just in case — once they enter the workforce. ‘Just in case’ learning is defined as learning everything you can in case you need it in the future. Learning just in time is learning exactly what you need, at the time you need it.<sup>19</sup>

Early in the interview, Kumar advises educators to partner with corporations to re-skill people and bring the workforce up to speed with the changing needs of the workplace.

He goes on to state technology can prove important when facilitating the transition into a lifelong learning continuum. There is the ability to use virtual technologies to make learning experiential. “Let me give you an example: in manufacturing, I know of corporations that use AR (Augmented Reality) and VR (Virtual Reality) technologies to create virtual learning cycles. I know of firms that use digital twins to simulate lifelong learning.”

The second aspect is the ability to transform traditional classrooms into smart classrooms, the ability to use collaborative online platforms, leverage data insights, instantaneously provide real time feedback and change the pace at which one can drive the learning process.<sup>20</sup>

On a similar theme, in a recent (September 2020) World Economic Forum paper entitled The Unexpected Benefits of Virtual Education<sup>21</sup>, Guille Miranda, Head of Corporate Social Responsibility, IBM introduces the concept of ‘new collar’ jobs. This implies IBM is looking for people who can work in geographically dispersed, virtual teams who can:



Collaborate Efficiently



Conduct Online Research and Analysis



Use AI and cloud Resources



Master Speaker and Presentation Skills



Seek Continuing Education



Exercise Emotional Intelligence



Become More Self-Motivated and Proactive

Miranda takes the view that the move to online education, accelerated by the COVID-19 pandemic, is driving the education system toward future workplace skills demands.<sup>23</sup>

John Goodwin, CEO of the Lego Foundation, makes similar observations from the industry perspective, and identifies the following key skill areas as being critical in the modern workplace:<sup>23</sup>

-  Cognitive
-  Creative
-  Emotional
-  Physical

### Moving Education from the Ivory Tower to the Modern Economy

The latest research on education models is pointing in a similar direction. To gain further insight, we interviewed Professor Claire Macken from RMIT. A leading researcher on education and innovation, who shared some findings from her soon to be published book Unbundling the Ivory Tower (Macken, Hare and Souter, 2021).

# Interview with Professor Clare Macken, RMIT University

## How Can We Determine if a Field of Study Is Future-Proof? What Are the Criteria of Assessment?

My view is that higher education is for a bigger purpose other than simply getting students a job. **It is the role of higher education to equip students with the knowledge and skills they need to make a meaningful contribution to society.** Taking the University of Queensland (QS Top 100 University) HELP principles, this would be summed up as:

1. A university education provides a learning experience that broadens students knowing and being for life beyond the classroom
2. Learning occurs in context, and context can be used to enhance the learning experience
3. Emotions play a role in how and why students learn
4. Leverage the social dynamics of learning to enhance the learning experience
5. Challenge and difficulty can be beneficial for students learning process
6. When students employ effective methods of thinking and understand how they learn, they can improve the way they learn
7. Learning is built on prior knowledge and engages students in deep and meaningful thinking and feeling (Nugent et al. 2019)

The criteria for assessment of a field of study, therefore, is the extent to which transferable skills can be obtained in the context of the study of that discipline.

These twin themes of transferability and context are critical for policy makers. They are also highlighted by President Aoun. Without this broader view, there is a risk education systems focus too much on short-term technical skills and fail to produce graduates who are flexible, creative and can adapt to the rapidly changing world.



“The world needs creative, intellectual, emotionally aware and competent thinkers and leaders who are resilient and able to find opportunity in change.”

Quoting from Macken's soon to be published book: How can educational systems be reformed to prepare future generations for future employment?

*"As a result of university education, graduates must have a broad knowledge of culture, making decisions by reference to the wider world and an understanding of moral and ethical problems (Badat 2009). As digitization continues at pace this is more critical than ever before, with productivity and revenue gains needing to be balanced and debated against human and societal impacts."*

**The world needs creative, intellectual, emotionally aware and competent thinkers and leaders who are resilient and able to find opportunity in change.** A student needs to be mindful of global implications, flexible, forward thinking and very comfortable with technology as a tool and as a solution.

### Can Future-Proof Fields of Study be Borne by Combining Existing Fields of Study?

*"Yes. I think that it is at the intersections of disciplines that new fields of study are the most interesting, and the most relevant. For example, business and health; and indeed business and health and technology."*

Below is an example as to how intersections of different fields, along with the traditional fields of study and business, can create contemporary fields of study.

Business Disciplines	Business & Tech	Business & Global	Business Specifications	Business & Health	Law & Tech	Law & Health
<ul style="list-style-type: none"> <li>Marketing</li> <li>Management</li> <li>Bus info tech</li> <li>Management service</li> </ul>	<ul style="list-style-type: none"> <li>Machine learning &amp; AI</li> <li>Digital business management</li> <li>Business and technology management</li> <li>Business transformation</li> </ul>	<ul style="list-style-type: none"> <li>Business &amp; international management</li> <li>International business</li> </ul>	<ul style="list-style-type: none"> <li>Business &amp; strategy</li> <li>Business intelligence</li> <li>Business analytics</li> </ul>	<ul style="list-style-type: none"> <li>Business &amp; health sciences</li> </ul>	<ul style="list-style-type: none"> <li>Law &amp; entrepreneurship</li> <li>Law &amp; Cybersecurity</li> </ul>	<ul style="list-style-type: none"> <li>Law &amp; health</li> <li>Public health</li> <li>Allied health</li> <li>Aged care</li> </ul>
<ul style="list-style-type: none"> <li>Public Relations</li> <li>Advertising</li> <li>Sales</li> <li>Project management</li> <li>Retail management</li> </ul>	<ul style="list-style-type: none"> <li>STE(A)M/digital MBA or business</li> <li>Accounting &amp; cloud computing, big data, AI, Blockchain</li> <li>HR Technology</li> </ul>	<ul style="list-style-type: none"> <li>MBA (Global)</li> <li>Accounting (global incl outsourcing)</li> </ul>	<ul style="list-style-type: none"> <li>Business &amp; management consulting</li> <li>Business/entrepreneurship</li> </ul>	<ul style="list-style-type: none"> <li>Business/Health science management</li> <li>Business/Applied Public Health</li> </ul>	<ul style="list-style-type: none"> <li>Legal futures &amp; technology</li> </ul>	<ul style="list-style-type: none"> <li>Master of Health &amp; Medical Law</li> </ul>
<ul style="list-style-type: none"> <li>Human resources</li> <li>General managers</li> <li>Supply chain</li> <li>Public administration</li> </ul>	<ul style="list-style-type: none"> <li>Marketing technology</li> <li>Digital Business/ Strategy</li> <li>FinTech</li> <li>Digital business management</li> </ul>	<ul style="list-style-type: none"> <li>Bachelor of Business (Global)</li> </ul>	<ul style="list-style-type: none"> <li>Business and operations management</li> </ul>	<ul style="list-style-type: none"> <li>MBA Health</li> <li>MBA Healthcare Management</li> </ul>	<ul style="list-style-type: none"> <li>Bachelor of information technology/ Bachelor of Law</li> </ul>	<ul style="list-style-type: none"> <li>Health law &amp; technology</li> <li>Health law &amp; bioethics</li> </ul>

Source: Unbundling the Ivory Tower, Macken, Hare and Souter 2021

We would recommend this framework to policy makers across all geographies and institutions. These multi-disciplinary skills are what many multinational, professional service firms, like KPMG are looking for when we recruit new employees.

## How Can Educational Systems be Reformed to Prepare Future Generations for Future Employment?

“Clearly transferable skills as a focus of education would be the primary means by which future generations can achieve future employment.”

“Here is another abstract from our upcoming book Unbundling the Ivory Tower, 2021 (not yet published) Macken Hare and Souter:

“The world of careers tomorrow will be so incredibly different from the world of today. **It is estimated that a young person today in Australia will be a job-hopper – 17 changes in employers across five different careers in their lifetime** (Australian Department of Education 2020). In the United States, it is a similar story. One in four workers have been with their current employer for less than a year, and one in two less than five years (Zhang 2020). In Germany, two-thirds of younger workers are on fixed-term contracts rather than in permanent employment (Zhang 2020).”

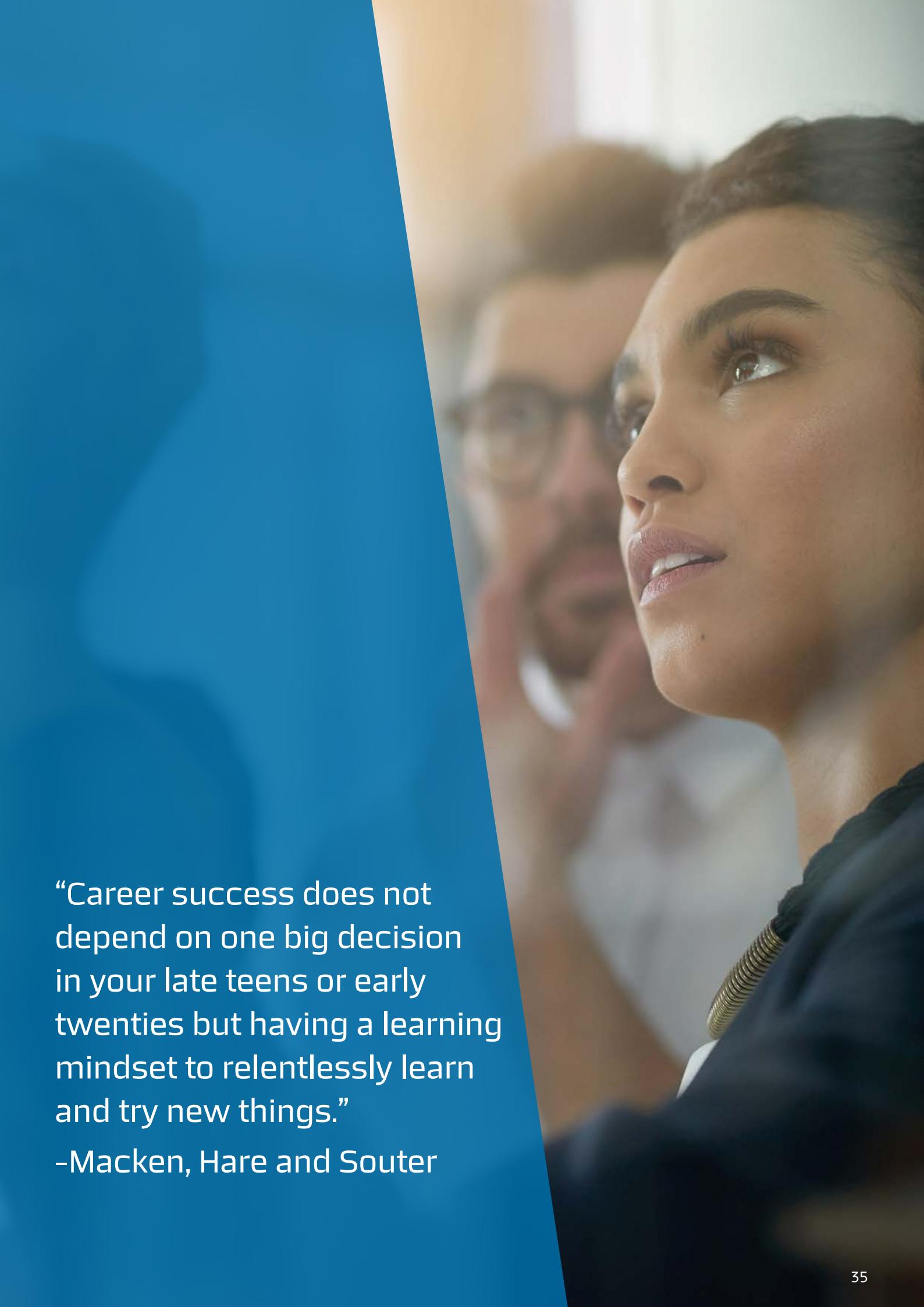
“The future career of a young person today will be punctuated by uncertainty and unpredictability. In the future, a young person is unlikely to bind up their identity with a single employer, or even profession. In professional fields, expertise has a short shelf-life. Technical skills and knowledge must be constantly renewed and upskilled as they become obsolete tomorrow (Bersin 2020). **Career success does not depend on one big decision in your late teens or early twenties but having a learning mindset to relentlessly learn and try new things.**”

“In the context of the Fourth Industrial Revolution, it might be considered obvious that, to some degree, higher education should design programs intended for job outcomes. **Without a radical overhaul of degrees to reflect the rapidly changing nature of industry and employment, higher education risks becoming obsolete (Singhal 2018).**”

The authors go on to provide some helpful advice for governments and educational institutions.

“Higher education must have a goal of designing learning programs that provide the kinds of knowledge, skills and competencies graduates require to succeed. This includes striking a balance between creating curricula that addresses the immediate needs of work, whilst also projecting to a future and future occupations that are, as yet, uncertain. The identification of the needs of work are being developed by technology companies on the basis of predictive analytics.”

- “**Burning Glass Technologies, for example, provide real-time labor market data products and analysis by scraping millions of job postings and resumés on the internet to provide insights into new in-demand skills for the changing job market.** Faethm, an AI analytics software as a service platform, shows the impact of automation and technology on current workforces and the types of characteristics needed to affect both role change and capability uplift.”
- “**Setting the conditions for a learner to love learning, over their lifetime, will best serve both an individual and society itself.** This goal achieves the function of higher education as a promotion of economic growth, and the preparation of students to contribute to the labor market and economy.”

A close-up photograph of a young woman with dark hair and brown eyes, looking upwards and to the right with a thoughtful expression. In the blurred background, an older man wearing glasses and a white shirt is also looking in the same direction. The image is split vertically by a large blue rectangular overlay on the left side.

“Career success does not depend on one big decision in your late teens or early twenties but having a learning mindset to relentlessly learn and try new things.”

-Macken, Hare and Souter

# The Cost Versus Value Dilemma

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Higher education grew by a factor of 6.12 between 1970 and 2013, while population multiplied by 1.93 and real GDP by 3.63.





In *The Future of Higher Education in A Disruptive World*<sup>25</sup> we looked at the impact of the COVID-19 pandemic, and related disruptive trends, on the higher education sector. One key area of focus was the growing divergence between cost and value.

The combination of human capital theory, equality of opportunity, the emergence of an export industry and the need for research combined to create a 'golden age' of expansion and esteem, in the post-war period. That period is now drawing to a close.

**Higher education growth has far outpaced other measures of societal growth.** Since the Second World War it has moved from an elite system to a mass- or high-participation one in most jurisdictions. On average globally, one in three young people now enter higher education and more than three in four do so in Europe and North America<sup>26</sup>. This expansion has contributed greatly to life-enrichment, nation-building, social wellbeing and technological progress. **Higher education grew by a factor of 6.12 between 1970 and 2013, while population multiplied by 1.93 and real GDP by 3.63.**<sup>27</sup>

The growth was advocated and justified on various grounds, all of which commanded popular support. 'Human capital theory' gave it an economic justification, showing that spending on higher education was an investment in economic growth. Equality of opportunity gave it a social justification.

Then, growing middle classes in young, populous countries with rising GDPs but insufficient domestic education systems started sending their children overseas for fee-paying university education.

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**From 1990 onward, Australia, Canada, the UK and the US in particular benefited to such an extent that international education was seen as an export sector in its own right. In Australia, it is the country's third-largest form of export and, in the State of Victoria, it is the largest.**<sup>28</sup>

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In turn, international rankings arrived to inform choice and add the overlay of a prestige market, spurring competition and investment in reputation. By and large over this period there has also been social consensus that research in universities should be publicly funded because, left on its own, the market will likely fail to supply the research on which the development of technology relies and through which much wealth is generated.

But the ‘golden age’ may be changing now. **A decreasing return on education is coinciding with rising tuition fees and spiraling student debt.**

Attainment rates of bachelor’s degrees in the young population are reaching 50% in some jurisdictions.<sup>29</sup> No longer as scarce, degrees have a decreasing earnings premium; even a negative premium in some instances. In the UK, it is estimated that one-fifth of degrees are not worth the money in terms of future earnings. These students may have been financially better off if they had not gone to university.<sup>30</sup> A 2020 survey on attitudes to higher education conducted in 11 jurisdictions revealed that 61% of respondents said a degree is less valuable than ten years ago.<sup>31</sup> In the UK, only 44% thought the benefits of going to university outweighed the expense, although the 11 country average was 56%.<sup>32</sup>

At the same time, in many jurisdictions, **tuition fees have risen well above the rate of inflation.** An OECD report in June 2020 showed that in 13 selected countries and territories, expenditure per student doubled in higher education, after allowing for inflation, between 1995 and 2015.<sup>33</sup>

Several factors have led to rising costs. University administrations costs are high and are often relatively inefficient, which further drives up costs. In some places, there has been a student amenities ‘arms race’ to provide the most-inviting campus experience. And the drive for international rankings, based largely on research performance and reputation, has made tuition fees an irresistible source of funds for research.

This takes us to a fundamental economic problem with higher education, as well as some other personal services sectors like healthcare and legal services. Usually known as Baumol Cost Disease<sup>34</sup>, **universities need to pay salaries to attract and retain sufficient talent, but they are running out of productivity gains under their current operating model.** Efforts to cut costs, such as reducing the number of small groups and limiting subject choice, are being met by consumer resistance

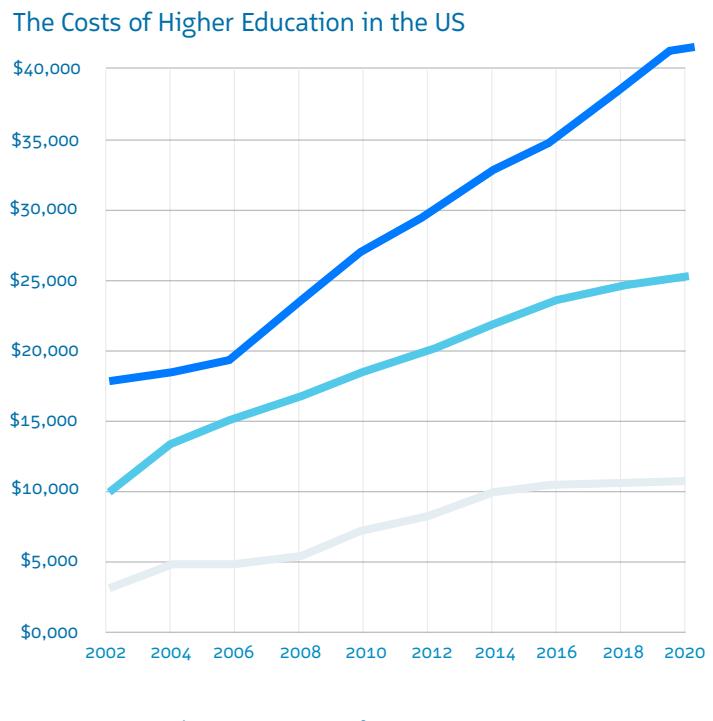
The problem lies in the inability to scale up under the current, largely face-to-face, model of higher education and the organizational culture that surrounds it.

This is not, in theory, a problem if society is willing to pay for it all, and productivity is rising in other parts of their economy to create the wealth. **However, the gloss has come off universities and there is unwillingness by many societies to pay any more than they do now.**<sup>35</sup>

From an industry and workplace perspective, Ravi Kumar, in his Wharton interview, saw the combination of this cost-value challenge, coupled with the scale and reach of technology, as an opportunity for new players to leapfrog traditional leading universities. These new players could be pure online higher education providers or new or smaller universities, all in emerging and developing nations with strong leadership and policy frameworks.

**Kumar observes traditional large economic institutions have very little to gain from change. The US is among the best examples. The cost of education is going up. Student finance is available, and therefore there is no incentive for institutions to reduce the cost of education, which continues to spiral out to a point where it is untenable.**

Kumar's comments, particularly as they relate to the costs of higher education in the United States, are supported by long term, trend research tracked by specialists in this area at Georgetown University's Center on Education and the Workforce, illustrated in the graph below:



Source: Education and the Workforce (2021)

An OECD report in June 2020 showed that in 13 selected countries and territories expenditure per student doubled in higher education after allowing for inflation between 1995 and 2015<sup>35</sup>. This is total expenditure, irrespective of the mix between government and student funding. Some of it may be attributable to administrative bloat and amenities arms races. Some might also be due to more demanding or less academically ready students. But most of it is simply to pay salary costs.

Kumar goes on to state, **the biggest roadblock remains resistance to change.** There is not enough education tech momentum to disrupt the traditional university infrastructure. Some universities have been bold enough to catapult into the new-age, EdTech sector. But everybody has not done so.

"There is an opportunity for those universities to leap into the future, but resistance to change is so high, and technology adoption is so low. Universities have to cannibalize themselves, and that is a very bold thing to do. You're going to take away what you are good at and bet on the future. You're going to bet into a B2B world. You're going to bet into micro-sized modular content, vis-a-vis content that comes in big packets." <sup>37</sup>

Later in the discussion, he links this technological disruption to the possibilities for emerging and developing nations, asserting that learning is going to democratize everything around us.

"Developing nations, emerging nations, and underdeveloped nations will have to focus on nurturing content, nurturing application of that content in innovation and evolving what needs to be taught in schools. That is because a lot of what needs to be built for the future – be it products or services – has to be built in the context of the bottom of the pyramid... in the context of what the emerging world needs." <sup>38</sup>

Looking at these issues from both a government and university leadership perspective, in a recent article entitled Covid-19 Accelerates 3 Disruptive Trends Facing

Higher Education<sup>39</sup>, Scott Pulshiper, President of Western Governors University (an online institution) and an advisor to the US Congress Higher Education and Workforce Investment Sub-Committee, identifies the following challenges facing the US education system:

- Rapidly escalating costs
- A widening disconnect with future workforce needs
- Crushing student debt
- Racial disparities in outcomes
- Low completion rates

He goes on to identify three trends that reinforce the findings in recent KPMG research:

1.  **Financial pressure and consolidation risk (traditional model – high cost/high price)**
2.  **Rapid movement of education programs online (noting the importance of quality systems and controls, led by government regulation, in these domains)**
3.  **Transition from a degree based to skills-based pipeline from the workplace**

Across all of the viewpoints outlined in this section of the paper, it is clear **there is a changing value proposition emerging** in the education sector that institutions need to develop and governments can facilitate through well targeted legislation, policy, strategy, and investment.<sup>40</sup>



# The Role of Government and Regulatory Reform

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The ability to transform will be the critical one for all education institutions to cultivate, so they can shape and respond to a changing world of education.





The current and accelerating shifts in work and education pose a significant challenge for governments and government policy. Added to this challenge is that government resources have been recently re-directed at unprecedented levels to meet health and economic challenges presented by the COVID-19 pandemic.

This presents one of those contradictory scenarios flagged in the earlier part of this paper. **With fewer resources, governments and education institutions need to address the demands of a new age that requires a substantive level of investment.** On the surface this seems like a 'wicked problem.' However, scratching below the surface reveals some natural advantages.

- Interest rates are at all-time low, giving governments the opportunity to raise large amounts of debt for public investment. At the same time, digital technology is moving from a capital intensive, proprietary model to the pay-as-you-go cloud service model, coupled with increasing access to high-quality shareware and open source applications.<sup>41</sup>
- Governments and education systems in the emerging and developing world do not have the legacy costs of proprietary technology of the developed world. This creates an **inflective opportunity to leapfrog traditional models and education players and lead the new world of work and education.**

The challenge for regulatory reform and systemic change programs is that the Fourth Industrial Revolution, a fusion of exponential technologies where silicon and carbon meet, will prove to be as profound as the previous revolutions driven by steam, electricity and computing.

Each of the earlier revolutions was accompanied by changes in the mode of education and the institutions that provided it. The school classroom, the worker's institute, the civic, technological and research university can all be matched with the economic and social needs of their times. There is no reason to expect that the new revolution will be different, but we are at the early stages of thinking about the corresponding changes needed in education. In our view, **the ability to transform will be the critical one for all education institutions to cultivate, so they can shape and respond to a changing world of education.**

Profound demographic changes are also underway. Many countries have aging populations, low fertility rates and a shrinking 'support ratio' of working age people of 25–64 years to those of 65 and older. By 2050, the United Nations believes that 48 countries and territories are likely to have support ratios below two. By contrast, other jurisdictions have fertility rates well above the replacement rate of 2.1, huge young populations, and growing middle classes. Power and influence are shifting inexorably as a result, in what has been described as a global rebalancing between East and West.

**Potential Support Ratio by Age**  
(ratio of population by age per population 65+)

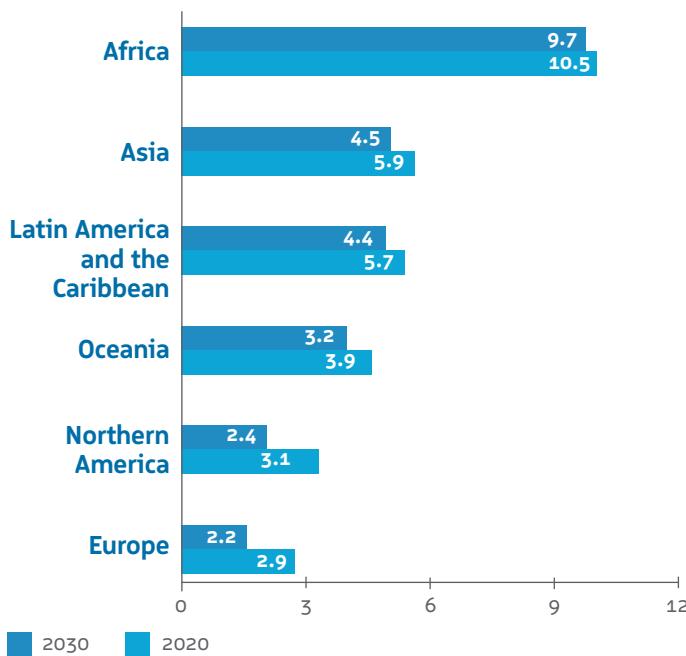


Illustration data source: UN World Population Prospects

### Japan: New Skills, New Learning Habits

One of the world's technologically advanced nations with high education standards, **Japan** has been wrestling with these demographic and funding challenges over several decades. In a 2009 OECD report, Japan's Central Education Council states:

"For the universal stage of tertiary education, it is necessary for each institution to clarify its own individuality and distinctiveness. Universities, junior colleges, colleges of technology and professional training colleges must all put education and research into operation that are fully based on each position and expected role/function and **each institution must clarify its own individuality and distinctiveness.** In particular, even for the same type of institution, each institution should clarify their own functions and goals out of a wide range of functions and goals based on the institution's own choices." (Central Council for Education, 2005)<sup>43</sup>

We believe this systemic, portfolio-based approach to policy, programs and funding by federal governments is critical in 'future proofing' education. For example, **an over-emphasis on specific vocations and technologies can be problematic because of the rapidly changing nature of these areas. Such an emphasis needs to be balanced by teaching a broader set of agile and adaptable skills like critical thinking, interpersonal communication, teamwork, management, etc.** This balance will need to be achieved by institutions within a clear context of differentiation and across the broader education system at all levels.

Governments will need to balance long term investments in research that will create the innovations of the future with short-term funding of vocational and technical courses.

At the curriculum level, Japan is modeling the broader approach to skills development that all government policy makers need to consider to provide agile graduates.

A 2018 OECD review of the Japanese Education system, which recognizes Japan as global leader in education, states with a curriculum revised around every 10 years, Japan has established a regular cycle to continuously update it, building on evidence from teaching practices.

"In the new curricular reform, however, Japan has recognized the need to update teaching and learning to foster competencies for the 21st century. In addition to knowledge, this includes developing cross-curricular skills, such as **problem-solving and creativity, and good learning habits.** To do so, the new curriculum (to be implemented from 2020 to 2022) focuses on using active learning strategies to develop the competencies of students around three pillars: the motivation to learn and apply learning to life, the acquisition of knowledge and technical skills, and the skills to think, make judgments and express oneself."<sup>43</sup>



5.  $(\frac{a}{b})^n$

a.  $\frac{a^n}{b^n}$

b.  $\frac{a}{b^n}$

c.  $a^{n/b}$

d.  $a^n b^n$

e.  $a^{1/n} b^{1/n}$

f.  $a^{n/b}$

g.  $a^{1/n} b^{1/n}$

h.  $a^{n/b}$

i.  $a^{1/n} b^{1/n}$

j.  $a^{n/b}$

k.  $a^{1/n} b^{1/n}$

l.  $a^{n/b}$

m.  $a^{1/n} b^{1/n}$

n.  $a^{n/b}$

o.  $a^{1/n} b^{1/n}$

p.  $a^{n/b}$

q.  $a^{1/n} b^{1/n}$

r.  $a^{n/b}$

s.  $a^{1/n} b^{1/n}$

t.  $a^{n/b}$

u.  $a^{1/n} b^{1/n}$

v.  $a^{n/b}$

w.  $a^{1/n} b^{1/n}$

x.  $a^{n/b}$

y.  $a^{1/n} b^{1/n}$

z.  $a^{n/b}$

aa.  $a^{1/n} b^{1/n}$

ab.  $a^{n/b}$

ac.  $a^{1/n} b^{1/n}$

ad.  $a^{n/b}$

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bp.  $a^{n/b}$

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qq.  $a^{n/b}$



Again, we see the recurring theme of the broader skills education needed in order to equip students for changing contexts and careers that is genuinely future-proof, highlighted by our interviewees and our own research. Importantly, these areas of focus are part of a systemic, long term policy platform based on world-leading practice and implemented by a partnership between government policy makers and education practitioners.

### Canada: World-leading Education Policy Pillars

Canada's higher education system has also been looking at the interface between work and education, responding by implementing long term, systemic changes. For policy makers, looking at the foundations on which this response was built is illuminating. Working with an OECD team and assessment framework in 2015, they identified the following policy pillars as essential to retain or build:

-  **Equity and quality: high education performance and equitable access** – built on fair and inclusive policies and a multi-cultural society
-  **Preparing students for the future: a highly educated workforce** – focus on supporting students' opportunities to transition to higher education or the labor market
-  **School improvement: positive learning environments and strong instructional leadership**
  - addressing the teacher supply imbalance and promoting greater decision-making capacity for school improvement
-  **Evaluation and assessment to improve student outcomes: strengthening a culture of assessment**
  - continue developing and aligning assessment practices and developing standards of practice.
-  **Governance: a comprehensive and diversified system** – setting priorities that build on and are aligned to the decentralized system.<sup>44</sup>

Similar messages are flowing from the employer side. Earlier this year, the LEGO Foundation released the report, *Creating Systems - how can education systems reform to enhance learners' creativity skills?*<sup>45</sup>, which interviewed Australian, Japanese, Thai, Scottish and Welsh policy-makers on their national and regional reform efforts. The report highlights efforts to reform curricula and assessment and teaching approaches. It also illustrates innovative programming with creative engagement on an unprecedented scale; positive changes in teaching and learning practice and greater levels of attainment; and evidence of improved learner engagement, confidence and collaboration.

### LEGO: Creating Educational Systems

The report details essential lessons for governments as they reset and reimagine learning focused on the following areas:

- Political will
- Partnerships
- Shared language
- Evidence
- Lesson-sharing
- International engagement.<sup>46</sup>

While the report looks primarily through the school lens, its findings look at the whole education system and future demand for skills, with observations and recommendations that are very relevant to any discussion about Agile Education Systems.

# Enduring Wisdom from 350 BCE

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While the primary focus of the questions addressed in this paper are about the future of education, perhaps the greatest test for future proofing education is history. It is worth looking back to models that have lasted for millennia.

*In a December 2018 feature article entitled Aristotle Knew What Worked, Emeritus Professor Stephen Parker stepped back to 350 BCE to reflect on the first principles of human education and skill development in the Western World:*

*"In vogue is the idea that the emphasis increasingly must be on 'soft skills' that can't easily be automated; whereas domain knowledge, it is said, will become less relevant because that can readily be stored in and retrieved from systems more reliable than the human brain. The lists of skills seem to differ on the surface, but they often come down to characteristics relating to critical thinking, problem-solving, innovation, emotional intelligence, adaptability and leadership.*

Aristotle argued there were three types of knowledge:



**Episteme:** the abstract, scientific, theoretical, which we can shorten to knowing why.



**Techne:** craft, practice, technique, which we can shorten to knowing how.



**Phronesis:** practical wisdom, experience or knowing what to do.

*All societies need to transmit the ability to know why, how and what to do. If the three become too separated from each other, innovation falters."<sup>47</sup>*

The enduring nature of these skills, across millennia and cultures, indicates they have the agility to address profound changes in the future across the environmental, social and economic domains.

Leading universities, like Northeastern, and those regularly in the QS World top 50 continue to place value on these traditional 'soft skills,' which, as we have seen from industry leaders quoted in this paper, are the same skills employers seek, particularly at the leadership and management level.

# Recommendations

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In the rapidly changing landscape of work and education, it is imperative that governments and higher education leaders take the long view. The skills employers demand today may be redundant in 10 to 20 years' time. Agile education systems must strike a balance between current technical and vocational requirements and enduring skills like critical thinking, problem-solving, innovation, emotional intelligence, adaptability and leadership.

Within this context, with a particular focus on the three key themes treated in this research paper – digital myth and reality, cost versus value and the role of government and regulatory reform – we propose the following recommendations for WGS readers:

**1. Investments in technological infrastructure and well-structured data repositories are a pre-requisite to effectively leveraging current and future digital innovation.**

The operational systems that hold student data, research credentials, personnel records and financial information need to be integrated and aligned to create the student-centric learning and support experience demanded by students and their families.

Given their scale, such investments will require funding partnerships between government and higher education institutions.

**2. The mindset of institutions needs to shift to place the student at the center to meet the expectations of a customer service culture, and provide the focus and flexibility needed to address changing demands.**

This is a challenge for traditional academic models and will require strong support programs for academic and professional staff.

Such programs should focus on peer-based modeling, highlighting excellence in student-centered teaching and pedagogies, experiential learning, industry engagement and multi-disciplinary collaboration.

Balanced with a systemic approach to quality and performance, with appropriate academic representation and consultation, peer-based approaches represent a constructive, non-threatening approach to large-scale change.

**3. Funding models need to strike a balance between market demand and investment in the broader 'soft skillset.'**

The latter provides the agility to apply creative and innovative approaches to changes in the economic, social and environmental context, as well as to the ever-evolving digital technology landscape, similar to the 'Humanics' concept proposed by President Aoun in Robot Proof.

Approached at a system-level, governments can provide leadership through a portfolio of policies and funded programs that invest in a balanced educational ecosystem that covers short term general skills, medium term vocational skills and market demands, and long-term critical analysis skills.

Balanced with a systemic approach to quality and performance, with appropriate academic representation and consultation, peer-based approaches represent a constructive, non-threatening approach to large-scale change.

**4. Governments, higher education institutions and industry need to partner around priorities and areas of strength to develop courses and curricula that will meet current and future workplace demand.**

They additionally need to conduct applied research built on strong areas of basic research that will create the adaptions and innovations of the future and establish respectful, long-term relationships at both the leadership and delivery level across all three sectors.

**5. Governments need to continually work with their leading universities, and international partner nations and institutions, to invest in the original research and basic science that will lead to the innovations of the future and create the agility to respond to changing environmental, social and economic contexts.**

Such investments should be aligned to national priorities and look at 100 year cycles with 10 year milestones.

Governments in emerging and developing nations should investigate opportunities to differentiate and specialize in targeted areas of strength, based on national priorities. Then they can attract among the best students and researchers from around the world through a combination of transnational education (TNE) online delivery, international partnerships and cross-border/cross-discipline research collaboration.

Investments in these areas should look at two-way models that upskill domestic talent and attract international talent on a longer-term basis.

**6. To compete effectively for global education talent, students, teachers and researchers, governments need to be open to citizenship and financial support programs for talented foreign nationals.**

Such programs are in place in leading countries like Canada, the United States, Ireland and Australia.

# Acknowledgments

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- Joseph E. Aoun, President, Northeastern University, US, and author of *Robot-Proof: Higher Education in the Age of Artificial Intelligence*, The MIT Press, 2017
- Professor Claire Macken, Royal Melbourne Institute of Technology—RMIT University, Australia, and author of forthcoming book, *Unbundling the Ivory Tower*, Macken, Hare and Souter 2021



# About KPMG

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For almost 50 years, KPMG Lower Gulf Limited has been providing audit, tax and advisory services to a broad range of domestic and international, public and private sector clients across all major aspects of business and the economy in the UAE and in the Sultanate of Oman. We work alongside the Firm's clients by building trust, mitigating risks and identifying business opportunities.

KPMG Lower Gulf is part of KPMG International Cooperative's global network of professional member firms. The KPMG network includes approximately 227,000 professionals in over 146 countries. KPMG in the UAE and Oman is well connected with its global member network and combines its local knowledge with international expertise, providing the sector and specialist skills required by the Firm's clients.

KPMG is widely represented in the Middle East: along with offices in the UAE and Oman, the firm operates in Saudi Arabia, Bahrain, Kuwait, Qatar, Egypt, Jordan, the Lebanon, Palestine and Iraq. Established in 1973, KPMG in the UAE and Oman employs 1,485 people across four offices, including about 100 partners and directors.

Our latest initiative, KPMG IMPACT, aims to help clients future-proof their businesses amid times of increasing focus toward issues such as climate change and social inequality. The goal is to help them achieve success across 17 major Sustainable Development Goals (SDGs) and become more resilient and socially conscious. For FY21, the firm has earmarked a global budget of USD 1.43 million for the initiative.

Our Emiratization initiative highlights our commitment to work closely with the local community and support the nationalization program of the UAE Government. KPMG Lower Gulf is closely collaborating with Abu Dhabi Global Market Academy (ADGMA), the Abu Dhabi Human Resources Authority and Abu Dhabi Accountability Authority to deliver the program, Pre-Audit Qualification Training (PAQT).

As we continue to grow, we aim to evolve and progress, striving for the highest levels of public trust in our work. Our values are:



**Integrity:** We do what is right.



**Excellence:** We never stop learning and improving.



**Courage:** We think and act boldly.



**Together:** We respect each other and draw strength from our differences.



**For Better:** We do what matters.

To meet the changing needs of our clients, we have adopted an approach aligned with our global purpose: Inspiring Confidence, Empowering Change. Our three pillars – exceptional quality of service, an unwavering commitment to the public interest, and building empowered teams – are the foundation of our firm.



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# Endnotes

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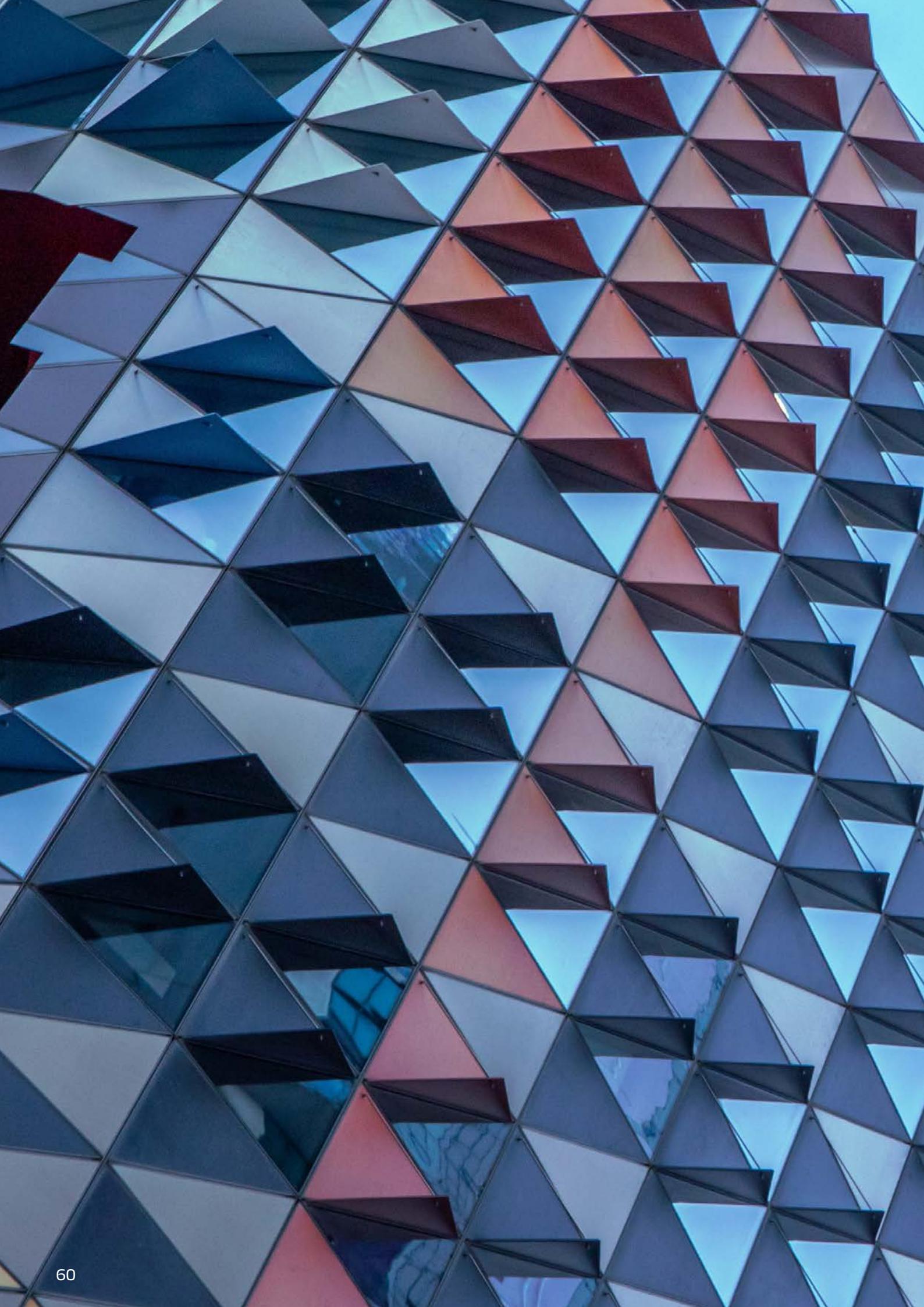
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