



Charles Darwin University

The Virtual University: Moving from Fiction to Fact

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The Virtual University: Moving from Fiction to Fact

Michael David Sankey, Henk Huijser, and Rachel Fitzgerald

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Abstract

As the online component of university business continues to increase, particularly in the area of learning and teaching, the “virtual learning environment” has become as important as the “physical learning environment.” This was clearly demonstrated over recent years, as was the imperative that as much care, if not

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more, is taken in how the virtual environment looks, feels, and responds to students and staff. It is evident that many institutions are seeing this as not just a means by which they can better support their current students, but as a way to value add and expand their reach. In the current higher education environment, the ability to provide an equivalence of experience in the online space makes the value proposition of the virtual university very attractive.

This chapter provides a window into the wealth of information that, when deliciously applied, may lay a solid foundation for the creation of an enduring virtual university, one that is both desirable and productive. Like all good building project, this process starts by first laying a solid foundation. In the case of an entity like a virtual university, this means providing a clear consistent policy and governance framework that, when established, provides an alignment to the vision and strategic plan and has its roots firmly laid in quality ground. As we work our way through the concepts contained within this volume, it is hoped that a picture will start to form that points to not just the validity of the virtual university, but also the limitless opportunities it may provide.

Keywords

Virtual university · Technology-enhanced learning · Higher education · TEL · Online

Introduction

As the online component of university business continues to increase, particularly in the aftermath of COVID-19, the notion of a “virtual learning environment,” as a means to mediate and facilitate student learning has now become as important as the “physical learning environment” (Champagne and Granja 2021). There are plenty of studies which demonstrate that learners accept online learning as a legitimate alternative, across multiple national jurisdictions (Paul and Jefferson 2019). That said, it is imperative that as much care, if not more, is taken in how responsive the online environment is to the needs of learners and staff, which transcends the look and feel, and more importantly, how staff engage with their students (Pratiwi et al. 2021). It is evident that many institutions are seeing online learning as a means to better support learners, and as a way to add value and expand their reach (Keegan and Bannister 2021). In the current higher education environment, the ability to provide an equivalent experience in the online space makes the value proposition of the virtual university very attractive.

This chapter seeks to provide an initial helicopter view of a range of considerations in implementing a virtual university. Various elements will be further explored by a range of experts from around the globe, particularly focused on how one might conceivably create a holistic virtual university, mindful of the ever-expanding range of technology-enhanced learning applications. These diverse elements will then

crystalize, in the final chapter of this volume, into a series of recommendations and considerations.

The concept of a virtual university is not a new one, by any means, and has its genesis in distance and open education movements, dating back decades (Anderson and Simpson 2012). In fact, back in 1996, Carol Twigg and Diana Oblinger (1996) wrote of the affordances of the virtual university, stating, “The concept of the virtual university represents a multifaceted response to consumer demand for increased access, improved quality, and reduced cost of higher education” (para. 91). Yet, this is now something that all universities need to consider, rather than it being an optional extra, or being left to specialist institutions and external providers.

One thing COVID has taught us is that learners are now, more than ever, taking learning into their own hands and looking for ways in which higher education can fit their lifestyle, rather than the other way around (Broom 2021). A serious consideration of this requires an honest look at the pros and cons and viability of establishing a fully virtual university, looking particularly at how to address the many challenges of translating on-campus experiences into virtual environments, including the challenge of equitable access. Thankfully, many have considered such challenges, which is the knowledge base we share in this volume.

Very distinctly, this book is not interested in models of blended learning, hybrid learning, or flipped classrooms, all of which have been written about at length. Instead, this book is designed solely for promoting the idea that it is possible, with the right strategies and combination of tools and techniques, to develop a comprehensive virtual university through the innovative use of technology to enhance learning and teaching.

Laying a Solid Foundation: Policy and Governance Models

Aligning the vision for technology-enhanced learning with plans for a virtual university is closely aligned with the practical elements one must have in place to ensure such a venture can be successful. A virtual university is a major undertaking and those planning to progress must develop university-wide strategies, engage in consultation with stakeholders, and ensure that policy, procedures, and budgets have been considered (bureaucratic realities).

Having clear goals and plans in place can empower any digital solutions you might choose and enable technologies to challenge and extend existing paradigms around learning and teaching. As we have seen over the last 25 years of online education, leadership in online learning often comes from the academic champions who create networks and codesign spaces in which we engage the learning and teaching community. While this has led us to a particular point, to go beyond that point, we need to see the implementation of the virtual university as a university-wide adaptive and cultural challenge as well as comprehensive digital transformation. Chapter ► [“Aligning the Vision for Technology-Enhanced Learning with a Master Plan, Policies, and Procedures”](#) explores the importance of setting out a vision for digital transformation that clarifies the concept of the virtual university at

an institutional level. In this chapter, Ashford-Rowe et al. explain their “digital at heart” vision for a virtual university and consider the critical steps required to engage stakeholders and to implement new strategic approaches to learning and teaching.

The implementation of a vision and goals requires good governance to oversee the delivery of a consistent virtual learner experience. The creation of a tailored, personalized, increasingly self-paced, capability-based, and authentically taught and assessed experience should span the entirety of the learning journey. However, to achieve this in the virtual space needs an understanding of some of the paradoxes that exist for what is perceived as a virtual organization, but in practice is very tangible, particularly around the practice of governance. Smallman and Ryan in chapter ▶ [“Developing Supporting Governance Structures to Sustain Technology-Enhanced Learning”](#) explore some of the implications of virtual organization theory, which essentially calls for transparency and flexibility, enabled by technology. The virtual university, it is suggested, needs controlled transparency, well-defined governance frameworks, and clear delegations, coupled with good policy and productive processes, in a formal structure that simultaneously operates informally.

In chapter ▶ [“Laying and Maintaining the Foundations for Quality”](#), Marshall extends this thinking with a conceptual model and a range of “quality” dimensions, purposes, and systems that are required to ensure the ongoing success and improvement of our bureaucratic realities. It is one thing to carefully manage our political, systemic, and symbolic dimensions, but it is quite another to add “value” to the organization and see it improve. To do so, the virtual university needs quality measures and improvement activities to rise above facile representations of brand and marketing hype. It needs to provide opportunities for sustaining a practice of continual improvement through a sensemaking approach driven by communication with stakeholders. For cultural transformation to succeed, sensemaking and buy-in from stakeholders are critical. This theme reemerges time and time again, for example, in chapter ▶ [“Academic Engagement in Pedagogic Transformation”](#), where Armellini and Maxwell share a case study that explores how senior decision-making, with regard to pedagogic transformation, impacts on staff engagement. They offer their informed insights into the impact of cultural change for the virtual university and share a quality enhancement model for pedagogic transformation, musing on how the academic community might be encouraged to participate in, shape, and even own the creation of a virtual university.

Of course, there are other considerations that have real implications for the virtual university, such as the digital divide. For many reasons, students worldwide were unable to access online learning during the COVID-19 lockdown (Garcia et al. 2020; Packham 2020). This is a core consideration for the goal setting and governance of the virtual university. In chapter ▶ [“A Social Equity-Based Framework Toward the Development of the Virtual University”](#), Tay considers ways we can overcome equity issues and shares his take on how a social equity-based framework, which recognizes barriers, considers access and equitable opportunities. Overall, this opening section provides us with success measures in the development of the virtual university.

The Virtual Learning Environment

The virtual university embraces digital learning and teaching paradigms, by delivering digitally enhanced, high-quality learning and teaching experiences. It is clear that when well-designed frameworks become transparent, relevant policies, products, services, processes, systems, and tools that drive learning and teaching hum along quietly in the background. That said, it is still critically important that we consider how the technologies we use for learning and teaching engage our virtual learners to learn at a deep cognitive level. This is explored by Lai and Markauskaite in their discussion of the critical role of digital technologies in developing learning and deeper participation, in chapter ▶ [“Innovation and the Role of Emerging Technologies”](#). They evaluate how technology-enhanced learning can be designed for the virtual university, underpinned by learning theory and evidence-based practice. They conclude that digital technologies are invaluable in their ability to enable learning across time and space but need targeted and deliberate application to engage learners successfully.

Sim and Huijser, in chapter ▶ [“Models for Engaging, Training, and Supporting the Use of Technology-Enhanced Learning”](#), then explore how targeted support can be used to enable academic staff to understand and leverage the affordances of digital technologies for learning and teaching, sharing case studies from practice in New Zealand and a professional development model that supports the enhancement of academic digital literacy. We have already acknowledged that the introduction of a virtual university represents an adaptive challenge to traditional higher education and a transformative model to change culture will be required. This is further explored by Wheaton and Young in chapter ▶ [“Transition Techniques When Introducing Change: A Sociomaterial Approach to the Virtual University”](#) who examine the relationship between organizational strategy, technology, and teaching to understand and analyze the risks that emerge from new processes such as technological adoption and sustained engagement with digital technologies.

Supporting Staff and Students

It is evident that models for engaging, training, and supporting the use of technology-enhanced learning, and the creation of transformation models to introduce change, are important elements of cultural change. While we have explored some top-down approaches to engaging stakeholders with change, a novel approach is proposed by Crehan et al. (chapter ▶ [“Peer Observation of Teaching in the Virtual University: Factors for Success”](#)), which builds on peer observation of teaching for a virtual university. They share factors of success for developing such an approach, based on their own experience of offering support, guidance, and encouragement through online peer observation in a way that creates an ongoing learning conversation.

Other technical transformations that will enhance the virtual university are likely to come from learning analytics and the ability to personalize learning and

understand the learner. The role of analytics when supporting staff and students in the virtual university are explored initially in chapter ▶ [“The Role of Analytics When Supporting Staff and Students in the Virtual Learning Environment”](#). Here, Jones and Fitzgerald explore different ways in which data can be used to inform and enhance learning and teaching through evidence-based approaches. This chapter begins with considering a range of learning analytics frameworks used to inform widespread collaboration and adoption, before highlighting the need for sociocultural and pedagogical insights that sit alongside different technological aspects. They suggest that having a framework in place frees us up to consider the design principles to be applied and the support and professional learning necessary to empower institutional adoption.

Learning analytics, once embedded into practice, offers the virtual university the lens it needs to understand learner and staff activity, as well as the opportunity to lead further research and development of its applications, guided by a coherent data strategy built on an institution’s framework. The framework provides the common ground to develop a shared understanding, consensus, and buy-in for all stakeholders concerned with improving student learning outcomes and the overall student learning experience.

Learning Theories and the Application of TEL

For the virtual university, we need to consider a range of pedagogies, or major learning theories, that help us conceive how the teacher and learner should approach online learning: cognitivism, connectivism, and constructivism. That is not to preclude other theories and approaches, but essentially many of the newer theories arguably have their roots in these three fundamental conceptualizations.

These three learning theories have underpinned the development and application of technology-enhanced learning now for more than 20 years, and have allowed us to embrace the fact that the contemporary online environment is much more than using an LMS. In fact, the virtual university will look at using a wide variety of tools that align with the LMS, tools to allow lecture capture and the recording of the teacher’s voice in both long- and short-form presentations. It will include tools that allow students to have a voice and a conversation (literally) with their peers and their teachers. It is anticipated that the virtual university would facilitate students to have the ability to represent themselves virtually. This would allow them to align what they have learned with a demonstration of their achievement of various skills or learning outcomes, such that they are able to can demonstrate this to potential employees, if they choose to so. Typically, this would be done though some form of ePortfolio tool, or digital profiling tool that would provide students with both private and public pages.

Interestingly, a technology that has emerged more recently is a productivity tool, that is, a collection of communication and collaboration tools that are used in the workforce to help teams be more focused and productive. Increasingly, as universities are expected to produce more job-ready graduates, it is assumed that those

graduates will be proficient with the technologies that are used in the workforce. Consequently, many institutions are including these tools to support their LMS. Similarly, the rise of virtual classroom tools allows for meetings and live interactions which, during the pandemic, saw many universities upskill quickly. An implication of this increase in different technologies is that learning theories may be required to be bent, combined, modified, and/or directly applied in the virtual university context, and Campbell and Tran, in chapter ▶ [“The 3C Merry-Go-Round: Constructivism, Cognitivism, Connectivism, etc.”](#), provide some concrete examples of how one university has developed a range of well-developed practices in the online teaching space. Such concrete examples provide a glimpse into how students might engage in the virtual university. Regardless however, they all share an underlying premise.

Nathaniel Ostashewski goes on to explore this premise in chapter ▶ [“Adapting and Creating New Theories Through the Ongoing Research of Technology-Enhanced Learning”](#) when he unpacks three approaches to contemporary higher education that support quality practices in a virtual setting. While these approaches vary considerably, they all share some common elements. However, the key common thread that runs through them all is the clear focus on a learner-centered approach that contains scaffolded supports for learner-to-learner interactions. These forms of interactions exist in all elements of human learning activities. He contends that learners tend to choose what to learn and they find the resources and people to help them enable that learning. In the virtual environment, the ability to network around the key topics to be studied is important, and this is done within a community that supports learner diversity through meaningful engagement, which is simply not possible in traditional educational delivery approaches, but make the prospect of a virtual university incredibly appealing. The theoretical foundation for this idea, in the form of connectivism, had already been laid by Czaplinski and Huijser in chapter ▶ [“Consistency Is Not Sameness in the Application of Learning Theories to TEL”](#), who explores the importance of theory to inform learning design, with a particular focus on active learning. The ultimate goal, they contend, is to develop self-directed and self-regulated learners, who can leverage the affordances of the network.

Using Social Media in the Virtual University and the Future of the LMS

Playing a distinct role in the virtual university is the prospect of using social media for “good” to engage different communities of practice and provide synergies with the world of work. However, to say “use for good” requires us to first make sense of two opposing views of social media: one that purports them to be full of opportunities for global connection, discourse, personal learning networks, and individual learning communities, and thus for society as a whole, and the opposing view, which suggests that social media can be addictive, distracting, with the potential to poison societal cohesion and threaten democracy.

Each position holds some elements of truth. Rather than following this binary though, Panke in chapter ▶ [“Friend or Nemesis: Social Media in Technology-Enhanced Learning Versus the Walled Garden”](#) outlines both the problems and the potential of using social media, which can present unprecedented opportunities and challenges for the virtual university. Although it might be appealing to err on the side of caution and simply avoid its use, she contends that for the virtual university, social media can hold important social affordances for both students and staff, as well as contribute to the development of job-ready graduates.

The widespread, daily use of social media is a reality in student lives, and given many readers of this chapter also engage in various forms of social media use, it should not be too much of a stretch to conceptualize how we might engage with this in the virtual university to stimulate intellectual curiosity. Social media tools offer opportunities to teach principles of academic discourse in a space that transcends the digital walls of the institution.

This aligns then with the changing conceptions of the LMS; that traditional place for online learning at university, and the need to find a narrative for how this can still (if at all) support the virtual university. This narrative, as argued in chapter ▶ [“The Future of the Learning Management System in the Virtual University”](#) by Marshall and Sankey, includes first developing a vision of how and which technologies become essential in forming the university’s learning ecosystem. This of course needs to be underpinned by a technical architecture aligned to the processes and services to be offered, which has the buy-in of its partners: academics, students, and administrators. That all sounds like business as usual, until we start to think about the ongoing evolution of these systems within the virtual university context.

At its core, all universities need academics, and the adoption and use of an LMS is strongly related to their roles and their professional identity (Liu and Geertshuis 2021). The virtual university is no different, and so an organization’s commitment to the provision of capability development for its teachers in the virtual space is fundamental to facilitating contemporary teaching (Liu and Geertshuis). As seen in the chapters prior, the chosen platforms need to enable academics to be active, collaborative partners, to enact a collegial university model of distributed leadership. The chosen systems therefore need to reflect engagement with diverse learners and a focus on expanding the reach and impact of the university into new learning contexts, which in turn should provide continuous educational experiences, responding in real time to changing needs for the learner, and ultimately employers and society. Presumably, this environment in the future will still include the management of content and learner information, but this will operate in support of a wider range of learning models informed by different work practices and within a rapidly evolving web of commercial relationships and business models (Newfield 2019). Not least of these is how these systems evolve to embrace the openness of knowledge and the advances of AI-driven large language models.

The Role Openness Plays in the Virtual University

A particular focus is paid to the role open educational practice (OEP) can play in the virtual university in chapters ▶ [“Open Educational Practice as an Enabler for Virtual Universities”](#) and ▶ [“The Affordances of Openness for the Virtual University”](#), which is often and rightly proposed as an enabler and catalyst for student growth. In their chapter ▶ [“Open Educational Practice as an Enabler for Virtual Universities”](#), Bossu and Ellis contend that OEP, which includes the use of open educational resources (OER), can increase access to education to those who are often excluded from mainstream education, such as minority groups, older learners, or single mothers. But more so, they challenge us to think that this can go much further in the context of the virtual university, in that it has the possibility to be an enabler of “innovation” and thereby enhance the overall student learning experiences.

It is worth considering their perspective that OEP is as an “opportunity” to provide more flexible learning opportunities to those unable to participate in traditional education (in a physical classroom), and that the virtual university can reach learners that tend to be otherwise excluded from higher education. OEP has already impacted education at all levels, as it tends to reignited debates around equity and access, including how wealthier countries can assist less privileged ones to increase access to free and open education (Willems and Bossu 2012).

Although OEP has the potential to positively affect higher education, this has not yet been realized in mainstream practice (Weller 2014, p. 2), as many institutions appear to demonstrate little awareness of the affordances of OEP, primarily due to ingrained misperceptions or bias, and underlying fears that OEP may be of lower quality and therefore less reliable. Bossu and Ellis’ chapter looks to break down these myths by exploring some of the research-based evidence supporting OEP as an enabler and catalyst of innovation and change. This includes the enablers of open pedagogy, capacity building, policy development, and social justice and inclusion.

Extending these thoughts further, Sanjaya Misha, in chapter ▶ [“The Affordances of Openness for the Virtual University”](#), discusses how openness can provide a robust framework through which to rethink education and training in tertiary education settings. He provides ten dimensions of practice to be applied as enablers for the virtual university. These dimensions are designed to build a resilient and future-proof system for sustainable academic and management practices. Mishra’s contention is that openness fosters fairness, flexibility, and freedom, which ultimately makes learning accessible to all.

Like Bossu and Ellis in the chapter before, Misha suggests that the virtual university should purposefully adopt an OEP policy that clearly situates OEP as a positive and proactive enabler, thereby opening up the possibility to realize the global promise of aligning to the United Nations Sustainable Development Goals, in particular Goal 4 (quality education) and Goal 10 (reduced inequalities). These UN goals consider the need to ensure inclusive and equitable quality education and the promotion of lifelong learning opportunities for all by 2030.

New and Emerging Forms of Online Assessment and Alternate Forms of Credentialing

Not surprisingly, the virtual university also has the opportunity to redefine assessment thanks to technologies specifically designed to address the acquisition of twenty-first-century skills. This aligns with more recent forms of authentic learning that clearly pitch assessment toward the attainment of higher-order capabilities. Matthew Hillier in chapter ► [“Making Online Assessment Active and Authentic”](#) goes into some depth to position educational approaches that take advantage of existing but relatively new technologies across a range of disciplines. He provides an indication of how each of the featured methods can address the attainment of twenty-first-century skills and how this might be done in an online environment. These approaches are supported by an evaluation which demonstrates the need for a balance between the perennial issues of authenticity, integrity, and scalability. It is incumbent on the virtual university to manage these demands by using a diversity of assessment approaches and technologies across their programs.

The chapter by Gunning et al. (chapter ► [“Peer and Collaborative Assessment”](#)) picks up on the idea of diversity in assessment approaches by offering an in-depth discussion about peer and collaborative assessment, and some of the associated tools. They note that a thoughtfully designed peer and collaborative assessment process supports student development in a broad range of personal, interpersonal, and technical skills that are transferrable across contexts. They argue that peer and collaborative assessment should therefore play a key role in the assessment approaches of the virtual university. Of course, collaboration in assessment is not free of risks associated with academic integrity, and this theme is further explored by Thomson et al., who note that concerns about integrity of assessment in online learning have arguably been exacerbated by the perceived experience of student cheating during remote teaching in response to COVID-19, and particularly in the translation of in-person invigilated examinations to online, “take-home” exams. Most recently, such concerns have led to more profound anxiety across the higher education sector with the emergence of ChatGPT and the potential impact of artificial intelligence (AI) more broadly.

More important than ever, with the advent of AI-based large language models, authenticity and originality ranks high in the virtual university, not least because the absence of a face-to-face presence can raise issues in the minds of those who waver. Understanding this means one must also understand the data that accompany a learner and leaves digital traces and footprints.

Leveraging that data requires the adoption of diverse approaches to learning analytics (LA), particularly those related to the virtual environment to inform and enhance learning and teaching through evidence-based decisions. Typically, we see this being understood through a series of frameworks that can be adopted to inform widespread collaborative adoption of LA. These frameworks generally consider a range of sociocultural and pedagogical factors aligned with the technology being adopted. To help us understand this, chapter ► [“The Role of Analytics When Supporting Staff and Students in the Virtual Learning Environment,”](#) by Jones and

Fitzgerald, examines a concept of the “behavior change wheel” when looking to design an LA plan for the virtual university. It examines the benefits and challenges of LA adoption when applied to a series of design principles that can be actioned to support staff professional learning, and ultimately improve student learning outcomes.

The next suite of affordances for the virtual university we move onto is that of attaining more transportable forms of credentials that can be used across the sector and sectors. Typically, these take the form of microcredentials that are linked to the profile of a learner rather than to one institution. These are explored in chapters ► [“Microcredentialing Models and Practice”](#) and ► [“The Challenges and Opportunities in the Portability and Authentication of Credentials”](#). Central to this theme is the notion of individual student success and how this may align to institutional policy, provision, and consumption. Unlike normal long-form credentials, the agency of the student is much more central to the success of any microcredentialing effort, as generally the institutions have a more hands-off approach to these forms of credentials. This is partly due to the affordances offered by a rapidly evolving technological landscape, which facilitates a more agile approach to skilling. These newer approaches render more traditional models somewhat obsolete. However, it creates strong opportunities for the virtual university, as learner success, linked to a learner’s profile, can reach across borders and be highly transparent and hence transportable.

The value of these forms of credentials is further heightened when employers form partnerships with providers, or even become the providers themselves. National and state governments are also stepping into this arena, looking to align national employability metrics with the notion of skill acquisition, based on national frameworks. Fitzgerald and Huijser investigate this and propose a simple approach to measure the success of microcredentials in chapter ► [“The Challenges and Opportunities in the Portability and Authentication of Credentials”](#). Their proposed metrics could be used by the virtual university to help plan their microcredentials offerings as part of a continuous improvement cycle.

The promise of microcredentials has been around for many years, but more recently we have witnessed the rise of other forms of credentialing from mainstream universities, other than the more traditional degree, diploma, or certificate, which have been their mainstay. This has largely been in response to the consumer demand to augment these fuller qualifications and to allow people to upskill and stay current. The practice of this is especially appropriate for the virtual university which, by its very nature, looks to establish a strong and diverse learning environment that can honor a variety of learning from multiple sources, including short courses and microcredentials. While this may not suit every institution, the virtual university, whose boundaries stretch way beyond national borders, is ideally placed to normalize this practice in a global context. Furthermore, it provides opportunities to develop ongoing relationships with learners throughout their working lives, and perhaps even beyond in that broader context.

Selvaratnam, in chapter ► [“Microcredentialing Models and Practice”](#), and Fitzgerald and Huijser, in chapter ► [“The Challenges and Opportunities in the](#)

[Portability and Authentication of Credentials](#)”, note the relevance of micro-credentialing for the virtual university model, particularly one linked to a learner profile which transverses traditional educational borders. This includes employer groups and industry partnerships with educational providers, or as being providers themselves, to ensure that the success of the learner is aligned with the most relevant employment skills. Governments have also increasingly stepped into this space, with the global rise of national employability metrics. These have been linked to the notion of skills (that microcredentials are so good at facilitating) and other educational offerings associated with re-skilling opportunities designed to create positive employment outcomes and uplift national productivity. This has been seen in the emergence of a range of national incentive schemes offered across different jurisdictions, which seek to encourage providers to speed up the diversification of their offerings. The value to the virtual university is when they can link this diversification of offerings to success metrics when planning to offer microcredentials as part of their continuous improvement cycle.

Gamification, Adaptive and Conditional Learning

The focus of the book then shifts to the theme of gamification and related adaptive and conditional learning. Bell in chapter ▶ [“Developing and Quantifying Intrinsically Motivating Instruction: Models and Principles of Gameful Design, Adaptive and Online Experiential Learning”](#) firstly discusses the important links between educational game design, pedagogy, and intrinsic motivators for learners. He presents four case studies through which he discusses exemplars for gamified course content that is likely to intrinsically motivate and engage students. He bases those on his SIMPLE matrix, which stands for Student Intrinsic Motivation in Personal Learning Environments, which was originally developed as a means of reviewing and quantifying the likelihood that a developed course or resource will engage a student group through implementation of evidence-based intrinsic motivators. This is important in a context where learner engagement is a key challenge, especially in online environments, and thus also in the virtual university. This is even more the case now with the advent of newer forms of artificial intelligence (AI) that are driven by machine learning with the capacity for natural language processing (NLP). As Bell contends, these will drive new means of accentuating motivators, and the examples provided demonstrate how ChatBots have been implemented in a number of courses where their feedback (on basic elements of course/subject comprehension) has been rated as the best advisor by participants unaware that they had been interacting with an algorithm, and generative AI applications, such as ChatGPT, have taken this to a whole new level.

What this chapter does contest is the notion that an individual academic, can be the sole source of content delivery, support, advice, counseling, and of a thousand other moving parts, is now, at best, questionable. Rather, working with skilled instructional designers, (some) automated feedback and intrinsically motivating

materials, designed to encourage engagement, and possibly even fun in online sessions seem now to be an attainable goal.

Thompson et al., in chapter ► [“The Role of Adaptive Learning Technologies and Conditional Learning”](#), extend on Bell’s discussion about adaptive learning and allow us to glimpse into the future in their discussion of the role of adaptive learning technologies and conditional learning. They provide two conceptual scenarios (undergraduate and postgraduate) to demonstrate how an adaptive learning system could support students in the virtual university. They argue that adaptive learning systems can provide a supportive model for learners, teaching staff, and administrators to address the challenges associated with virtual learning. In the process, they can create a highly personalized learning experience, which has a range of potential benefits.

However, they do warn of significant implications for learning and teaching in higher education from proposed adaptive technologies that should be carefully considered. Yet, the risk of not considering evidence-informed ways to approach the use of adaptive learning technologies in higher education is that adaptive learning models will only be driven by objectives related to competitive advantage, or financial performance, rather than opportunities to better support students and gain greater understanding of learning in the virtual university.

The Rise and Rise of AI, VR, AR, MR, and XR

The next section builds on the theme of adaptive and personalized learning with a focus on the affordances of AI and virtual, augmented, mixed, and extended reality technologies. Interestingly, Marshall notes in chapter ► [“Emerging, Emergent, and Emerged Approaches to the Different Forms of Reality in Learning and Teaching”](#) that these various forms of mixed realities have been around for almost 60 years. However, he also identifies significant limitations in how these technologies are currently used in higher education, which does not necessarily take advantage of their potential for learning. In his chapter, Marshall identifies three themes: the value that these technologies play in bringing information into the environment of the learner; the ability to change the learner’s perceptions; and the implications for the virtual university as an evolving organization that can apply mixed reality technologies in meaningful ways to support learning. Again, this is important in addressing the earlier mentioned challenge of learner engagement. These technologies offer the promise of personalized learning that can intrinsically motivate learners by linking the learning experience to their prior knowledge, skills, and experiences. In addition, they hold considerable potential to be used in the design of authentic, work-based experiential learning, which is a theme taken up by Dean et al. in their chapter about preparing learners for the future of work and explores how virtual models of work-integrated learning (WIL) can provide a bridge between the virtual university and the reality of the workplace.

Mason et al., in chapter ► [“AI in Higher Education, Risks and Opportunities for the Virtual University”](#), extends the thinking of both Bell and Marshall taking a

closer look at the place AI can now play in the virtual university as it continues to evolve. This chapter explores the potential for empowering human learning with the extended application of technology that had previously been only seen in the realm of science fiction. They argue that a distinguishing feature of the virtual university will be its “permeability” of knowledge and that, just as the move to cloud-based hosting services has transformed the notion of enterprise IT architecture, AI similarly can create the platform for the unbundling and repackaging of services that will be likely to become a distinguishing feature of the virtual university. By extension, the emergence of an AI-based metropole, or convergence of information that is dynamically created for an individual, that is then extended by human interacting, exponentially extends the way in which the “academy” can function, as not just a convenor of knowledge, but as the engine for extending knowledge community. This dynamically created ubiquitous learning community facilitated by the virtual university, yet based on an extension of the individual, potentially could evolve to the point of generating new pedagogical constructs to be used by both individuals and other artificial entities.

Quality, Benchmarking, Learning, and Educational Analytics

In the final section of the book, we revisit the question of quality assurance, benchmarking, and the use of institutional data for continuous improvement. In other words, many of the chapters have explored the potential of the virtual university, and the potential of a wide range of current and emerging technologies to facilitate learning. The logical next question is how we ensure that such potential is realized on a continual basis, or how we assure ourselves that the aims and objectives are being met. To that end, Dart and Cunningham, in chapter ▶ [“Using Institutional Data to Drive Quality, Improvement, and Innovation”](#), explore how institutional data can be leveraged to drive quality, improvement, and innovation. Digital environments produce “rivers” of data, in particular student trace data. They note that if those data can be linked to more traditional university data, opportunities open up for evidence-based improvement across the board for the virtual university, but in particular create the context for improvement of student learning and learning experiences. They use a series of examples to illustrate how institutional data can be translated into action to successfully drive quality and innovation in a range of virtual learning and teaching contexts.

It is all too easy to see established standards and benchmarking tools as guides to successful leadership, particularly when they are presented and promoted by government agencies, accreditors, and respected professional bodies. Marshall and Sankey, in chapter ▶ [“The Role of Standards and Benchmarking in Technology-Enhanced Learning”](#), demonstrate that the reality is not quite that simple. Standards and benchmarking tools must themselves change and evolve to respond to organizational capabilities and the rapidly shifting contexts defining the pathway toward

the virtual university. It is important to consider the minimum that needs to be considered both by those maintaining and developing frameworks, and by those using the frameworks, to enact any change mechanisms. This includes the agencies, regulators, and accreditors working to enhance the qualities and outcomes needed from higher education in all societies.

COVID-19 has emphasized the need to focus strongly on the diversity of needs throughout the student population and the range of contexts that they must learn from, as much as it has shown the importance of modern communication and collaboration tools for all forms of information work. These technological aspects demand a pedagogical response and a reengagement with the impact that such changes are having on learners, educators, the workplace, and society at large. Frameworks need to be able to respond to rapidly changing technologies and pedagogies while also enabling and driving the collection of evidence to inform and shape that change.

They need to be explicitly designed to change themselves, even though enabling change is a major challenge to those responsible for quality frameworks. The epistemology of the virtual university is built on creativity and imagination, both pedagogically and organizationally. Frameworks must contain enough flexibility in themselves to provide the opportunity for leaders to demonstrate new ideas that harness that creativity and imagination in powerful and often unexpected ways.

Leaders need to also be willing to anchor their own ambitions with evidence and to make decisions that reflect comprehensive and accurate assessments of the strengths and weaknesses of the institution (see chapter ► [“Using Institutional Data to Drive Quality, Improvement, and Innovation”](#) in this volume for an extended discussion of this important aspect). They further need to consider the ways that change can be connected and capability developed in networks of practice that operate across entire sectors of education and societies. Quality frameworks should provide common points of reference and a language for engaging in genuinely collaborative initiatives, responding to the shared challenges facing all universities. This latter point is fundamental to normative change and essential if universities are to lead their own destiny as a virtual university.

Concluding Thoughts

This chapter has provided an oversight as to the wealth of information to be found in the chapters that follow, which will make it possible for the virtual university to move from a notion of fiction to a matter of fact. That is not to say that forms of the virtual universities do not already exist, as they do, but when the principles in this book are applied the environment is created for the opportunity for the virtual university to become a mainstream option.

Like any good building project, this process starts by first laying down some solid foundations. These foundations are seen to be consistent policy and a coherent governance model. When established, this helps to align the vision for technology-

enhanced learning (TEL) to the master plan, which extends into everyday procedures. Consistent with this, and present in kindred organizations, the virtual university thrives in the transparency of its governance of TEL, which has its roots firmly laid in the deep earth for quality. This is particularly important in the virtual environment.

Any social equity-based framework that underpins the virtual university is based on the notion of academic engagement that embraces pedagogic transformation. That is, the role of innovation and the embracing of emerging technologies can provide support and empowerment to both staff and students. However, this does not just happen; it invokes models of professional development that are specifically designed to enhance the application TEL in the virtual university. Because we are largely working in the virtual space the notion of the peer (working with your virtual colleagues) becomes important, both in a social and professional sense. One of the manifestations of this is peer observation of teaching in the virtual space, and the opportunity this provides to stimulate sociomaterial change for the virtual university, which blends well with the application of the social and material aspects of technology in learning and teaching.

As the virtual university does so much of its work in the online space, understanding how people are responding and engaging in this space brings front and center the role of data analytics in supporting staff and students. However, this by itself is meaningless unless there is a purposeful design to what is occurring in this online space. For the virtual university, this flags the deliberate application of learning theories that relate to TEL. These have their roots in the 3Cs of constructivism, cognitivism, and connectivism, but manifest in many adaptations of these basic tenets. One thing is very clear, however: consistency, not sameness, in the application of these learning theories is key. Once this is present, we can make sense of the adaptation and creation of new theories through our ongoing research of TEL.

One of these adaptations that is particularly relevant for the virtual university is the role social media play in the life of our students and now our staff. This plays out further as we look into the future of more traditional online tools such as the learning management system, which are strongly linked to newer and emerging forms of assessment practice. These practices look to make online assessment more active and authentic through a greater emphasis on peer and collaborative assessment. Why? Because we are trying to prepare our students for the future of work and much of this will be online and interactive. This of course brings with it the challenges of ensuring this assessment is authentic and original, which in turn requires measures to detect those who may take advantage of this greater flexibility to consider cheating.

The affordance that openness provides and more broadly open educational practice, as an enabler for the virtual universities, is not to be understated here, nor is the important role that new and alternate forms of credentials may play. Developing coherent new models to follow the development of microcredentialing practice, and understanding the opportunities and challenges to portability and authentication of online short courses offerings, is central to quality in the virtual university.

In many ways, this makes us look to newer forms of learning that embrace approaches like gamification, adaptive and conditional learning, thus developing

and quantifying intrinsically motivated instruction in the process. This demands the development of clear models and principles of gameful design and adaptive online experiential learning that embraces newer technologies that promote conditional learning and the rise of alternate reality spaces (AI, VR, AR, MR, and XR).

Not least of these in recent times is the rise of artificial intelligence, and the large language models and opportunities this provides means that the virtual university may not have to reinvent the wheel. When aligned with an understanding of how others are dealing with these opportunities, through quality benchmarking and the application of learning and educational analytics, we can start to use out institutional data to drive further quality improvements and innovations.

As we work our way through the concepts contained within this volume, it is hoped that a picture will start to form that points to not just the validity of the virtual university, but also the limitless opportunities it may provide.

Cross-References

- ▶ [The Virtual University in Practice](#)

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