Chapter 1
Future of Learning: Teaching and Learning Strategies

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Abstract This chapter is an introductory chapter titled "Future of Learning: Teaching and Learning Strategies". In this chapter of the book, the primary purpose of the proposed learning strategies advocated in this book will be discussed, the significance and timeliness of the topics covered inline to the current educational climate and future classroom teaching. An overview and discussion on the current teaching and learning "gaps", crisis and challenges facing the higher education will be highlighted to provide readers the context and urgency on the need to shift the learning culture through rethinking, challenging the status quo and norms through re-design and transformation. The need to be more mindful on social engineering and cultural intelligence in teaching will be emphasized for educators to be aware, updated and recalibrated to fit well in the rapidly evolving culturally diverse learning environment. The valuable contributions are presented through rigorous discussion on innovative learning strategies, digital transformations, social engineering and cultural intelligence in teaching and learning context. The motivation of this attempt is to equip learners with the social and humanizing elements while appreciating the latest and advanced technological learning design and support systems. Each chapter's scope and its research gaps will be discussed succinctly yet comprehensively to get the readers understand the value that this book offers. Possible remedies to the identified research gaps are discussed. The will commence by presenting the background, context of teaching and learning in higher education at present, the urgency and need to rethink, transform and be resilient to adapt to evolving changes through relevant learning strategies, digital transformation, social and cultural engineering strategies that are innovative driven. Each chapter presents the research gaps and recommends the appropriate evidence-based approach adopted to deal with the issues accordingly. The methodologies and research design adopted are described. The concluding paragraphs enable the reader to understand the importance of the proposed chapters and its strong connectivity among them.

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1.1 What's New: The Future Learning

The role and expectations of higher education are continuously and constantly evolving and changing, where higher education institutes are influenced by a multitude of external forces that also vary as years unfold. As such, many have started to ponder and marvel how the future of learning process and its nuances will evolve in the near and distant future. The trends that we witness and experience in today's higher education landscape are momentously influenced by rapid evolving technological developments, globalization, varying employer demands and so on. Higher education institutions must be committed to be agile, proactively look out for and respond promptly to new developments in the sector to remain competitive. This enables institutions to re-align and re-design the pedagogies to be adopted in classrooms in accordance with the students' needs. Moreover, it also provides teachers with the required training to upgrade their skills to ensure that they are fully equipped to manage the complexities in a twenty-first century classroom. As a contingency strategy, institutions should be aware of the potential setbacks that they would potentially encounter, that allows them to plan and prepare to deal with it effectively.

Pedagogy and curriculum learning design are vital aspects in the eco-system of providing high quality where it serves as a pivoting role in propelling forward the future of higher education. The way in which teachers teach and students learn has certainly changed over the years and is expected to continue changing in the future. The future cannot be predicted with 100% certainty. Just like how the COVID-19 pandemic forced global experimentation with remote teaching, an abrupt major event or development of new technology could take us by surprise and seriously disrupt the flow of higher education institutes.

The effects of COVID-19 pandemic could be well acknowledged with more than one billion students' education pursuit has been disrupted. Nonetheless, in the flip side, we must acknowledge that it has certainly given us a hard push, to rethink while working around the limitations that enabled us an opportunity to rethink and innovate learning, teaching strategies and re-image, reinvent education. It has also re-emphasized the urgency to review and accelerate the transformation from traditional classroom of teaching and learning that was still lingering and deeply entrenched in many educational institutions. That said, educators generally seek out to explore and experiment innovative strategies to move away from a teacher-centric towards student-centric/student-oriented learning environment where it is inclined towards higher level of engagement, collaborative dialogues, inter-intra and peer feedback.

1.2 Trends and Drivers

RMIT (n.d.) reported in reference to Professor Tricia McLaughlin, there are four key aspects in which education is set to transform in the near future. Firstly, there will be a substantive increase in collaborative learning pedagogies in general where

more students become co-creators of their own learning. Secondly, technology will be an enabler to have classrooms to be facilitated anytime and anywhere. Thirdly, teachers will start to have more individualized and personalized learning plans for students that enable them to learn at a pace that best suits their abilities, imperatively accommodate to their speed of acquiring knowledge and to engage with contents that is most beneficial to them. Lastly, the purpose of assessments will move beyond attaining good grades results. These changes are already observable in classrooms today and are likely to be even more prominent as we progress and propel forward.

In a similar vein, Redecker et al. (2011) advocated that personalization, collaboration and informalization (informal learning) will be at the core of future learning. The standard of future learning will be characterized by lifelong learning and moulded by the pervasiveness of information and communication technologies. Several vital trends and drivers influencing the future of learning were presented in the Conceptual Map of the Future of Learning by Redecker et al. (2011). The framework comprises of four key thrusts, namely drivers, labour market trends and demands, education and training and ICT trends. The thrust on drivers influences the labour market trends and demands in general. These elements include demography, globalization, immigration, technology and labour market. The education and training section focuses on new skills and new ways of learning, focusing explicitly on personalization, collaboration and informalization. Personalization on the front of new skills development focuses on personal skills such as initiative, resilience, responsibility, risk-taking and creativity, whereas on the front of new ways of learning, personalization focused on being learner-centred approach such as to be tailor-made and targeted, active and constructive, and motivating and engaging. Collaboration on the front of new skills development addresses social skills such as teamwork, networking, empathy, compassion and co-constructing, whereas on the front of new ways of learning, it focuses on social learning such as peer-learning and sharing and collaborating in communities. Informalization on the front of new skills development addresses the development of learning skills such as managing, organizing, meta-cognitive skills and failing forward, whereas on the new ways of learning front, it focuses on life wide learning such as anywhere, anytime approach, blending virtual and real, and combining source/providers. The last pillar that influences the entire education and training eco-system is the ICT trends. Some examples include augmented reality, data mining, learning analytics, electronic tutors, 3D virtual worlds, social networks, games, mobiles, e-books, OER, portfolios and learning management system (LMS).

Drawing from their research and other relevant literature, in the next section, we list and elaborate the key trends and drivers that would potentially have a significant influence on the future direction of teaching and learning in higher education.

1.2.1 Globalization

Globalization impacts all aspects of operations from an international, national, industrial and societal contexts, including the evolution of higher education. In fact, globalization is primarily a driving force for many of the evolving trends. The classroom learning (Carnoy & Rhoten, 2002), learning climate, learning eco-system, infrastructure and processes, teaching strategies adopted and culture of learning (Rajaram, 2021) are subtly but would ultimately be in continuous process of transformation by the varying forces of globalization. The spillover effects could also be seen in varying aspects of the knowledge production process that includes the overall delivery of school educational systems, national policies and local cultural, social practices. A potential decrease in public funding and the rapid adoption of information technology to expand the quantity of education at a low cost are other implications that need to be managed. The ripple effects of globalization make higher education institutions and universities to work much harder to compete, stay relevant, contemporary and survive in terms of sustainability in a global market.

The implications and impacts of globalization manifest in the higher education market in a multitude of ways. A few such examples include the intensification of competition for international students, the increase in transnational programmes and the prevalence of for-profit providers (De Wit, 2011). Imperatively, with the higher education markets becoming global and commodified, competition has since become more intense. As such, students around the globe are coming out from their home country to pursue their higher education or university education and enhance their value and standing in terms of their academic and professional development, preparing them for new global workforce. Naturally, with an increase in international students, the composition of students in the higher education institutions is much more diverse than ever. This element of diversity is viewed as the drivers for the growth and future of higher education. Further to this, the effect of globalization is experienced in the rapid growing demand of adopting of technological advancements on how higher education institutions deliver programmes today.

Globalization has certainly enabled for an increased international cooperation that allows universities to form alliances to compete in the global mass higher education market (Chan, 2004) and hence position themselves more strategically in terms of sustainability and providing much higher value proposition to the targeted market. When done right, this allows cooperating institutions to value add inline to the needs of the targeted segment and thus attract more students in view of competitiveness. Globalization has played a pivotal role in increasing the significance of English language abilities resulting in many non-native speakers pursuing degrees in English-speaking countries such as the United States or the United Kingdom.

1.2.2 Demographic: Diversity of Learners

Diversity in terms of nationality and ethnicity are a few of the major changes in demographics that have been observed in student populations over the years progressively. The projections of the Bureau of the Census in the United States report that there will be a population of 393.9 million immigrants by the year 2050 with an average annual growth rate of 0.77% per year. It is proposed that 55% of the net growth is likely to be ascribed to immigrants and their descendants. Further to this, the number of international students in general has been positively increasing over the years (Duffin, 2020a, 2020b). This was well illustrated in the statistics on the number of international students in the United States from 2003/04 to 2019/20, which is presented by Statista via https://www.statista.com/statistics/237681/international-students-in-the-us/. The increase in cultural diversity can be largely attributed to the continuous increasing number of immigrants and their children along with international students. This trend can also be largely mirrored, resonated and experienced in other developed countries as well.

Diversity can also present itself in other varying forms such as gender, sexual orientation, age, socio-economic class and disability. When we examined from a dimension of diversity, all students from varying cultural diversity can be viewed as having their own individual strengths and weaknesses because of the varying environments embedded with unique values and beliefs with which they grew up in or simply due to a matter of personality differences that are largely influenced by the cultural norms and practices and climate. As such, it is imperative that higher education institutes must pay closer attention to ensuring that their programmes consider the learning culture, norms that tie closely to their efficacy of learning, mental well-being and welfare by acknowledging the needs of these culturally different students. This has a ripple effect on the increased trend for more individualized learning. For instance, self-paced learning prevents fast learners from feeling restricted and bored, and slow learners from feeling left behind.

The benefit of this evolving shift in demographics is for the students having the opportunity to interact and work with peers who come from varying cultural backgrounds. The ability to work in such a dynamic environment with social and cultural differences is a crucial skill for students to have today as it equips them to be job ready to work in diverse cultural teams and beyond. Soft skills such as teamwork, embracing differences yet working cordially with respect and communicating with sensitivity and mindfulness, are becoming increasingly vital traits employers desire in fresh graduates, equally as the emphasis given to the technical/hard skills. This shift in employer expectations and demands is certainly a contributing factor that helps to influence and shape the future of higher education.

1.2.3 Labour Market and Employer Demands

The work climate, culture and environment are rapidly evolving embedded with more complexities from social, cultural and operational perspectives. With digitalization as part of the driving force forward, jobs are now re-designed and require new, different skillset, knowledge and abilities to fill them. Skills' "gaps", mismatch and potential workforce fragility provide stronger impetus to re-access having a transformed curriculum. The efforts taken by varying stakeholders in wanting to close the "skills gaps" of the learning in school and the "know-hows and skills" for work have called for a revolution of upskilling and reskilling with over one billion workers by 2030 needing to reskill. Beyond the advocation and promotional efforts of lifelong learning in preparing the society for job disruptions, there must be equal emphasis on continuous review, revamp, improvisation and updating of the education models to avoid a disconnect with the realities of the future.

Employers depend largely on employees to enhance their organization's competitiveness (Pang et al., 2018) and growth in terms of sustainability, tied to employees' capabilities and outputs that could potentially affect overall organizational performance. If a company makes poor recruitment decisions, they will incur a loss from both monetary and non-monetary aspects. Hence, it is crucial for them to hire the right people with the essential "know-hows", skill and competencies. This pressing need from employers explains why higher education institutes have been increasingly pressured to develop graduates with relevant, contemporary employability skills and prepare students adequately for the continuously evolving workforce (Suleman, 2017).

It is most certain and becomes apparent that jobs of the future will require new and higher levels of skillsets. Redecker et al. (2011) state that the main drivers that impact relevancy and currency of skills include the progressive de-valuing of shelf-life of knowledge, increased level of information availability, and the persisting pressures of generalization and specialization of the workforce (Redecker et al., 2011). Europe is an example where economies are moving towards an increased demand in knowledge and skill intensive jobs related to technical and managerial work. This major shift in employer demands is not just visible in Europe but across the globe as well. The World Economic Forum emphasized the shift in skill demands and composition, which was presented in the Future of Jobs Report, World Economic Forum that could be retrieved from https://reports.weforum.org/future-of-jobs-2016/shareable-infographics/. Institutions must have the relevant contemporary knowledge and the capacity to train and equip students with these skills.

World Economic Forum in January 2020 highlighted in a report that proposes skills that could be clustered in eight categories for contemporary modern education: Innovation and creativity, problem-based and collaborative learning; technology; interpersonal; global citizenship; personalized and self-paced learning; accessible and inclusive learning; and lifelong and student-driven learning. The expectation of future generation workers is to be equipped with skills that even smart and highly

technologically advanced machines cannot replicate or at least perform as competently as humans. This entails emotional, social and care support roles, embracing cultural intelligence and work that requires frequent human interactions and collaborations. The new job roles and its scopes are to be much less specific, defined and more fluid. Hence, being agile, willingness to adapt and align speedily, having an entrepreneurial and growth mindset by being creative and innovative are core competencies that need to be cultivated, advocated and ingrained throughout one's education on top of the basic subject contents knowledge to be acquired. Besides this, a mindset of grit, crisis readiness and fortitude embedded with a basic awareness of global emerging trends is to be ingrained through social learning which could be done via societal and community service learning. Such skills would come handy to deal with unprecedented circumstances, manage future work crisis and avoid social panic situations, for example COVID-19 pandemic. Moreover, futures literacy is a skill that enables people to comprehend and vision, and imagine the future in a beneficial way, inspiring and encouraging innovative solutions for future issues. Information and media literacy empowers individuals to independently discern facts from fake news and disinformation campaigns. Contemporary and future education models should emphasize and put weightage on ethos such as upholding integrity behaviour, personal ethics and values to nurture responsible global citizens who not only comprehend but can also affirmatively and actively contribute to crucial issues such as social disparity, biases and discriminative aspects and sustainability.

Aside the focus on relevant and modern skills development, the future labour market is influenced by the emergence of new technological advancements and disruptions. Not only do employees have to upskill and reskill by learning to work with technological innovations, but digitalization can also make jobs redundant, resulting in unemployment. James (2019) advocated three types of skills universities need to introduce into the curriculum to prepare students for future employment, namely practical technological skills, data skills and social skills. We are already seeing the use of technology in varying functional roles within higher education classrooms that has shown a significant increase over the years. Technological disruptions do not only affect what we need to learn now but imperatively how we would be learning in the future and beyond.

1.2.4 Emerging Technologies

Generally, technology investments made by schools worldwide has increased more than a 100-fold in the last two decades (Lim et al., 2013). Most of these investments were made on the assumption that technology-mediated learning environments provide opportunities for students to search for and analyse information, solve problems, communicate and collaborate. The overall direction is that institutions are expected to have students to be equipped with competencies that enable them to compete in the twenty-first century and beyond marketplace.

Moreover, over 60% of higher education institutions have either reorganized or have plans to reorganize their information technology units within two years (Elzarka, 2012). The demand for innovative and instruction-focused technologies has progressively continued to rise, and the use of other technologies such as e-portfolios, learning management systems and wireless classrooms has been growing as well.

Generally, emerging technologies in education can be viewed as volatile in having them embedded within the learning processes and curriculum designs. However, it is still vital for institutions to discover and explore new ways of adopting and implementing them in classrooms. This enables education institutions to remain up to date and at the same time develop key competencies in students for them to be upskilled and reskilled to stay relevant for the future workforce. Technology has a large influence on how course contents are taught and delivered and the type of learning design pedagogies adopted.

1.3 Learning Intelligence

Learning intelligence refers to an institution or organization's learning and development, innovations, transformations and capabilities. To put it in context, it can be explicitly defined as the institution or organization's capability to define, describe learning goals, comprehend the rapidly evolving learning needs, requirements and practices, and quantify via interpreting learning outcomes. The next primary question is for us to relate and understand the role of intelligence in learning. The definitions of learning and intelligence are different and could be viewed as separate aspects that can be discussed independently. However, interestingly, the distinction between these two concepts becomes vague when it comes to the actual learning process. Evidence reports that the relationship between learning and intelligence shows minimal difference in measures of individual's intelligence, such as an intelligence quotient (IQ) test and measures of their ability to learn. This establishes a strong correlation and identity between the notions of intelligence and learning.

All of these insights from a holistic context advocate that the efficacy of learning can be enhanced by focusing on learning practices or their intellectual development. As such, educators have more autonomy to diversify students' learning through social-culturally and intellectually meaningful as well as rewarding approaches such as virtual and augmented reality, artificial intelligence, personalized/self-paced learning or gamification. Figure 1.1 presents the conceptual framework for learning intelligence.

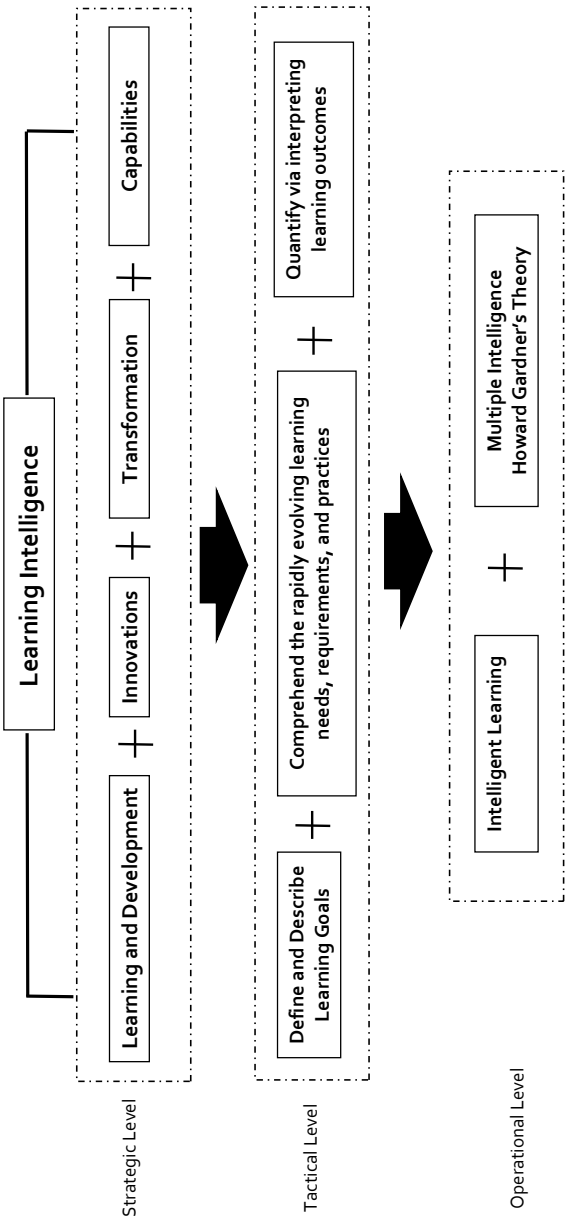

Fig. 1.1 Conceptual framework for learning intelligence

1.3.1 Strategic Level Planning and Interventions

Under the strategic level, four key thrusts are involved in formulating and applying the learning intelligence notion, namely (a) learning and development; (b) innovations; (c) transformation; and (d) capabilities. There must be an eco-system built to ensure the processes of learning and development are well established. For example, investing in a validated system that tracks and monitors strategic key performance indicators for (a) the organization or institution; (b) its division and/or department learning level goals; and (c) its employees' individual professional growth. Next, the institution or organization must draw out strategic learning plans that need to be cascaded down to be achieved by the varying respective divisions/departments. These strategic goals include having to well understand the skills, applied knowledge and competencies required and devising a strategic road map. Next is building the strategic eco-system supported by policies that advocate creativity to flourish, more importantly to shape an innovative culture to be ingrained with the institution/organization. On a similar vein, the plan for transformation goals must be implemented through policy advocate and processes as enablers. Further to that, the relevant resources and manpower as an investment to develop the relevant capabilities must be drawn out and allocated.

1.3.2 Tactical Level Planning and Interventions

Under the tactical level, three key thrusts are involved in cascading the strategic level directions in applying the learning intelligence notion, namely (a) define and describe learning goals; (b) comprehend the rapidly evolving learning needs, requirements and practices; and (c) quantify via interpreting learning outcomes. At the division/department level, the learning goals are to be defined from the context of the institution's strategic plan and direction. The learning goals should be explicitly described to comprehend the emphasis and focus. To have this done, the evolving learning needs, requirements and practices must be carefully examined, understood and interpreted. This enables the division/department to then decide on the identification of areas of learning to be focused on and making it available for access. The learning outcomes can be quantified to explicitly monitor and measure the impact.

1.3.3 Operational Level Planning and Interventions

1.3.3.1 Intelligent Learning

At this juncture, having a clear and deep understanding of the term "intelligent learning" enables us to distinguish it with the term learning intelligence. Intelligent

learning refers to the occurrence or phase when learning and development departments, educators and learners collaborate and work together to have the essentials sorted out and get the things right. When the learning process is optimized, and the learning outcomes are achievable, then learners are engaged in intelligent learning. Besides that, by giving due consideration to the environmental aspects, we are able to increase the efficacy of the intended learning outcomes and goals. An intelligent learning environment refers to the educational strategy or approach where learners are immersed in a deep learning, problem-solving and critical thinking climate, space or situation. An example to illustrate this would be maritime students or sailors who use a ship simulator to be exposed to real-situational circumstances for their learning and training purposes.

1.3.3.2 Howard Gardner's Theory of Multiple Intelligences

In Howard Gardner's theory of multiple intelligences (1983, 1993), that is a primarily learner-based philosophy, the traditional views of intelligence were challenged and the existence of nine discrete "intelligences" in human beings, combinable in various ways to form an intellectual repertoire of different intelligences, was argued and advocated.

Gardner provided a basis upon which to identify, value and develop learners' abilities. These intelligences were clustered into nine intelligences progressively, namely:

- **Logical-Mathematical**: It is characterized as the ability to perform logical reasoning, utilize the numbers effectively (Armstrong, 2009) and think logically (Richards & Rodgers, 2014). Other abilities include problem-solving, exploring patterns, calculating and outlining.
- **Verbal-Linguistic**: It refers to using language in an innovative and unique way (Richards & Rodgers, 2014). It relates to rhythms, sounds of words, that include human voice as well as environmental and instrumental sounds. It uses syntax, semantics, phonology and pragmatic dimensions of language or its practical use, for example, rhetoric, explanation, mnemonics and metalanguage.
- **Visual-Spatial**: It refers to the abilities to design, invent, imagine and create. It involves the bodily-kinesthetic aspects, namely learning through physical movement, mimicking and touching. It can be defined as the "…capacity to visualize to graphically represent visual or spatial ideas, and to orient oneself appropriately in a spatial matrix" (Armstrong, 2009, p. 7).
- **Interpersonal**: It relates and understands others' feelings. Gardner (2011) defines this intelligence as "the ability to notice and make distinctions among other individuals and specifically, among their moods, temperaments, motivations and intentions" (p. 253).
- **Intrapersonal**: The primary aspect of this intelligence is focused on one's inner self where it makes one understands one's own emotions, motivations and moods. Gardner (2006) defined this intelligence as the ability "to form an accurate,

veridical model of oneself and to be able to use that model to operate effectively in life" (pp. 49–50).

- **Naturalist**: This intelligence was added to the list in 1995. Gardner describes this as a half intelligence intertwined with spiritualist intelligence. It comprises of individuals who are sensitive to patterns and make connections to elements in nature while enjoying and respecting other species and the environment. The sensitivity is tied to other natural phenomena such as mountains and cloud formations (Armstrong, 2009).
- **Musical-Rhythmic**: It refers to the capacity to comprehend and express elements of music that includes rhythmic and melodic patterns through formal analytic means or figural or intuitive means.
- **Bodily-Kinesthetic**: It refers to the ability to use mental capabilities to organize body movements, showing the related cooperation between mental and physical activities. These includes physical tasks such as acting out or dancing (Green & Tanner, 2005).
- **Existential**: This was added to the list as the ninth intelligence in 1999 and is referred to as the intelligence of big questions. It refers to the ability to raise and contemplate big questions (Gardner, 2006).

In an interview with Mindshift Connections in April 1997, Gardner stated that multiple intelligence (MI) is most useful for two educational ends: (a) Enables learners to realize desired outcomes through planned education programmes and (b) allows learners to comprehend vital theories and concepts in the disciplines (Gardner, 1997).

The fundamental thrust of Gardner's theory notion underlies the questions, "*Why are we teaching people what we are teaching in the way we are teaching, and why do we value our current system of educating human beings as the best, and as the most wholesome, accurate way of assessing the intelligence of a human being?*".

The design methodology adopted to deliver knowledge may not be well aligned to the capabilities of learners. Thus, this drives unproductive outcomes and failures on the quality aspects of the learning process. Learners must be self-aware of their strengths and weaknesses to enhance their self-learning journey and overcome their challenges by being adaptive to diverse tasks. The strategy adopted must embed the notion of understanding learners' cognitive process and the socio-constructivist process.

In trying to figure out how best to experiment using the intelligence in classrooms, several strategies were adopted, and these can be summarized as follows: (a) Adopting Gardner's theory as a legitimate planning guide to offer students a variety of learning activities; (b) categorizing the types of intelligence into its particular activities; (c) incorporating specific intelligences to the relevant topics to cover all aspects of intelligences holistically; and (d) ensuring all topics are covered with relevant intelligences incorporated. Gardner's theory aims to address the needs of the students, where activities are designed to relate to students' strengths and weaknesses. It enables them to work on their profiles which were less well developed while building on their areas of strength.

The emphasis must be in the range of activities offered as a planned, integral part of the curriculum, rather than randomly selected for sake of variety. Gardner himself is critical of a simplistic approach where the activities to be included must be carefully thought through that nurture different intelligences instead of an ad hoc approach for the sake of variety or diverse coverage. Based on the foundational inspirations from Hopper and Hurry (2000)'s insights, an enhanced, detailed and transformed guiding interventions have been newly formulated. Table 1.1 presents the enhanced version on the scope and impact of learning from multiple intelligences.

Tensions between process versus contents

The different values in society could be well experienced as tensions that emerge from the perceptions of the need to place emphasis on how people learn (process of learning) versus what people learn (the content of learning). Small (1977) advocates the notion of the distinction between education and school, where he claimed that by

Table 1.1 Scope and impact on learning from multiple intelligences (MI)

Increased awareness on the way learning happens and about its learning process	1. Emphasis is on students' exploration and self-learning process. 2. Exposure of learners to varying differentiated learning approaches and them of being responsible for their own learning and attaining its outcomes. 3. More focused efforts and much greater emphasis on exploring strategies in which students learn best. 4. Enable reasonable flexibility and adequate autonomy provided for the curriculum to be tailor-made to fit the learning needs of students. 5. Identify the embedded learning challenges and have them explicitly addressed to enhance the efficacy of the intended learning outcomes.
Increased emphasis on individual learning processes and personalized learning	1. The focus is on personalized learning where the emphasis is on individuals devising their learning processes where they are made accountable for their own learning. 2. The belief that all individuals are unique, and they do not have the same kinds of minds is adopted; the efficacy of education for individuals works most effectively when these differences and strengths are taken into due consideration instead of being ignored. 3. The approach of learners keeping their records of learning progress and achievements as part of a planned process helps in the development of the learner's autonomy (Greenhalgh, 1994). 4. The fourfold Kolb's (1984) influential framework advocates an array of learning styles to fit individual learning styles. When learners utilize their preferred learning styles, they widened their opportunities for success in learning (Greenhalgh, 1994). 5. "Learning happens when the learners start questioning the norms; searching for information to address the varying perspectives; explore the unknown without being spoon-fed with model answers; self-think critically on how to resolve issues at hand; experience discomfort in the progress and are put in an ambiguous situation, while working towards resolving an assigned task. This allows one to think, reflect and strive towards the process of finding the answers to the queries and unanswered issues. The process of the learning phase is the focus if learning in terms of depth and quality is to occur" (Rajaram, 2021, p. vii).

(continued)

Table 1.1 (continued)

Enhanced stimulation of the active, team-based and collaborative learning process	1. Students' motivation increases dramatically when they acknowledge, resonate and relate through relevant diverse activities in lessons, where it would not be an end in itself but a means of learning. 2. Once the students can grasp and comprehend the aspects which they had previously not known, they would be committed in projecting themselves in a positive light to their peers. 3. Less time taken to deal with the behavioural disruptions that could potentially cause classroom anxiety which is reduced to enable a more conducive climate of learning. 4. Facilitates the process of creating awareness to recognize their ability to learn and the sense of learning, which is a core element in enhancing self-esteem, especially for those who regard themselves as failures or at least their perceived notion as such. 5. The shift of accountability involved in the learning process enables an affirmative effect between student–teacher relationships.

going to school, one may not necessarily be educated, and conversely, getting back to school does not necessarily give one an education. This was reiterated drawing on the work of Illich who mentioned that the actual participation constitutes socially valuable learning where the participation involves learners in every phase of the learning process with full autonomy of what to be learned and how it is to be learned.

The tensions between process and content are at times irreconcilable; hence, this may potentially lead to the collapse of the system. Generally, students can take control and monitor their own learning progress. However, they tend to be demotivated and block off their own learning processes by not mobilizing their learning skills when they perceive little relevance of what is being taught. The key emphasis in learning should be not merely facilitating the "right" or "wrong" contents; rather, it is about mobilizing intellectual inquisitiveness, enabling to make balanced judgements, nurturing reasoning skills and resourcefulness while equipping individuals to make sense of the world in which they live in.

On the flip side, multiple intelligences (MI) theory has come under scrutiny where it was criticized for being fundamentally flawed (Best, 1996; White, 1998). The MI theory has been manipulated, distorted and diluted to fit a wide range of pedagogical, educational and curricular strategies some of which have gained much criticism, including Gardner himself. Using the analogy of a beacon, by providing a light from the beacon, and not in the beacon itself, the value of MI approach can be acknowledged. The focus of the critics was on the actual machinations of the beacon rather than the broader implications of the light shining from it. Hence, we could reiterate that the MI notion does shed an alternative light on aspects of the contemporary and current debates in education. Despite the non-novelty of the theory, it is certainly timely and refreshing to reiterate the key thrusts that it sheds light on for both the learners and the teachers. Basically, on the aspect of how it enables learners to access, manage and develop their own learning processes.

The Impact: On Cross-Cultural Aspects and Context

The increased attention in the use of multiple intelligences is primarily because of the discrepancy that often exists between school tasks and the learners' "spectrum of intelligences" (Gardner, 1983). Culture distinctively influences the development of learners' intelligences by defining what is valued for every individual who potentially differs from cultural, social and other diversity elements. The primary question to reflect on the efficacy of how students are identified and developed is, are they well noticed based on their intelligences, strengths and sociocultural backgrounds?

Three core requirements need to be addressed for a certain type of intelligence to be developed: (1) The opportunity must be given or facilitated for learning; (2) the learning culture must place emphasis and value on the specific intelligences development; and (3) the learner must put in efforts and place importance on developing that intelligence.

Educators can elevate students through engaging them actively with the application of multiple intelligences. This intervention assists nurture-specific intelligences that students may lack which are vital for their future success by developing culturally responsive methods to engage students who have challenges in learning. Culturally responsive and personalized learning experiences enable students to reach their fullest potential at their own pace, while providing them with positive reinforcement (Teele, 1990).

It is not necessary to address all of the intelligences in everything educators teach (Gardner, 1983, 1993, 1994). Different projects can provide students the alternative to explore a topic using their strongest intelligence. Some students might develop a model, write or illustrate content, for example. The topic must be taught to students in a manner that is relevant, appropriate and applicable to them in the near future.

A culturally responsive assessment is required to promote equitable educational experiences via multiple intelligences. David Lazear (1994) identified key principles in providing instruction for culturally responsive assessment that adopts multiple intelligences notion as follows:

- Assessment should drive the learning design, the adoption of pedagogical approach and its curriculum design.
- Assessment should be at the core of the education process, focusing on authenticity.
- Assessment practices should resemble assessment in the "real world".
- Assessment design and execution must involve educators and students to be active partners who have worked together in demonstrating learning.
- Assessment requires time and efforts, and hence, educators must be given adequate time to create and administer instruments.
- Assessment practices should be designed for students' benefit.
- Assessment should be individualized and developmentally appropriate.

All in all, educators must continuously rethink and review on the current instructional and assessment practices, examining it from a multi-sociocultural lens to be agile and adaptable to the rapid evolving changes. Educators should adopt a reverse engineering approach where the planning, facilitation and assessment must be based

on the learner's individual needs while taking due consideration of the sociocultural settings. As a clear relationship exists between multiple intelligences and culture (Reiff, 1993, 1996), educational experiences must reflect the understanding of each learner's culture.

1.4 Key Evolving Challenges and Concerns of Future Learning

Higher education institutes are under continuous call by varying stakeholders to remain relevant and contemporary in the twenty-first century and beyond for the future. Hence, it is imperative that they commit towards the journey of radical transformation to teaching and learning space that have been brought about by digital technologies and the Internet in the last decade (Burkle et al., 2018). Adopting a growth mindset and agility in their outlook enables them to address the rapidly evolving changes and disruptions. On the contrary, major and sudden breakthroughs in teaching and learning aspects, while potentially beneficial, can also be highly detrimental should institutions are unprepared to deal and manage it. Further to these challenges brought about by technological disruptions and advancements, institutions should also examine the varying challenges relating to the topics such as sustainability, multi-disciplinary training, easy and affordable access to education and learning in diversity, distinctive embedded nuances within different learning cultures and culture of learning which are pressing topics today and likely in the future as well.

One of the pressing concerns is the implications and the ripple effects of fiscal challenges faced by the higher education institutions and universities. There are varying aspects of factors that contribute to the financial predicaments of institutions. Some of these includes the lack of adequate or sufficiently sustainable government support and progressive increase in operational and functional costs. This has put institutions to search and look out for other streams of cash inflow. This could potentially include providing online (asynchronous) and virtual (synchronous) programmes that can be accessed anywhere in the world. These programmes could be collaborated with corporations to provide upskilling and reskilling professional certifications. However, on the flip side, pursuing such non-traditional funding sources can bring on challenges and complications of its own as predicaments. For example, corporate sponsorships and contract clauses could significantly interfere with an institute's research through pre-invention license agreements, publication delays, pre-publication access to research results, censorship and so on.

Another recent and more contemporary-inclined concern is that of online programmes, where illegal downloads and uploads can severely impact an institute's revenue stream and reputation. In the similar vein, other potential challenges particularly for online learning includes (1) will there be a negative effect or implication in a perceived reduced quality of education due to the absence of physical presence and

a lesser direct face-to-face human engagement; (2) increased faculty training costs, perhaps in getting more experienced yet competent facilitators adept who are technologically inclined; (3) faculty resistance; (4) employer bias and perception against online degrees in terms of its rigour and quality; (5) increased cost of technological advancements and infrastructure; (6) programme start-up costs and challenges; (7) potential reduction on student and professor interactions; (8) irrelevance and outdatedness of previous location advantage; and (9) potential infringement on existing programmes (Palvia et al., 2018; Rajaram, 2021). The potential future challenges may be plentiful, however, as the pace of change within higher education continues to speed up. PwC (2020) identified that increased risks will largely fall into one of four clusters, namely: (1) Brand preservation; (2) information security; (3) regulatory; and (4) operational. Overall, it is crucial for higher education institutions to acknowledge honestly the potential challenges that they may face and be resourceful, humble to learn from others while making the necessary arrangements to tackle them appropriately.

1.5 The 21st Century Classroom: How to Learn and Teach?

21st Century Classroom can be defined as a classroom that embeds the elements and the learning culture and climate of futuristic learning. Futuristic learning entails a major shift focusing on student-centric learning where inter-group, intra-group collaboration, peer review, higher-order skills training beyond knowledge acquisition, leveraging on digitalization in learning and crisis, unprecedented situational handling leadership and social literacy skills. The advancement of educational technology has certainly assisted in transforming classrooms across the globe. In a twenty-first century classroom today, teachers can easily access information and resources that their predecessors would find inconceivable. For example, teachers can access information on the Internet at anytime, anywhere at any location; they can gain access to infinite information and numerous data sets, visuals/images and videos of events across the world. The high potential and capabilities of technology are expected to get even better as time progresses. It is imperative for institutes to be mindful and ensure that technology is not merely used as simply a way to deliver information, which may be the reason but should never be the only purpose. Through the limitations offered by such educational technology integration, institutions may possibly overlook many impactful and positive contributions that technology can make in twenty-first century classrooms. Hence, teachers should leverage the use of technology as deemed fit to the situational and circumstance context to engage students with real-world problem-solving, conceptual development and critical thinking (Irving, 2006).

The goal of future education is to facilitate and create a seamless pathway for students to gain the twenty-first century and beyond employability skills and competencies (Donovan et al., 2014) that makes students job ready and address the demands of today's workforce. Many educational reforms are not able to sustain or fail largely

due to varying definitions that describe the reform, and perhaps the term "twenty-first century skills' are interchangeably used without a clear and well-defined description. Some focus on the use of technology for communication and collaboration while others are inclined on digital literacy. Despite this lack of consistency, there have been numerous efforts to define and describe twenty-first century skills and learning. In general, these skills are those that go beyond the classroom context. Advances in technology make it essential for students to have functional and critical thinking skills such as information, media and ICT literacy. Moreover, in a globally competitive information age, it is also vital for students to develop skills such as agility, resilient, flexibility, adaptability, leadership and other employability skills. Thus, with the introduction of skills and competencies required for the twenty-first century and beyond, it is no surprise that modes and approaches of learning have changed over the past years (Davidson & Goldberg, 2009). With emerging technologies, modes of teaching have also changed. In the next section, we shall discuss and examine the newer teaching techniques, methodologies and learning strategies that have been influenced by digitalization and technological advancements.

1.5.1 Evolving Teaching Methodologies

Industry experts years ago had predicted that massive open online courses (MOOCs) would potentially cause face-to-face higher education institutes to become obsolete (Govindarajan and Srivastava (2020). In contrary, this is clearly not the case today, where higher education institutes have responded adequately well and have changed significantly compared to a decade ago. More specifically, there have been numerous changes to the ways in which higher education is facilitated and the course instruction being delivered, more so adjusting rapidly through learning from COVID-19 pandemic.

These changes have certainly been the effects of digitalization, technological advancements along with the easy access and usability of Internet. Many higher education institutes have started to focus on the application of technology and the Internet of Things (IoT), a global network that links devices, objects and things to the Internet infrastructure interact with the internal and external environments (Aldowah et al., 2017). The Internet, in particular, has a significant presence in higher education institutions, where the capability of technologies to disrupt teaching, learning and assessment is well understood. Overall, the Internet and technological developments have greatly impacted higher education. Now let us examine more specifically on how teaching methodologies and strategies have evolved for the future.

1.5.2 Blended Learning

Blended learning entails the combination of face-to-face (physical or virtual and synchronous) and online (asynchronous) learning, with an emphasis on technology-based/ technology-enabled learning (Rajaram, 2021). Blended learning enhances cost effectiveness and increase access and flexibility (Sharma et al., 2019). For example, if the number of students' size is very large, say in few hundreds, then it could be economical to have them all go through the asynchronous online learning where the time spent explicitly for face to face will be more productive. The students could be engaged through discussions that incline towards higher order of applied learning. Further to that, it can also help improve pedagogical practices and student learning outcomes. In terms of pedagogical learning design, blended learning enables increased interactions between students and teachers, while facilitating skills and learning agility, and capacity development. With an array of varying benefits, it is no surprise that blended learning programmes are becoming even more popular and in demand today. A report by Allen et al. (2007) found that 36% of schools in the United States offer at least one blended programme with the majority of them being associate degree programmes. The penetration rate of blended programmes by the type of school was examined in different types of schools advocated by Allen et al. (2007). Overall, this number is expected to be much higher today, especially with the emergence of newer technologies, rapid evolution of digital transformation interventions and the current pandemic COVID-19 situation.

In their studies in 2007, it was reported as follows: (a) The penetration rate for the certificate programme peaked for the doctoral/research and associates type of school clusters, followed by masters and baccalaureate type of school clusters, with the specialized type of school cluster scoring the least impact; (b) for the associate program, the peak of penetration was from the doctoral/research and associates type of school clusters, followed by the masters and baccalaureate type of school clusters, with again the specialized type of school cluster scoring the least impact; (c) for the bachelors program, the peak of penetration is attained at the masters and doctoral/research type of school clusters, followed by the baccalaureate and specialized segments, with the associates type of school cluster having the minimal effect; (d) the penetration rate for the master's programme peaked for doctoral/research and masters type of school clusters, followed by baccalaureate and specialized type of school clusters, with the specialized type of school cluster being rated with the minimal impact This research analysis enabled potential improvised design to occur, having the relevant elements carefully embedded in the design of blended learning.

Alexander et al. (2019) state that blended learning is seen to have increased steadily as a favoured course delivery model alongside with varying other fully online options. Personalized or adaptive courseware and web conferencing tools are some of the digital solutions that are used in blended learning to achieve the intended learning outcomes. Blended learning is preferred by students primarily due to reasons such as flexibility, ease of access and the integration of advanced multimedia. To support and assist in the growth of blended learning pedagogy, higher education institutions

must support and expose faculty in the learning design experiences that optimize the use of digital platforms that comprise collaboration and student-centred learning design.

1.5.3 Online Learning

Online learning has shown significant growth and demand over the last decade, as the Internet and the recent COVID-19 pandemic have literally forced schools, including higher education institutions, to accept and work in a remote virtual learning space to continue its essential operations of facilitating lectures, seminars, tutorials and students' consultations. It is noteworthy to point out that online learning was prominent even before the COVID-19 pandemic due to the rapid evolution of digitalization, more global learning collaborations and the emphasis towards the concept of self-directed and personalized that enables students to learn at their own pace. In fact, online learning has shown clear and significant growth in adoption in the last decade. Forecasts have predicted that the online education market will be worth $350 billion by 2025 (Koskal, 2020). The progressive steady growth of online learning is clear in the United States, where the number of students enrolled in distance learning courses has been steadily increasing over the years, as presented by Duffin (2020a, 2020b), U.S. student distance learning enrolment 2012–2018, that could be retrieved from https://www.statista.com/statistics/944245/student-distance-learning-enrollment-usa/

For higher education institutions, online learning can free resources from courses that can be commoditized and enabling these resources to be directed to research-based teaching, personalized problem-solving and mentorship. Students would have more space to manage their time since they are not required to spend all their time in campus, and instead use their time effectively in campuses for extra curriculum activities, optional electives, group work discussions, consultations with faculty, more peer-to-peer or intra-inter group interactions and career guidance, all of which apparently cannot be done from home (Govindarajan & Srivastava, 2020).

Online education is becoming an essential strategy, especially experiencing how it has made a huge impact on learning during COVID-19 pandemic for higher education institutions and universities, perhaps to all segments of education. Hence, it is undoubtedly clear that given the rapid growth of online learning, higher education institutions must figure out ways to provide quality online programmes, explicitly to investigate the efficacy of online learning.

1.5.4 Mobile Learning

Mobile learning or m-learning is viewed as separate aspect from other forms of technology-supported learning due to the differences in the way it mediates and

facilitates learning experiences. Its ability to enable learners to learn at any time or place makes mobile learning an unique form of learning. The five distinct affordances that mobile learning offers include (1) portability; (2) affordable and ubiquitous access; (3) "just-in-time" learning opportunities; (4) connection and convergence; and (5) individualized and personalized experiences (Melhuish & Falloon, 2010).

The concept of mobile learning has been there for more than a decade; however, today, its focus is no longer solely on applications, but rather very much inclined towards the connectivity and convenience it brings to the learning experiences. As mobile devices become more affordable and accessible to students across the globe, the possibility of m-learning becomes limitless. In fact, the ownership of mobile devices has been steadily increasing. Research conducted by the Pew Research Center in 2018 reported that 59% of adults globally own a smartphone, whereas research from the EDUCAUSE Center for Analysis and Research reported that 95% of undergraduate students own smartphones (Alexander et al., 2019).

Most students generally support the adoption of m-learning and have a positive outlook towards it. Four in five students claimed that they have used a mobile device for coursework (Magda & Aslanian, 2018). Students used mobile devices for a wide range of learning activities, including accessing of course readings, communicating with professors and peers, accessing the learning management system, conducting research and writing up course work reports.

1.5.5 Simulations, Gamification and Video Games

Simulation, as a learning activity, is a growing trend in many diverse fields (Damewood, 2016). Simulation is a system that represents or stands in for another system, and its purpose is to enable process, procedure or skills practice in a controlled environment. For example, in the nursing field, substituting portion of the clinical hours with simulation learning hours is becoming a common and growing trend. Simulation allows students to apply information learnt and sets aside time for reflection that helps transfer information into knowledge. In the same vein, video games can also be used as an avenue or a strategy to facilitate simulation.

Educators seemed to be dismissive of video games (Shaffer et al., 2005). In a contrary, corporations, the government and the military have already recognized and made use of their significant educational power. They argue that games and learning are activities that are most powerful when they are personally meaningful, experiential, social and epistemological concurrently. Video games enable learners to participate in a new imaginary world and think, talk and act in unique and creative ways. For instance, the game "Real Lives 2010" is a simulation game that allows players to live a life in any country of the world with events occurring throughout their life based on real-world statistics. This game could be used to relate to students the varying forms of struggles that are ubiquitous around the world. The benefits and usefulness of video games are well acknowledged by K-12 teachers, with almost

60% of them adopt digital games at least once weekly in teaching and 18% utilizing them daily (Novotney, 2015).

Video games enable the development of effective social practices (Shaffer et al., 2005). Video games present players with a simulated world that, if well-constructed, can go beyond teaching facts and skills and embody certain aspects of social practices. There are strong implications on how video games can potentially impact higher education of the future.

1.6 Learning Strategies for the Future

As teaching and learning methodologies evolve, so will students. Students play a vital role in the higher education process, and so institutions must acknowledge on how students themselves may influence the entire learning experience. Matthias (n.d) from PA Consulting (n.d), as reported in Times Higher Education, stated that students presently have clearer goals and higher expectations on the type of relationship they require to develop with higher education institutions to achieve their educational goals, aspirations, and ambitions. The present and future students would not only have varied but certainly have much higher expectations in their educational journey. Moreover, they would also adopt different behaviours and attitudes when it comes to learning strategies.

Hence, it is imperative for educators to be agile and respond to these changing needs. Primarily, these students would come with much better exposed in terms of digitalization tools and platforms in their high schools and extended learning resources that enable them to appreciate a wider breadth of knowledge, especially from a multi-disciplinary context and with a more diverse collaborative learning methodologies and service-learning techniques. Hence, the learning strategies need to be designed with the rapidly changing needs and demands in mind so that higher education institutions can produce "job-ready" and industry-inclined graduates. Some contemporary strategies include enhanced level of team-based, active and collaborative learning; advanced practical hands-on exposure with increased frequency, for example, more internships planted within the programme curriculum; work and study programme embedded to see more connectivity of their classroom learning and its application to workplace context; multi-disciplinary curriculum where there are courses that need to be taken with other subject disciplines. This process enhances students' learning exposure and enriches their learning capacity through intermingling with other student profiles that enable them to appreciate subjects that are beyond their core specialization. Hence, the mantra is to adopt the strategy of being agile and responsive by performing continuous reviews to closely align to the needs of employers and other stakeholders so that the "gap" of skills and knowledge required for these students to be equipped is continuously addressed and closed.

1.7 Educators of the Future

Educators must rethink on what and how their roles have evolved to meet the needs of the future of education. The roles of higher education teachers must also be re-examined, in the similar vein on how the higher education curriculum is to be continuously reviewed and adjusted to reflect the twenty-first century ideas about knowledge and learning. As pointed out by Bolstad et al. (2012), teachers' roles need to be reconsidered if the common consensus towards the primary role of education is not just to transmit knowledge but also to cultivate people's ability to engage with and generate knowledge (Bolstad et al., 2012). Therefore, it is crucial that educators receive adequate training that will allow them to develop the necessary skills and competencies required for future classrooms. Some of the core skills that we believe are essential in the twenty-first century classroom and beyond are presented below with supporting discussions:

1.7.1 Cross-Cultural Competence

With many higher education institutes adopting an international approach or striving towards internationalization, teachers at present and of the future are expected to deal with students from diverse backgrounds. In a study conducted by Ballantyne et al. (1999) in Australia, it was discovered that the phrase "cross-cultural teaching and learning" emerged as the primary element to describe, contextualize and describe exemplary teaching in universities. This study is further supported by Salmona et al. (2015) who reported that the development of enhanced cultural competence was one of the key factors identified as crucial for future teachers. Both of these studies are indicators of how cross-cultural skills are extremely essential, relevant, contemporary and importantly necessary in today's higher education contexts. In today's multicultural, diverse climate and environment, educators are to be equipped so that they could train the students to acquire the relevant skills and knowledge to deal with the conflicts positively, see them as opportunities to strengthen professional relationships and shift the mindset to embrace diversity and working in complex culturally intertwined contexts.

1.7.2 Empathy: Leadership Skills Development

Empathy is a concept that came about in the early 1990s by Theodor Lipps and Edward Titchener (Davis, 1996; Rajaram, 2021). Empathy can be defined and described fundamentally as the psychological process of a person reflecting the feeling of another person or the ability to empathize. According to Bouton (2016), teaching and training of empathy is a vital skill for pre-service teachers (Bouton,

2016) and educators in higher education to be equipped with, developed and trained. This is especially true in the current context where there are often trends of mismatched aspects of diversity between teachers and students. Besides playing an important role in dealing with cultural sensitivity and diversity issues in the school system, empathy can also assist teachers in expanding social skills, emotional intelligence, moral development and so on. Further to that, empathy allows teachers to better analyse, relate and understand students' behaviour at depth. This allows them to undertake a more student-centred approach which is a shift that has been progressively happening for quite some time in the higher education domain. Rajaram (2021) has advocated and validated through an evidence-based approach that takes an effective psychological intervention known to elicit cognitive growth in a variety of contents and translates it into a university setting to develop students' cognitive empathy as part of the leadership skills in a university business course. In the similar vein, the conceptual strategy could be adopted for educators as well to enhance their cognitive empathy as part of the professional skills development. The primary basis is to have social-psychological interventions provoke individuals to address potential cognitive blocks that may inhibit positive learning behaviours. This research was significant and highly effective for three primary reasons, namely: "(1) it attempted to prime participants for the development of a non-content-based skill, in this study it was cognitive empathy, with a generalizable activity sequence; (2) it compared the effects of this priming activity against participants receiving more domain-specific content; (3) it introduced methods of analyzing participant work for holistic solutions and for indicators of graduate attributes instead of merely addressing content knowledge and domain-specific skills" (Rajaram, 2021, p. 121).

1.7.3 Teacher-Thinking

The development of cognitive competency of the concept "Teacher-Thinking" is embedded with several processes such as perception, reflection, problem-solving, inquiring and the manipulation of ideas (Huang, 2015). Teacher-thinking is one of the key skills for educators to develop and work on as it enables one to synthesize and perceive significant functions in their teaching work. It serves primarily as a foundational and fundamental element for an educator's decision-making. Hence, as classrooms become more complex with additional technological tools that are being added into the mix, teacher-thinking skills become even more crucial for educators to be able to keep up with the fast-paced classroom.

1.7.4 Growth Mindset: Lifelong Learning

Twenty-first century education entails educators to adopt a growth mindset that makes it necessary for them to see themselves and act as lifelong learners. It also requires

them to have the ability to adjust, align and adapt to changing educational circumstances, evolving expectations and needs of students. For example, a teacher may be placed out of their comfort zone when teaching with new technological tools or embracing digitalization in teaching. However, if that teacher views this as a learning opportunity with a growth and positive mindset, then it enables him/her to overcome such discomfort and grow the required knowledge and skills. Without the fundamental trait/qualities of a lifelong learner, educators may potentially reduce the efficacy of their own teaching abilities and stagnate the growth of their students.

Researchers at the NZCER project Teachers' Work argued that the learning environments are a result of an interplay between individual teachers' knowledge, skills and dispositions, and the context within which they were working. Therefore, while a highly educated workforce is imperative for twenty-first century education, in the same vein, it is equally crucial that higher education institutes facilitate and support teachers' ongoing professional learning needs.

1.7.5 Collaborative and Networked Learning

For a long time, professional networks served as an avenue/platform where educators have shared knowledge, best practices which well served as professional development. Future-oriented learning will involve more cross-disciplinary collaboration, embedded with new strategies of mentoring and learning relationships among educators and educational leaders (Bolstad et al., 2012; Rajaram, 2021). Berry (1993) mentioned faculty are expected to connect and build industry networks by bringing them into the university community to value-add to the current resources and enhance recognition. Teachers wanted to network basically to improve their own practices and thought processes as well as to overcome the possibility of being isolated or avoid loneliness. Establishing a learning community allows educators to gain a richer, more diverse perspectives and be more open to appreciate the varying aspects and differences in pedagogical practices.

1.8 Future Curriculum Learning Design and Assessment

Curriculum could be viewed as the core intellectual centre of schooling and its main message system (Williamson, 2013). Curriculum links both academic, vocational knowledge and skills with personal identity as well as the culture of society. Moreover, it also determines the contents to be studied and the methods for studying it. As a whole, curriculum can describe the values and aims used to justify a particular program, all the educational processes and learning that go on within it.

Twenty years ago, Kress (2000) advocated that generally, most curricula in Western schools remained the same when compared to schools of the nineteenth century where the goal was to produce homogeneously conceived citizens who could

contribute to the labour force and satisfy the needs of the nineteenth century nation. On a similar vein, Williamson (2013) characterized curricula of the past as "factory schooling" where students are prepared for life in largely routine low-skills industrial jobs. The curriculum of the future in the 1980s was expected to focus on creating a more educated, flexible and highly skilled workforce as factory schooling lost relevance. Today, we are facing a myriad of new, complex and unique needs, concerns that must be addressed by higher education to ensure its longevity in the long run. These new circumstances require more thought through, novel, improvised responses equating to new goals and curricula which are more appropriate and suitable to attain these goals.

Adopting a twenty-first century curriculum must facilitate the bandwidth to blend knowledge, thinking, innovation skills, media, information and communication technology (ICT) literacy, and real-life experiences in the context of core academic subjects (Alismail & McGuire, 2015). Students need to develop twenty-first century skills such as critical thinking, problem-solving and ability to collaborate by working in teams so that they are adequately ready to pursue their future careers and endeavours. Higher education institutions have addressed the changing nature of the world by employing new, innovative pedagogical techniques that are relevant in today's rapidly changing situational contexts. However, these new pedagogical strategies are often designed to encompass several teaching and learning themes including collaboration, co-creation with learners, connectedness and technological disruptions. The next section will present discussions on the future curriculum design through having it evaluated by these themes and addressing the future of assessments.

1.8.1 Collaboration

Collaboration in learning delivers quality learning outcomes in terms of comprehension of contents instead of merely a means to develop or assess knowledge (Child & Shaw, 2016; Rajaram, 2020, 2021). It is described as a technique that facilitates learning mechanisms such as induction, deduction and associative learning. It involves groups of learners working together to solve a problem, complete a task or create a product (Laal et al., 2012). In a collaborative learning environment, students are challenged both socially and emotionally and are actively engaged.

There is a growing emphasis on project and enquiry-based learning as research has proven that collaboration has positive impact on student's learning and knowledge retention. It increases the social competencies of students and allows them to learn and incorporate knowledge from multiple sources. There has been an increasing need for students to apply what they have learnt in social settings. Organizations today require innovation to happen through combining the potential and expertise of their employees through collaboration. Furthermore, the recent advancements in technology have created new opportunities for how collaboration occurs.

Hence, it is of no surprise that collaboration has now become a twenty-first century trend. There is an essential need in society for people to be able to work together

on varying issues, and thus, there is an apparent shift from individual efforts to group work and from independence to community. The importance of collaboration is viewed through the use of group work as a means to assess student learning.

1.8.2 Co-creation with Learners

According to the OECD (2018), future-ready students need to exercise agency in their own education as well as throughout their life. Agency implies a sense of responsibility to participate and to influence people for the better. For educators to enable agency, they must recognize learners' individuality and acknowledge the relationships that influence their learning. The concept of co-creation or co-agency encompasses the future of curriculum design. Co-agency, as described by the OECD, refers to the interactive and mutually supportive relationships that help learners achieve their goals.

Co-creation allows students to contribute towards their own learning. By actively participating in class, students will not be limited to only learning from their teacher's perspective; rather, co-creation allows teachers to widen their views and the opinions through students who likely would give them novel ideas which are not thought of before. Interactive exchanges between teacher and learner are another aspect that surrounds the future of curriculum design. Teachers should intentionally plan to allocate more time to interact with students within the classrooms in their classrooms.

1.8.3 Connectedness

To better prepare students for the workforce, higher education institutes should ensure that students are equipped with adequate practical knowledge and a good understanding of their individual chosen career paths. Perhaps, this could be possibly done by encouraging connectedness in varying ways between higher education institutes and corporate organizations, allowing students to experience the real work setting and make early connections with industry professionals. Work experience and being equipped with the skills, ability to transit quickly to business operational requirements, have become more imperative in the twenty-first century and beyond because industries are increasingly looking out for graduates with the relevant, necessary competencies and skills to succeed in the respective given roles. The term "connectedness" in this context refers to how curriculum will be designed to enable students to learn in real workforce type of environments, or even close to a simulated setting outside the classroom.

There has been a growing number of higher education institutes incorporating some type of work placement within their programmes or adding an internship scheme at the end of a programme (Helyer & Lee, 2014). The goal is to allow students to learn through hands-on experience, acquire the "know-hows" in the real

corporate settings and leverage, and use what they have. The transferable and generic skills are even more crucial than ever in today's rapid changing world, especially with so much of uncertainties and evolution in the future job requirements. Hence, it is vital for graduates to be agile, respond with a growth mindset to be adaptable and resilient to thrive. Internship, work experiences gained via work-study programmes and part-time work, for example, allow students to gain some of these actual work skills which enhance their adaptability and transition to workforce more speedily by understanding the realities of work upon graduation. It also gives students some level of connectedness with the working world. Moreover, it allows them to expand their professional network by making professional connections and build relationships with employees and working adults who can guide, mentor and provide them with relevant, expert advice and recent, contemporary insights.

1.8.4 Technological Disruptions and Interventions

Technological disruptions and interventions are emerging theme that envelops the radical changes in pedagogy. New technological innovations have assisted higher education institutes to deploy new teaching methodologies, for example flipped classroom, blended learning, higher emphasis on cooperative and collaborative learning and so on. Enhancements in technological tools, platforms and the integration of digitalization have enabled for the betterment of fully online programmes as well as the development of effective virtual learning environments with high level of student engagement and quality learning process efficacy. Mobile learning, data analytics through technological interventions, mixed reality, artificial intelligence (AI), blockchain and virtual assistants are a few key developments in technology and digitalization (Alexander et al., 2019). Besides having technology and digitalization assist in teaching and learning arena, it also helps higher education institutes to accelerate and advance the capabilities and capacities for data analytics. Analytical technologies are increasingly and more widely adopted generally; for instance, data mining techniques are progressively gaining significance in the education sector. Higher education institutes can creatively use these techniques to influence and perhaps incorporate interventions to enhance the learning processes and outcomes. For example, data mining techniques can facilitate policy makers in higher education to be equipped with data-based models that support their goals to enhance the efficiency, efficacy and quality of teaching and learning. Hence, these techniques can create systemic change by helping institutions seek solutions for specific issues. Overall, relevant technological interventions and systems can provide support in the higher education decision-making processes (Aldowah et al., 2019). Ketamo et al. (2019) experimented using artificial intelligence and other technologies to build a real-time understanding of skills, competencies, knowledge and abilities that workplaces seek. Primarily, the goal of this project was to overcome the specific contextualized challenges and frustrations of ensuring that curriculum design is up-to-date inline of preparing graduates for the rapidly evolving the work setting. This

serves as highly useful and beneficial for institutes to align students' learning and the attributes developed to be useful upon graduation and to enter the workforce. This reiterates on how technology and digitalization can potentially assist institutes to modify curricula in totality or altogether. Both of these studies presented show how technological disruptions become one of a key consideration it comes to curriculum design, where potential benefits can be attained. Pedagogical strategies such as online or blended learning are largely influenced and impacted by this intervention.

1.8.5 Assessments

Aside the curricula, the assessment design of the future also does come into as a reflective question when discussing and planning the future of higher education. For example, the COVID-19 pandemic reiterated or re-emphasized the relevance and imperativeness of virtual (synchronous) or fully online/e-(asynchronous) assessments. Times Higher Education (2020) reported that in the next five years, universities must embrace technology to transform the way assessment is facilitated to enhance its efficacy in terms of quality, speed and accuracy. Five distinct ways were identified by which technology will potentially affect assessments, namely to be more authentic, accessible, automated, continuous and secure. Moreover, further to technological interventions, there are other related drivers that influence assessments for the future. The mega trends for assessment include, namely (1) increases in computational power and statistical methods; (2) dynamics of population change; and (3) the rhetoric and politics of accountability. Changes in assessment are largely a resultant of increased class sizes, modified curricula and the need to support students better. At the same time, assessment options are constrained by regulations and external quality assurance demands. These are largely driven by concerns over standards, reliability and plagiarism. Hence, it is key for institutes to address these concerns and provide due considerations given the rapid evolving and changing environment.

One of the highest emerging themes in the academic literature on educational assessment is the increase in emphasis on exploring, understanding and exploiting the influences of specific assessment approaches on student learning process and outcomes. Another theme directs to the extent to which assessments meet the key goals, objectives and intended learning outcomes of a course. Both of these themes advocate and emphasize how the holistic goals of assessments have shifted from merely just focusing on grades to focusing learning in a more student-centred approach. Assessments no longer serve just as a way to assess student learning, but now are transforming to become tools that can assist in student development. Therefore, the concepts of assessment for learning and authentic assessments are expected to grow in prominence in the future. Ultimately, the conceptualizations of both pedagogies embedded with the relevant and appropriate assessments would significantly influence and impact the factors affecting higher education.

1.9 Learning Mobility—The New Expectation of Learning "Anywhere and Anytime"

The development and wide adoption of the Internet as well as mobile devices have allowed for higher education institutes to add on a new or improvised mode of delivery for their programmes. For instance, online learning allows students to access their course resources and materials from anywhere in the world with an Internet connection and a mobile device or laptop, while asynchronous learning allows students to learn at their own pace. The combination of these two modes of learning creates a situation or a convenient possibility where learning can occur anywhere and anytime. We refer to this concept as learning mobility where it encompasses choices such as e-learning, m-learning and distance learning.

Learning mobility is essential now and in the future due to evolving changes in demographics and landscape of higher education. For instance, there has been an increasing number of adult learners enrolling into higher education institutes. This is reported by statistics from the United States (US) Department of Education, Maryville University (n.d.), explicitly pointing to the number of adults of 20 or older going back to school since 1970 with projected numbers for 2019 and 2024 that could be retrieved from https://online.maryville.edu/blog/going-back-to-school-statistics/

Adult learners have specific needs that they seek support from higher education institutes such flexibility, more tailored-made learning design to align in their learning endeavours due to heavy commitments outside of school such as family, personal and/or work. Learners who are working and pursuing their studies concurrently are generally inclined towards higher "anytime and anywhere" tendencies due to the need for them to create a balance between their work, school personal and family life (Du et al., 2019). The study reported that a higher level of self-directed learning has a greater potential of better performance, although there could be potential adverse impact on learning performance. This is pointed out and reiterated by Rajaram (2021) where he advocates that to increase the efficacy in self-directed learning, it would be crucial to embed well-designed and essential interventions to (1) assess the learners' knowledge gained through online quizzes; (2) provide immediate formative feedback; and (3) facilitate an avenue to engage and address their queries possibly with some level of human intervention. Apparently, the increased frequency of transitions between learning locations can potentially result in much poorer information retention as compared to when the learning occurs in a more consistent and sustainable environment. Aside from demographics, external influences play a vital role in the adoption of learning mobility options. Unforeseen circumstances such as the SARS outbreak or the recent COVID-19 pandemic highlight the need for institutes to be prepared for situational circumstances where students may not be able to physically attend classes on campus. In the case of the COVID-19 pandemic, travel bans and social distancing measures prevented face-to-face learning activities. Hence, the learning mobility options, its supporting resources and the platforms it operates are vital aspects for higher education institutes to consider.

While it comes across that self-directed learning, i.e., "anytime and anywhere learning" is useful and highly beneficial, we should acknowledge the limitations, concerns that it comes with. Online or distance learning introduces and intensifies certain barriers in social interaction, technology, student support, pedagogy and accessibility (Morris, 2010).

Firstly, fully online or distance learners can feel alone and isolated due to a lack of interaction and communication between their peers and teachers, resulting in a lack of social interactiveness and engagement. Secondly, a technological barrier and limitation occurs when students feel discomfort in adopting technological tools or platforms which add on to embedded elements such as technically inclined challenges, Internet and technology-inclined costs and accessibility, and technical "know-hows" and skills. Thirdly, the lack of student support or limitations that are tied to them, namely (1) lack of social-cultural eco-systems and processes built in to meditate the complex learning challenges due to diversity; (2) inadequate time for students to be able to gain in-depth comprehension of contents due to the lack of interactivity component embedded in the system; and (3) lack of academic experience where teachers are not able to empathize, resonate to the students' needs with an agile and responsive mindset. Fourthly, effective implementation of pedagogical barriers and limitations may occur as not all classroom instructors may be equipped with the relevant skills or "know-hows" or deemed effective when operating online. Senior aged faculty members may potentially struggle in keeping up and facilitating interactive and individualized lessons online due to the inability to catch up speedily with the current technological advancements. Finally, the presence of a digital divide suggests that some students may not have decent broadband connections to access the online resources and course materials. Further to this, physically disabled students may face limitations and barriers if there are insufficient supportive or assistive technologies. This specific barrier relates and intertwines to the sociocultural aspects of institutes and beyond.

With such limitations and barriers in mind, it is imperative for higher education institutes to comprehend how they can overcome by addressing and eventually resolving such issues. Therefore, it is vital for them to come up with a guiding framework that supports learning mobility which could be applied to their operations. To facilitate learning mobility, a few primary components are essential to be considered which will assist in building an effective digital infrastructure. These components include universal broadband connectivity, a plan for facilitating digital citizenship, investment in professional learning to allow for necessary pedagogical transformations, engagement of parents and community partners, and the establishment of appropriate assessment and data systems (Thigpen, 2014). The aforementioned components are elaborated in Table 1.2.

Table 1.2 Key components for a digital infrastructure that supports learning mobility

Component	Description
Broadband connectivity	To function in twenty-first century classrooms, both students and educators need to have fast and reliable connections to the Internet. This is so that they can effectively use a range of digital tools, including online communication tools such as Zoom, Microsoft Teams and Google Hangouts. A decent broadband connection also allows learners to work with their teachers and peers using online collaborative tools. Moreover, it allows them to take advantage of secure cloud capabilities such as data storage. It is recommended that school campuses have a minimum of 100 Mbps (megabits per second) for every 1,000 students and staff to meet the demands of online learning
Digital citizenship	The concept of digital citizenship refers to the knowledge required to participate effectively and responsibly in a digital world and includes digital literacy and online safety and ethics. The way in which students interact with digital tools as well as their engagement with digital content influences the extent to which they benefit from digital learning. Digital literacy is particularly important because youth are increasingly getting their news through online media platforms such as YouTube, Twitter and Facebook. Thus, it is important that schools teach learners to effectively discern the credibility and accuracy of information they see online
Professional learning	Educators play a crucial role in a comprehensive digital infrastructure. They require their own systems of support and training to fully take advantage of the potential of digital learning. Therefore, there is a need for educators to move to a professional learning model. Rather than simply understanding how to use a technological tool, they also need to understand how the tools can be used to transform their classroom
Engagement of stakeholders	Communities surrounding students can support and shape individualized learning pathways. Connecting learning opportunities across youth-serving institutions will improve overall engagement and interest in school. Communities can involve themselves in helping achieve student learning goals through apprenticeships, community-based exhibitions and supporting the alignment of afterschool programming with in-school curricula
Assessment and data systems	Creating personalized and student-centred digital learning opportunities heavily relies on access to real-time data on student performance which can be used to evaluate instructional practice. Through assessment and data systems, schools will be able to continually adjust and improve learning pathways for each individual student. A comprehensive digital infrastructure should provide educators with relevant and timely data which can help them in designing pedagogy to be used in classrooms

1.10 Individualized and Personalized Learning: Customization for Learners

One major trend in higher education is the increasingly individualized and personalized approach to learning. Personalized learning involves differentiation and individualization to connect to a specific learner's interests and experiences (Bartle, 2015). It enables teachers to curate to the needs and abilities of each individual student. The goal of personalized learning is to ensure that the educational system responds directly to the students' diverse needs rather than implementing a "one-size-fits-all" model that may not be as efficient. Educational reforms in higher education are already making personalized learning a reality (McLoughlin, 2013), for example pedagogical models that support the principles of personalized learning including connectivist learning, online collaborative learning and pedagogy 2.0.

Other pedagogical techniques include personalized learning include flipped classrooms, e-learning, MOOCs and mobile learning Li and Wong (2020). Personalized learning benefits students as it utilizes their differences as a leveraging factor to customize when it comes to instruction and assessments. It can assist teachers recognize individual strengths and demands of students and is unlike the "one-size-fits-all" model that has been found to lead to undesirable outcomes such as higher drop-out rates. Li and Wong (2020) have presented the data for 2001–2009 versus 2010–2018 on specific objectives of personalized learning in their study. Elements that were rated in range between 10 and 34% for both category of years 2001–2009 and 2010–2018 include (a) increase learning effectiveness; (b) provide personalized learning path; (c) increase learning satisfaction; (d) enhance learning motivation; (e) enhance learners' engagement; and (f) enrich learning experience. However, elements that were rated below 10% for both category of years 2001–2009 and 2010–2018 include (a) cater for learners' interest; (b) increase teaching effectiveness; (c) promote lifelong learning; (d) achieve learning objective; (e) enhance collaborative learning; (f) address individual learning style; (g) predict learners' performance; (h) provide personalized learning support; (i) promote learners' self-regulation; (j) identify learners at-risk; and (k) others.

FitzGerald, Jones, Kucirkova and Scanlon (2018) reported that the potential benefits of personalized learning can be classified into three distinct levels, namely (1) learner, teacher and institution. At the student level, the benefit could be focused on personalization that can potentially increase motivation and learner empowerment and improve attitudes to learning. At the teacher level, personalized learning can support teachers via learner feedback, some of that can be automated so that teachers can focus on more higher quality commentary. At the institutional level, personalization has been found to be able to help tackle underachievement in education and raise standards in compulsory education.

On the flip side, we also need to acknowledge the challenges of personalized learning which are discussed by Bartle (2015) who listed four potential obstacles. Firstly, students tend to not know where their knowledge is lacking. To take ownership and co-author their personalized learning, it is vital that students have an adequate

comprehension of the required progressive steps of their learning. Secondly, students may take a superficial or rather surface level approach when it comes to online learning, so it is crucial that it is designed to facilitate the process of deep learning and secondary interventions that encourages this. Thirdly, teachers should be willing and have the ability to shift their pedagogy to a student-centred approach, especially since the skills and inclination of values that a teacher advocates have been found to affect student achievement. Lastly, accreditation requirements may pose a challenge or limiting factor as it potentially restricts the flexibility of courses.

Bingham et al. (2016) add on to the potential challenges in the implementation of personalized learning. These researchers reported that inaccurate data, challenges in developing student autonomy and problems with managing students' use of technology will potentially led teachers retreating back to more traditional and low-tech practices. From a holistic perspective, they claimed that understanding and anticipating challenges prior to future implementation are imperative so that institutes can better plan resource allocation. Further to this, it enables institutes to identify precursors of favourable or unfavourable student learning outcomes.

1.11 Sociocultural Interventions for Future

Higher education institutes are facing major shifts and changing trends in their demographics. Aside from an increase in the profile of adult learners, there have also been progressive general growth in the enrolment of female students (UNESCO Institute for Statistics, 2020), students with disabilities (Koshy, 2019), low-income students (Fry & Cilluffo, 2019), international students (Zong & Batalova, 2018) and many other sociocultural categorizations. These different groups of students contribute to the growing diversity of higher education campuses. While we could acknowledge that diversity does bring about benefits, institutes must also thoroughly and carefully consider on how it can impact the overall learning experience of every student in varying ways. Furthermore, these groups are the ones who are often marginalized and face inequities in their daily lives. Hence, it is crucial that institutes consider these inequities, provide adequate accommodations and establish relevant policies to ensure that all students have equal learning opportunities.

The trend towards diversity could be primarily because higher education has become a necessity for students around the world to attain livable wages and to build successful long-term careers. An estimated 85% of current jobs and about 90% of the fastest-growing, best-paying jobs require employees to have some form of post-secondary education (Adams Becker et al., 2017). Despite that, it is reported that the United States is on the road to producing 11 million fewer certificates and degrees than the national economy will require by 2025. Certain inequities around the globe can be attributed to the cause of this student underachievement. For instance, half of all people from high-income families earn a bachelor's degree by age 25, but this number goes down to just one in ten for those in low-income families. In the case of

students with disabilities, the evidence points towards lower rates of college adjustment experienced compared to their peers with disabilities (Kim & Kutscher, 2020). Students with disabilities are also reported to be marginalized and face alienation, stigma and discrimination. These factors and other contributing aspects contribute to the undermining of their confidence and academic success. As a whole, these studies highlight how the varying factors beyond the student's or institute's control can significantly impact learning experiences.

Aside impacting students, sociocultural factors can also impact teachers and influence academic change and development in higher education. A study by Englund et al. (2018), examining the working environments of teachers on an online pharmacy programme, verifies this claim along with other findings. Their study shows that communication and dialogue are crucial components of cultural construction. Different teaching departments may have their own established, customized culture, and hence, there can be tensions and restrictions when they are expected to work with one another. The finding is especially imperative in the current context where there is an increased focus on interdisciplinary knowledge, thus requiring faculty from various departments to work with each other and together. This is also crucial as more foreign educators enter local institutes, bringing certain aspects and nuances of their cultural values and norms into their departments. Therefore, higher education institutes must ensure that not only they monitor sociocultural influences amidst students but also among teachers as well.

It is expected that the future of higher education will become more technology-centric, given that online education is a long-term strategy for many tertiary institutes. We can foresee certain issues of the future that arise from sociocultural factors. For instance, digital tools and platforms that offer beyond basic features today that majority of students from higher-income families can access may not be as financially viable for easy access to students from lower-income families. We could expect this trend will continue to unfold as technological tools and gadgets consistently continue to upgrade. Perhaps, some students may be able to afford the speediest Internet services while others may not be as fortunate. This can result in severe disparities in the quality of learning between these two groups of learners. Thigpen (2014) reports that 30% of households in the United States do not have high-speed broadband while many lack decent speeds for students to adequately and properly utilize modern digital learning tools at home. Nonetheless, the relevant and effective use of technology has great potential to improve student outcomes for under-served students. It is crucial for higher education institutes to ensure an equitable access to technology is advocated and facilitated to ensure the efficacy of the reach is optimized. While the student profile population of higher education institutes is becoming increasingly diverse, policymakers and faculty need to be acknowledged and be aware of the potential obstacles they need to likely overcome in the future. Hence, it is imperative for higher education institutes to place more targeted emphasis on the sociocultural elements that potentially influence the experiences of teachers and students.

1.12 Recommendations

Despite the unpredictability of the future of learning with a full hundred percent certainty largely caused by the consistent evolving changes, speed of innovations and from time to time intervened by unpredictable events, specific trends and drivers could potentially point to the direction of the future of learning. Hence based on the analysis, I have proposed recommendations based on these observed trends, by clustering them into three levels of higher education institutes, namely at the micro (teacher level), meso (school and programme level) and macro (university/institutional level).

At the micro-level, teachers are strongly advocated to upgrade their ICT skills as the demand and need for flexible online offerings have continued to increase over the years (Roddy et al., 2017) and are expected to further increase down the road in the near future. As online learning continues to expand, it is becoming increasingly clear that there is a need for competent online instructors. Although some aspects of face-to-face teaching competencies can be potentially transferred to online contexts, this may not be adequate in dealing with the varying unique aspects of online teaching. There is a rising need for teachers to effectively communicate, manage technology, and deliver and assess contents. Teachers should closely monitor students' progress and follow up on issues to ensure that they minimize student disengagement. Further to that, without sufficient technological skills, teachers may be unable to overcome technology-related challenges during online lessons which could impact students' overall learning experience. Ideally, institutions should provide teachers with relevant training so that they can upgrade their knowledge and skills. However, teachers should also remain proactive and look towards lifelong learning due to the constant emergence of new evolving technologies.

At the programme level, higher education institutes are expected to shift towards more resilient teaching, in accordance with a whitepaper written for Coursera (2020). They state that in the subsequent phases of the COVID-19 pandemic, higher education institutes should be ready to shift to a fully online format at any given phase. However, even in the phase beyond the post-crisis, there remains a need for agile teaching models since an unexpected crisis could occur anytime. Therefore, they suggest that institutes should expose, train and benefit students through flexible teaching models that are resilient against uncertainties but at the same time able to meet the changing and rising expectations of students in terms of value and quality. Resilient teaching largely points towards the fact that each course is explicitly design around a set of well-defined and scoped learning goals, with supporting learning activities that help students advance towards those goals and guide them through a scaffolded process. They illustrated the case of Duke University who uses the term "flexible teaching" to describe their student-centred, engaging, adaptive and inclusive approach. The authors suggest that blended learning is a core aspect of resilient teaching as it provides students more and varying options. In all, it is suggested that programmes are designed to be student-centred, interactive and inclusive so that schools will be able to effectively deal with the new era of education.

At the institutional level, it is vital for higher education management and policy-makers to ensure that policies are adapted to the current times. According to KPMG International (2020), many higher education institutions around the world are at or approaching crossroads when it comes to strategy and operating models. Wiley Education Services (n.d.) suggests three key initiatives that administrators can focus on so that their institute may be better able to deal with the new developments in the higher education environment that continues to evolve due to advancements in technology, increased competition, variations in student demographics, and changing student and employer demands. These recommendations include increasing access to new students, overcoming faculty technology concerns, refining and supporting the students' journey. Moreover, recommendations at the policy level include creating a safe and equitable learning environment and climate for all students. For instance, institutions can review their financial aid policies to assist and retain lower-income students. They can also ensure stricter anti-discrimination policies to ensure minority students' safety. There should also be fair accommodations for students with disabilities. It is imperative that the emphasis of policies should not only focus on the institution itself but also be more student-focused as this will also benefit the institution from a more holistic level.

To assist the various stakeholders, namely the senior management, researchers and educators on the transformation for future learning, I have conceptualized a guiding framework that is presented in Fig. 1.2 that serves as a scaffolded analysis and flow of process. The framework is categorized into three clusters, namely external interventions (external environment), internal interventions (internal environment) and outcomes (impact on stakeholders). Higher education institutions are affected by, and affect, their environment. The external interventions serve as inputs for the institutions to align and create continuously relevant strategies (internal interventions): (1) internationalization and globalization: As institutions open their recruitment to international students, the courses offered need to be mindful of the cultural aspects in designing their pedagogical design and so on. It also relates to the rapid evolution and demands on educational services to be offered beyond domestic market that involves inter-institutional cross-country collaborations; (2) digitalization, technology evolution, advancement and trends: The evolving changes in technological disruptions and infrastructure needs to be dealt with by higher education institutions. For example, the contemporary upgraded technologies require a "rethink" on how the existing information technology infrastructure could be re-aligned to meet the changing rapid demands to be relevant; (3) social and cultural transformation: With the rapid acceleration of globalization and the urgent need to collaborate globally requires higher education institutions to be agile and responsive by being mindful of the culturally, socially embedded strategies adopted and executed; (4) demographic changes and shifts: The profile, type of students interested to attend undergraduate and postgraduate programmes are changing distinctively, for example, more adult learners such as mid-career professionals or talent pool who are identified to be senior leaders are coming back to pursue both their undergraduate and postgraduate qualifications; (5) changing immigration profile: Students internationally are showing

more interest in pursuing their studies overseas to enhance their exposure and experience, where some are deciding to reside in those countries after their studies. Aside this, there are more opportunities or call for foreign talents who are being invited as expatriates to take up job positions, as such their children will now potentially be attending the higher institutions in that country. (6) Education policies locally and globally: There will be continuous changes and new policy initiatives on education in every country that impacts domestic issues pertaining to educational strategies adopted while the changes that are made in other countries do have ripple effects due to the inter-connectivity of the movement of the students across countries. (7) Changing needs of the job roles: As the world evolves and the needs, demands and expectations of the people, consumers and varying stakeholders' changes, hence this requires the functional job roles and responsibilities to transform. Hence, the higher education institutions need to speedily respond to these "gaps" by having them addressed appropriately through reviewing and re-aligning on how they could train and equip the students with the new skills and competencies.

The outputs are the strategies to be executed to meet the demands and expectations of varying stakeholders. This comes under the purview of internal environment that comprises of internal interventions as illustrated below. Figure 1.2 presents a validated framework on the transformational model for future learning in higher education that encompasses three primary thrusts, namely external environment, internal environment and potential outcomes that shape as deliverables. In the below section, the core elements that comprise within the internal environment of higher education institutions and serve as vital influencing factors to shape the deliverables are illustrated as follows:

(1) Continual Learning: Re-value the lifespan of educational qualifications—learning for and through life. Many years ago, we may have adopted the mindset of preparing for almost 20 years for our very first job, perhaps the only job for life. Can we afford to remain with that traditional mindset with the rapid evolution of changes that have been happening around us? Perhaps we have to accept the reality of aligning and changing roles, responsibilities and even jobs. The key reflection is the relevancy and update-ness of the skills and knowledge as years unfold ahead, after your graduation from a higher education institution. As the efficacy of the already equipped "know-hows" decreases rapidly as years pass, then the need to acquire new skills and knowledge must be ramped up to stay relevant and contemporary. So, there is an urgent need of mindset shift, where one must acknowledge that learning never ends and no one time qualification is adequate. The perception of learning for and through life must not mean that there is a body of knowledge and competencies that once acquired will prepare us for the rest of our life. Instead, learning for life must be the process of continual learning for the rest of an individual's life, throughout in a progressive manner. No amount of intense and prepared education frontloading can prepare one completely for life. The only possible strategy to propel ahead is through continual learning through varying means that enable one to remain contemporary, relevant and current for the entity of

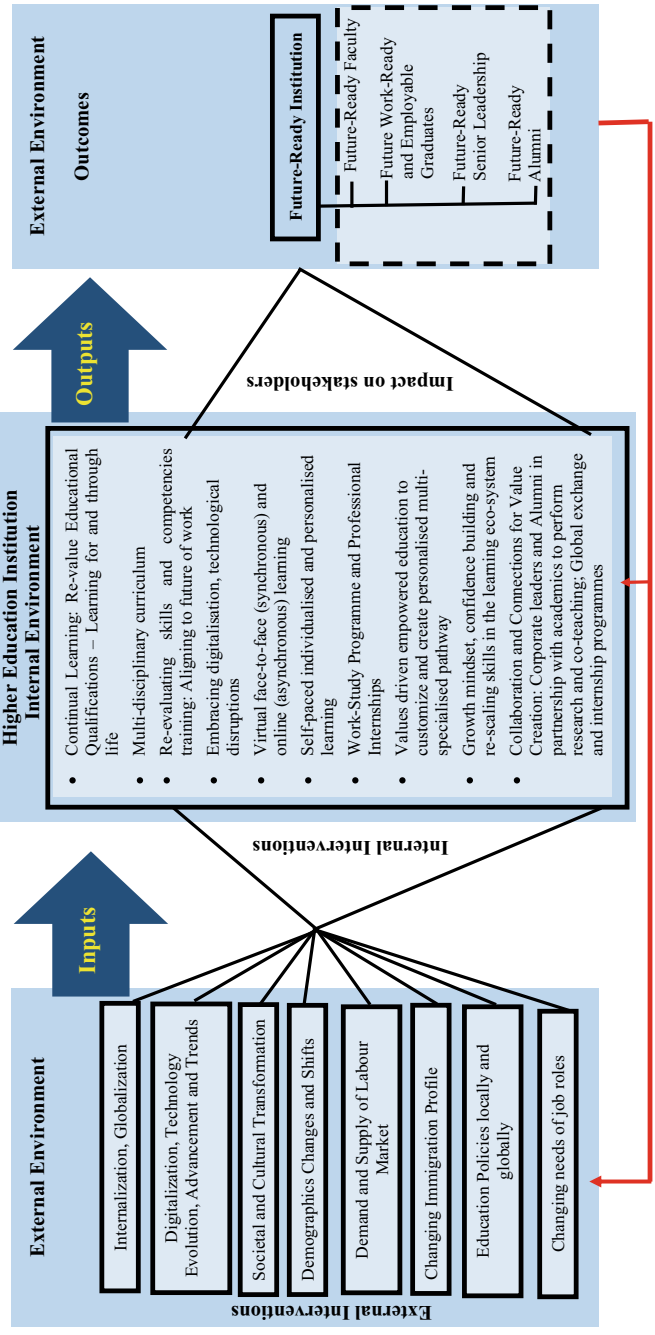

Fig. 1.2 Transformational model for future of learning in Higher Education

one's life. Hence, the value proposition of the academic qualifications needs to be re-evaluated from the varying different stakeholders' perspectives and today's complex, dynamic and evolving environment and climate. Vital questions such: (a) Are the students ready for the future job roles in terms of applied knowledge and "know-hows"? (b) Are these students' skills-set required for the future jobs adequate? (c) How can we create an eco-system where there is a progressive structure of academic qualification renewable with professional experience add-on over an individual's life-time stint? This requires a major revamp of the entire higher educational structural process and its related eco-system governing it to be reviewed and transformed. (f) How can the learning loops fastened in process to shorten the time to market for skills and knowledge, commencing from frontier research, leading industrial technologies and breakthrough market practices to academia and back to the market. Obviously, this strategy drives the competitiveness as a people and system. Hence, the outreach, collaboration and partnership strategy need to be sharpen specifically in the arena of internships, academia and industrial collaborations as well as alumni engagement.

(2) Multi-disciplinary curriculum: There is an urgent need to cross-fertilize students for them to be exposed and acquire knowledge in subjects beyond their core specialization. This enables them to intermingle with students of other specializations where such collaborations are valuable in terms of exchanging and learning from varying collective perspectives. (a) Are the modules flexible combined and recombined across multi-disciplinary contexts, provide empowerment to design their own curriculum, build their own degree courses that enable students to pivot and flex across rapidly changing, evolving sectors and to create new value propositions for the evolving market? (b) What are new skills or knowledge "know-hows" that need to be introduced to enhance the efficacy in transiting to the workplace? For instance, the skills to learn, learn speedily, unlearn and relearn, collaborate across multiple disciplines, cultures and perspectives to create something unique become more imperative than the focus on grade at a particular point in life and ever before.

(3) Re-evaluating skills and competencies training—Aligning to future work: The relevant skills and competencies required for the rapidly changing job roles must be identified and the training must be incorporated through appropriate learning design and pedagogical approaches at the programme level. This allows students to be progressively trained on these skills while they are in the university which enables them to proficient when they step into the workforce.

(4) Embracing digitalization, technological disruptions: School leadership needs to reiterate the urgency and importance on the shift and change of mindset towards embracing the technological disruptions in support with innovative pedagogical learning designs to deal with the rapid changing needs.

(5) Virtual face-to-face (synchronous) and online (asynchronous) learning: The capacity in terms of information technology infrastructure, competent trained faculty and the sustainable resources needs to be ready and available so that fully virtual seminars / lectures as well as fully online asynchronous learning

could be supported and delivered with high efficacy in terms of quality and impact.

(6) Self-paced individualized and personalized learning: The pressing need in developing and facilitating more individualized tailor-made learning becomes essential as the diversity of students (i.e., faster learners versus slower learners; students from varying social and cultural backgrounds; students with different strengths and weakness in a particular area of study).

(7) Work-study programme and professional internships: The eco-system needs to be developed where students are able to work while pursuing their studies becomes vital today to ensure they are able to relate and apply their acquired classroom knowledge, concurrently enabling them to be progressively upscaled on the "know-hows" and required skills. This includes work-study programme where students are able to go for an adequate period away on a job placing taking say a 6-month block off during the pursuit of their study or alternatively make special arrangements to work on say for example, 1–2 days full-time with an organization and the remaining days taking up 50% of the normal study load. Such flexible arrangements allow students to acquire their classrooms learning, having them applied on job immediately and bring back questions or clarifications to be discussed in class. Such scaffolded learning structure certainly allows students to go through a process which is highly productive as they could experience the authentic value of in-class learning while having them applied during their professional attachment job roles at workplace.

(8) Values driven empowered education to customize and create personalized multi-specialized pathway: Every institution needs to create their own values that are to be advocated and highly emphasized to be ingrained during students' stint in pursuit of their studies. This plays a vital role in having to be empowered in their own learning. Aside this, the course learning structure should be designed to assist shape students' personalized multi-specialized pathway, where they are empowered to identify courses within a structured yet flexible and multi-pronged pathway, enabling them to expand their knowledge base beyond their core area of specialization. In a world of contesting ideas, principles, ideology, beliefs and values, the confidence in charting one's own destiny based on pragmatic, focused and disciplined search for what works best for our people in context, instead be slaves of ideology. There is a need to define one's way of life based on one's own set of values. Teachers are to be equipped with the "know-hows" and confidence to chart own customized learning solutions to modern rapid challenges bestowed to shape up "job-ready" graduates based on a pragmatic, focused and disciplined search for what works best for the students on context, rather than be slaves of ideology; and defining, shaping the customized set of values to stand out and succeed.

Two key values that are vital to be ingrained in the eco-system, includes (1) the sense of beyond self-fulfilment and self-growth, to be nurtured on service leadership where the values overarch to the contributions and service to the society, world and the country one belongs to; (2) the responsibility to define

success beyond oneself to overcome challenges with tenacity and in unity through leading with conviction and excelling with confidence.

(9) Growth mindset, confidence building and re-scaling skills in the learning eco-system: It is vital to have multiple interventions that enable students to be ingrained with the growth mindset where the eco-system has adequate controls put in place to enable continuous re-scaling and up-scaling of relevant skills. The capacity for us to be confident and respond with a growth mindset commences from comprehending our strengths, weakness and interests. This rudimentary aspect is vital to be ingrained as values from our foundational years of school, especially reiterated in the pursuit of one's university education. The intervention on re-scaling skills enables students to better comprehend and appreciate the evolving needs, changes diversity and complexity that they are expected to navigate and face in the future. The key thrust is to have the humility to learn from others, around the globe, but never relegate to merely imitating other's ideas without thoroughly relating and applying the context. The strategic ethos is to build the eco-system that enables students to other's successes as well as failures, but ultimately they must have the courage and confidence to develop their own solutions to their own challenges—in any context of their future workplace.

(10) Collaboration and Connections for Value Creation: Corporate leaders and alumni in partnership with academics to perform research and co-teaching; global exchange and internship programmes: The industrial partnership and collaboration to inject timely contemporary discussions and insights into the learning process are essential. These interventions are targeted to produce a future-ready institution that comprises of (a) future-ready faculty: Are those who are equipped with deep rooted ethos and values that enable propelling of the learning to greater heights through empowered grounded beliefs and leadership; (b) future work-ready and employable graduates: The ultimate goal of every institution to ensure students is ready for employment with equipped with the relevant "know-hows" and skills; (c) future-ready senior leadership: To lead and navigate the rapid evolving changes, the leadership of the institution needs to have the compelling vision and competence to navigate through unprecedented challenges, make tough decisions and agile to change course as required to meet the rapid changing needs; (d) future-ready alumni: The service leadership with intertwined bonded relationship with the institution and the mindset to work collaboratively by value-adding as to be the new norm for the graduates who become alumni of the institution. Finally, there is a feedback loop that serves as a channel to provide necessary inputs back to the external and internal aspects of the interventions.

Universities and higher education institutions are not merely transmitters of knowledge and skills, where many online asynchronous learning contents, platforms and providers can fulfil that fundamentally. Instead, we must be agile and responsive to leverage on technological interventions to transfer baseline foundational knowledge and skills through self-directed and paced, adaptive learning while harnessing

on the accumulated and real-time data converted to meaningful information to focus our teaching efforts. By doing so, it enables teachers to increase their bandwidth by re-directing their efforts, time and energy to nurture and develop higher-order skills to connect, collaborate and create. Further to this, it is vital for leaders of university and higher education institutes (HEIs), educators and students to be catalyst of interconnectedness where each of them is to serve as bridges or connectors to collaborate and create value. In a fast paced, rapidly evolving more diverse and divided world, yet more intertwined and interconnected, all stakeholders, especially universities and HEIs leadership, have to build and maintain a strong network of connections and partnerships to stay relevant and current, keep the bonding, togetherness strong, intact and remain open. Hence, it's imperative to deepen the connections in three dimensions, namely with the world, with industry and with the local and global community. As the world evolves multi-dimensionally and perhaps more than before threatens to fragment along geopolitical, ideological, cultural and technological lines, university and HEIs and its leaders at all levels that includes educators can distinguish themselves as an unwavering platform for people to connect, collaborate and create to transcend those lines. Thus, there is an urgent need to rejuvenate and re-ignite the strategic push with necessary interventions to have students nurtured by understanding and interacting with the world—one way for universities and HEIs to connect and reconnect even more assertively and in a large scale with the world through their exchange and professional attachments or internship programmes, even as COVID-19 pandemic wears on. The key point is to send students overseas to learn and welcome foreign students to add diversity to the universities and HEIs campuses while enabling these students to enhance their understanding of the world. The strategic positioning of HEIs and universities is to continuously explore creative ways to build and create a unique brand that resembles for being trusted and accepted as a principled partner that others can rely, put their trust on as well as wanting to partner and work with. The value proposition is not merely the ability to just appreciate and celebrate diversity but to also bridge divergence and create new convergence. Secondly, HEIs and universities need to further tighten its connections and affiliations with academia and industry. Perhaps, the concept of how internships could be introduced beyond a fixated credit bearing should be explored and applied in context across the various schools of specializations. For instance, the internships could be acknowledged as a service where it could be tied to their progressive work experience. Flexibility must be enabled for students to lengthen their pursuit of studies, for instance if they would like to take a 6-month full-time interning position where they could apply what they have learned in a classroom context or alternatively, they could do a part-time internship through a work-study programme where they commit 1–2 days interning and the rest of the days at school. Such arrangements enable students to intern with industry without being constrained by time and subject of study. Students in future should be able to complete their programmes at their own time, if they have the desire and opportunity to intersperse their internship and studies. Another radical yet future directed strategy is to adopt the applied learning eco-systematic model that brings the university into the workplace and allows students to learn by working with real-life tools to solve real-life industry challenges and needs. For this initiative

to be rolled out well, faculty plays a critical role as they become the connecting link between industry and universities. Universities must create more opportunities for faculty to keep pace with the latest industry innovations and create free-flowing exchanges of ideas and personnel between industry and universities. Further to this, universities need to review and rebalance their pre-employment training or PET and focus on continuing education and training (CET) as well as their staff composition and manpower resources to sustain and execute the needful. Finally, universities must aspire to move towards the eco-system of being "in the community, with the community and for the community", so that they are able to better engage the world's talent to put the hands, hearts and heads together create a dynamic, unwavering and exciting future of tomorrow.

This transformation model for future of learning in higher education serves as a guide to comprehend the intertwined elements that serve as a control mechanism that affects, shapes and impacts the potential outcomes.

1.13 Concluding Thoughts: Implications for Future Learning

At all three levels, namely strategic (institutional), tactical (program) and operational (micro) levels, recommendations provided cover several distinct yet interlinking key themes that bring about their own implications—student centricity, flexible learning and technology integration. These themes are identified to be some of the most vital aspects to be duly considered when higher education institutes come up with proposed remedies or solutions for future learning.

Based on the discussions and recommendations proposed, it is clear that institutes should adopt a more student-centred and personalized approach in teaching, administrative aspects and policy development. It is ideal and recommended for future learning to place more focus and emphasis on the development of students. Student-centred learning fosters communication and collaborative skills (Aguti et al., 2014), while student-centred approaches are largely effective, for example, when multicultural issues are examined as they are able to benefit from the varying perspectives that made available to them (Wright, 2011). This is very relevant in today's increasingly diverse classrooms where students are expected to work with individuals from dissimilar backgrounds. Through such collaborative interactions, students are exposed to much wider perspectives where they learn how to respect, acknowledge and deal with differences in views due to varying norms, beliefs and cultural backgrounds in a tactful yet fruitful manner. Student centricity can further benefit under-served students through policy changes revolving around funding and more. On the contrary, there are also negative implications of student centricity and in particular, student-centred learning. An issue raised in a study by Abbasi and Hadadi (2014) of English language learners in Iran revolves around the practicality of student-centred teaching. Interestingly, students interviewed were unfamiliar with the concept and felt that they

would be much more comfortable learning the way they used to. Those students who have experienced such student-centred teaching approaches were reluctant in taking responsibility for their own learning due to the embedded sociocultural norms of them being much lesser tolerant of uncertainty situational contexts. They complained that the instructor was not doing much in the classroom as their accepted perceived notion is for teachers to provide the essential information and they to be at the receiving end. The authors justified this by emphasizing that this could be due to their previous learning experiences where they have been largely performing the role of a passive listener where instructors were the only ones taking control. Therefore, instructors need to be aware of the potential setbacks and hence be mindful on how they could progressively assist and guide students to shift their mindsets while letting them experience the benefits of such student-centred approaches. In the similar vein, such situation could potentially occur in higher education classrooms where students come from varying diverse social and cultural backgrounds. Hence, it is imperative that instructors are mindful and create space, an echo-system, a learning environment and climate where all students are encouraged to participate that makes them feel secured and motivated to do so.

The next theme encompasses discussions and recommendations revolving around flexible learning. Unpredictable global events, for example. COVID-19 pandemic raises concerns regarding the adoption of correct and appropriate learning design pedagogy. As such recommendations to adopt models such as flipped, blended learning models are advocated. The benefit of launching blended learning programmes is that it enables institutions to reach a global audience in a relatively short time while able to bring about large returns on investment. On the learning aspect, it enhances level of active learning process (Bonk & Graham, 2005), student engagement and higher-order cognitive learning (Rajaram, 2021). Flexibility is vital given the changing student demographics such as the increase in adult learners who need to balance work, school and their own personal lives. Implementing blended learning models can be more complex than it seems (Garrison & Vaughan, 2007), where it potentially involves large start-up costs. Blended learning or even fully online programmes can face significant competition with institutions or corporations offering MOOCs delivering similar content at a lower rate.

Finally, technological integration is another prevalent theme that was discussed and reflected upon. We see technology being adopted and digital disruptions intervening via online learning and technology-enhanced learning. The use of technology enhances the level of students' engagement (Schindler et al., 2017), facilitate feedback (Lilllejord et al., 2018), potentially transform the learning process to achieve higher-order learning outcomes, enhance the level of students' engagement and improve knowledge and skill acquisition. Moreover, technology can help institutes collate big data that assist in developing more student-centred and personalized learning paths for students. Such collated data can assist institutes to identify specific gaps in learning and hence allow teachers to create targeted solutions (Nazarenko & Khronusova, 2017). At the policy level, the use of real-time data enables making effective decisions. On the flip side, such implementation of technology has its drawbacks as well. For example, students may get distracted by such

interventions, wasting valuable, precious and limited time available in classrooms. Another issue could also be the unequal availability of technologies for all, especially those from low socio-economic status. A key concern is also that technology could only potentially benefit those with access and alienate those without (Kemp et al., 2014). There have also been disagreements as to whether online learning can fully replace face-to-face learning fully or is it to be seen as a complementary to further value-add effectively. These diverging and biased perspectives may impact the rate at which some recommendations are adopted.

The future of learning entails numerous opportunities but certainly subject to volatility and filled with unprecedented interventions as there are varying influential factors that the higher education environment is exposed to with continuous, constant evolution. Higher education institutes are expected to take charge and act on the key trends pointing towards the direction of future learning. Institutes cannot simply go with the flow and reactively respond to changes in the environment; rather, they need to be proactive by anticipating and preparing well ahead to effectively and promptly deal with the rapid changes.

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