

Virtual reality

in business education

Louise Claassen

Executive fellow of Henley Business School Africa and co-founder of creative emerging technology lab start-up ORBmersive

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Business education, leadership development, and the upskilling of future executives require a constant eye on unfolding trends and openness to incorporating fresh approaches and technologies. As learning moves increasingly into a digital space, technologies like virtual reality are emerging as creative and dynamic spaces in which students can interact directly or participate in creative technology labs that immerse them in practical problems or allow them to experience far-flung ecosystems and cultures.



Disclaimer

Aligned with our mission, 'We build the people who build the businesses that build Africa', we facilitate open, multi-perspective conversations and the generation of thought leadership pieces, such as this white paper. However, the views expressed in this white paper are solely those of the author and not necessarily those of Henley Business School Africa.

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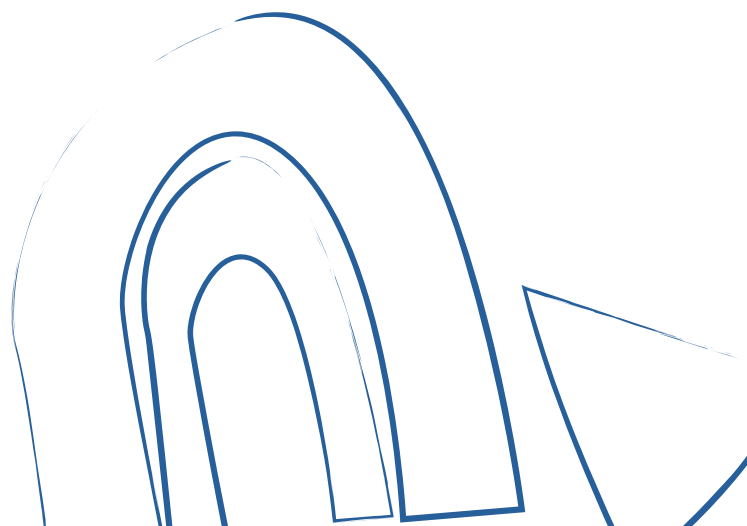


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Abstract

Since the Third Industrial Revolution – the Digital Revolution – started in earnest in the late 1900s, the world has seen a dizzying array of new technologies become part of our day-to-day lives. Changes have ranged from the harnessing of nuclear energy and the invention of the ethernet to the creation of wireless devices, web pages, social media platforms, mobile-phone money services like Kenya's M-Pesa, and the internet of things. Many of these technologies and innovations have become ubiquitous in modern society. As technologies are absorbed into our thinking and daily reality, new goals and exciting areas of focus emerge and take hold. Virtual reality and the associated world of extended reality are a case in point.

As the current Fourth Industrial Revolution attests, the next frontier for business, society, and educators alike is technology. Digital technology spans a litany of emerging and complementary tools, such as cloud computing and nanotechnology, three-dimensional printing, and artificial intelligence. These technologies are disrupting business, healthcare, government, manufacturing, social cohesion and inclusion, as well as how we learn, connect, and develop. Virtual reality (VR), specifically, unlocks the power of immersive learning as it points the way to immersive worlds – and metaverses – that can be brought to life through its unique capabilities. VR and a range of allied technologies such as cryptocurrencies, non-fungible tokens (NFTs) and blockchain also power the newest iteration of the World Wide Web, known as Web3.

Based on the experiences of the small band of 'explorers' at Henley Business School Africa in Johannesburg, South Africa, this white paper defines the nature of virtual learning tools and explores the potential for harnessing simulated interventions in the business school education space as a way of delivering experiential learning and student engagement. Moreover, this white paper intends to provoke a discussion around how business schools can – and should – embrace VR tools and introduces practical insights that can be replicated within business schools and educational institutions around the world. However, it is important to first become acquainted with the following keywords, relevant terminology, and acronyms that are used when having conversations about the topic:

Keywords

Virtual reality (VR) – Virtual reality involves a complete immersion into a virtual world, which is achieved by using VR devices to shut out the real world (Gupton and Kiger, 2020).

Augmented reality (AR) – Augmented reality refers to the creation of a composite experience achieved by superimposing digital elements onto the real world.

Mixed reality (MR) – Mixed reality involves combining VR and AR with real-world elements.

Extended reality – VR, AR, and MR fall under the collective term extended reality, which 'covers all of the various technologies that enhance our senses' (Gupton and Kiger, 2020).

The metaverse – An amalgamation of the words 'meta' and 'universe', the metaverse describes the virtual world that exists online in a three-dimensional form, which brings virtual and mixed-world realities together using a browser or a VR headset (Ma, 2022).

Web3 – The decentralised, democratic future of the internet that draws in emerging digital platforms and ownership models, such as NFTs, cryptocurrencies, and blockchain (Stackpole, 2022).

Introduction

Several notable trends are playing out in the world of business education: shifting pedagogies designed to grow and develop relevant, socially minded leaders for a changing world (Brown and Crawford, 2021); a demand for individualised and flexible learning pathways (Krishnamurthy, 2020) that support lifelong learning and use digital tools to offer remote learning options (Hammergren, 2021); an appreciation for the impact of experiential approaches in the development of desirable leadership traits, such as adaptability and empathy, as part of an enhanced learning cycle (Richardson, 2015: 109); and of significant interest for this white paper, the adoption of technological platforms and solutions to enhance the learning journey. VR supports all these outcomes. Known as the 'empathy machine' of the emerging tech world (Palmer, 2021), VR has been shown to encourage empathetic behaviour by encapsulating the qualities of presence and embodiment (Shin, 2018).

Technologies, such as VR, have the potential to set adaptive business schools apart from the pack by integrating accepted learning methods such as academic case studies with immersive digital tools that bring innovation to life. Embracing such technology ensures that business school educators are supported in their uptake of innovative technological options in line with institutional innovation. Furthermore, the technology creates a unique and transformative channel for learning that straddles the worlds of entertainment and education to create truly impactful learning experiences that will incite and keep learners involved.

In VR lingo, 'presence' refers 'to the scale of immersion felt in a VR experience. Simply put, presence is achieved when users feel like they're there, wherever that immersive world is' (Oculus Creators, n.d.).

What is virtual reality?

VR refers to a realistic computer-generated environment that is accessed using specialised electronic equipment, enabling users to interact with a simulated three-dimensional reality in a graphic-rich, physical way (Collins, 2022a). The technology has been decried by the likes of former United States (US) Secretary of State Hillary Clinton as 'no substitute' for real people (Fisher, 2015), yet has been embraced by others, such as science fiction film director Brett Leonard, as 'a truly immersive medium ... [that] will only continue to get better and better' (Craig, 2020). Whatever one's view, VR is increasingly carving out a place for itself in the world of entertainment, business, and education. In addition, VR is part of a suite of Web3 technologies that are bringing the metaverse to life.

While the incorporation of VR into real-world experiences and interactions may remind one of science fiction, technology has its roots as far back as the 1960s. The very first commercial VR technologies began to appear in the late 1980s, although they have largely remained the preserve of niche sectors, such as flight and surgical procedure simulations, military training and, more recently, the gaming industry, education, and training (Cipresso et al., 2018). Since 2014, when Facebook founder Mark Zuckerberg bought VR platform Oculus for US\$2 billion (Haselton, 2017), there has been renewed interest in the potential for the technology by

investors and consumers alike, as well as companies like Sony, HTC, and Apple, which acquired the Canadian augmented reality (AR) headset start-up Vrvana for US\$30 million in 2017 (McGee et al., 2022).

AR merges computer-generated data with a real-world environment (Collins, 2022b). Researchers anticipate that some one billion people will be wearing AR headsets by 2030, 'supporting a market worth up to US\$2 trillion in revenue' (McGee et al., 2022).

Despite initial scepticism from some quarters around Zuckerberg's Oculus investment (Haselton, 2017), 'overall spending on AR and VR headsets, software, and services, including purchases by consumers, rose in 2020 to US\$12 billion globally, up 50% from 2019' (Deloitte Insights, 2020: 97). While the global pandemic of 2020 impacted growth, Deloitte Insights (2020: 97) predicted that 'the industry will reach a total of US\$73 billion in 2024, or a 54% annual growth rate between 2020 and 2024'.

How should business schools embrace virtual reality?

Inspiring evidence

In 2021, professional services firm PwC released findings that highlighted the value of using VR tools to support soft skills training, and as a way of helping businesses to upskill employees faster and more cost-effectively. The study showed that using VR enabled learners to absorb information four times faster than they could in the classroom alone, and with four times the focus compared to their e-learning peers (Likens and Mower, 2021). Perhaps more impressive, is that VR learners were 275% more confident when applying newly acquired skills than they were before the learning intervention, and 3.75 times more 'emotionally connected to content than classroom learners' (Likens and Mower, 2021).

(Stern et al., 2021). This sparked the interest of future-focused researchers and advisory firms, such as Gartner, which forecast in 2017 that by 2021, '60% of US-based higher education institutions will intentionally use VR to create an enhanced simulation and learning environment' (Resnick, 2017). While uptake has been behind this projected curve, and 'adoption rates of VAR [virtual and augmented reality] technology for teaching have not been well described across a higher education institution' (Marks and Thomas, 2022: 1288), the enthusiasm for the technology's potential as far back as 2017 is a testament to the potential evident in developing an enhanced learning journey and experience for learners (Resnick, 2017).

US business schools, such as Sloan School of Management at the Massachusetts Institute of Technology and Stanford University Graduate School of Business, have begun deploying VR into their executive education offerings, be it for simulated role-playing exercises or to allow classmates based around the world to engage in a virtual campus space (Childers, 2019). However, no two VR development experiences are the same. For instance, reflecting on INSEAD business school's foray into VR technology



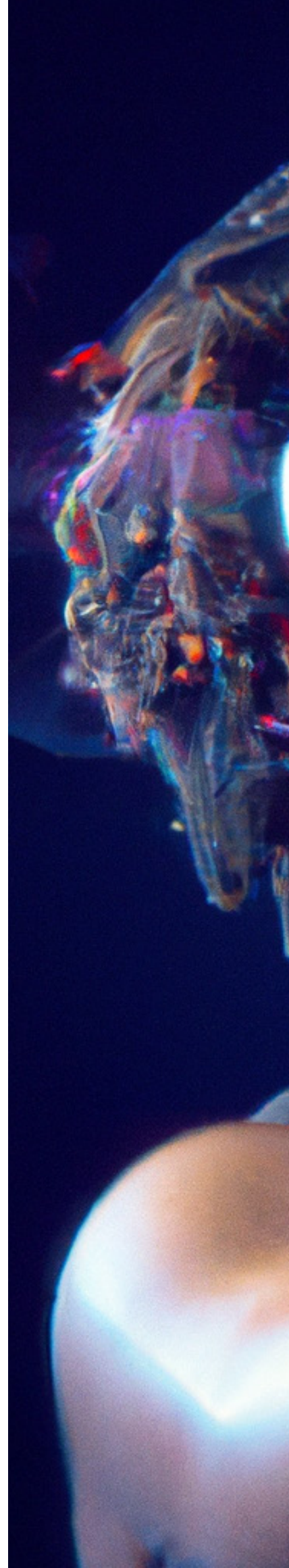
Enthusiasm for virtual reality's potential

Some business schools, notably in the US and Europe, started exploring VR teaching methods before the 2020 global pandemic

as a learning tool, Stern et al. (2021) wrote: 'We don't envision that VR will replace existing tools and approaches. Rather, it will add a new dimension to the classroom – both virtual and physical – without taking anything away.' The INSEAD experience has leaned towards the use of VR as a storytelling tool to support immersive learning and expose learners to 'exercises that mirror the work environment, geared towards exploring real-world scenarios and outcomes' (Stern et al., 2021). The technology, while not regarded as a substitute for real-life experiences, was regarded as a useful way in which to transport 'participants to unfamiliar locales – an especially useful feat given recent restrictions on international travel' (Stern et al., 2021).

More recently, a 2022 article in the United Kingdom's Financial Times quoted Dot Powell, Warwick Business School's Director of Teaching and Learning Enhancement, on the institution's increased adoption of technologies to enhance the learning experience. Powell noted that learning approaches that simply require lecturers to talk over a slide presentation 'won't be acceptable for much longer', as the appetite for engagement with fellow students and course content continues to grow among students of higher education institutions (Conboye, 2022).

In addition to enabling learners to 'travel' to remote locations, many leading business schools regard the use of VR as a tool for personalising the learning journey (Murray, 2021).





Henley's virtual reality journey

The beginning

Henley Business School (HBS) Africa's journey into the use of VR as a business school and leadership learning tool began around August 2019. Exposure to the international leadership immersion programmes conducted by HBS Africa in countries as far afield as Kenya, Tanzania, Ghana, Nigeria, Russia, China, the US, and Canada yielded insights into the value inherent in first-hand exposure for business school students from Africa. Aside from network development and cultural exposure, students experienced different business contexts and dynamics in their sector and among leaders, as well as the broad economic, social, and cultural subtleties shaping specific environments. The value of such global immersions has been widely recognised as tools for shaping future executives, business leaders, and entrepreneurs (McLeod, 2018).

Challenges encountered

Nevertheless, these in-country interventions were expensive and at best could only accommodate 20–30 students per immersion. Once on the ground, there were time constraints to consider, which impacted the number of close-up encounters participants could undertake. In addition, the process was often overwhelming for students, who were faced with sensory, cultural, and information overload.

In Africa, where the cost and complexities around intracontinental travel add another layer to be considered, there is the added concern that it is easier to fly to Europe or the US for an immersion, than it is to undertake a programme in an African country, such as Ghana or Uganda. Yet, it is vitally important for South African students – as well as those from the rest of the

continent – to understand how they fit into the broader African context, as well as the opportunities being presented by greater intra-African trade, investment, and cooperation.

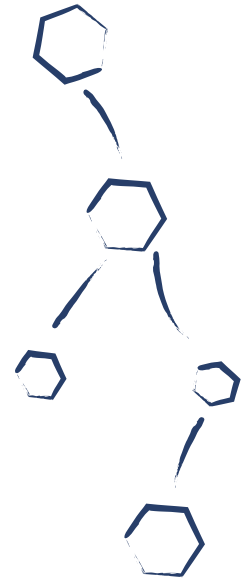
Identifying opportunities

Virtual reality as a possible learning tool

Faced with the growing impact of VR as a business and entertainment tool – as well as an empathy machine capable of transporting users to different spaces with a deep sense of presence and embodiment (Shin, 2018) that amplifies learning – it soon became evident to the HBS Africa team that an opportunity existed to create virtual immersions. Harnessing VR as a learning tool had the potential to create a more democratic and inclusive immersion experience.

Exploring virtual immersions

Initially, HBS Africa's concept focused on virtually transporting students into a different environment, without them having to leave their chairs, which the team referred to as virtual immersions. With this end-game in mind, a small team comprising the writer and her fellow 'explorers', Phillip Mabitle and Siqu Nsele, began to experiment with VR. Armed with some research, a now-obsolete Oculus Go headset, and a 360-degree camera, the Henley Explore team focused its efforts on discovering what existed in the world of VR, exploring how it could be applied in the context of virtual immersion, and producing content for the business school. The team's VR output was ultimately incorporated into HBS Africa's one-year Postgraduate Diploma in Management Practice in Africa (Bizcommunity, 2021 cited in Henley Business School Africa, 2021).



Experiences and outcomes of using virtual reality tools

The following sections summarise our endeavours progressing to what we envisaged for the future.

Honest reflection to ensure slicker experiences

Admittedly, HBS Africa's initial forays into using VR as a business learning tool were not without challenges. However, the stumbling blocks also yielded important lessons on how to create slicker experiences and learning interventions. Chief among these was the need to temper our expectations.

Overcoming the financial stumbling block

Initially, the team felt that students should be required to purchase their own Oculus devices. Yet, this proved both impractical and, in a country of such high inequality like South Africa, could have had an unintended exclusionary outcome. Ultimately, HBS Africa as an institution decided to invest in the technology as confirmation of its support of the initiative and to make headsets available for individual use as required. This concurred with international assessments that the cost of adopting VR was potentially prohibitive, given the initial financial outlay in terms of technology, such as VR headsets, and the need to create content specifically designed to be viewed and delivered using a VR platform (Stern et al., 2021). As the uptake of VR grows, both the cost of VR film and experience production and hardware should come down, while the realism of the experience will continue to improve (Murray, 2021). Already, the Henley Explore team has noted a significant drop in the price of hardware devices.

Securing collaboration and partnerships

It also became clear to the Henley Explore team that the VR experiences lent themselves to cross-medium collaborations, leading to the creation of business-related case studies based on the VR film content and covering mutually relevant themes in more depth using a short case format, with topics such as sustainability and cultural intelligence, diversity, and inclusion, leadership, and managing high-performance teams. The decision to hinge traditional business school methods on the VR films and metaverse interventions, while ensuring that accompanying case studies were unique, quick to read, and to the point, was intentional. More specifically, it reflected the belief that this new approach to learning should not limit itself by playing by the old rules. Indeed, HBS Africa's approach was deliberately exploratory and focused on developing partnerships.



Understanding opportunities for the future

Having taken this approach, by 2022, the Henley Explore team recognised that the current opportunity lay in utilising VR to address and understand real-world solutions using unique and authentic learning experiences (Herrington et al., 2007). It became clear to the team that the incorporation of VR into existing teaching methods complemented the nature of the technology used and did not seek to pigeonhole it within a current teaching framework.

Practical guidance for getting started

Insights from the United States

At the same time the Henley Explore team was experimenting with VR tools, so too were other individuals and global institutions. For example, Dr Gulbin Ozcan-Deniz, an associate professor in VR and construction at Thomas Jefferson University in the US, shared her practical, constructivist model for the use of virtual tools in education during a conference in 2019. Ozcan-Deniz made specific recommendations, namely:

- She advocated for an approach that merged concrete experience with observation and reflection, then evolved into the formation of abstract concepts before being tested in new situations (Ozcan-Deniz, 2019). The cycle was expected to gain meaning from each subsequent iteration.
- She presented a VR implementation requirements outline as depicted in Figure 1, which touched on many of the areas explored in the HBS Africa VR process, but not all. In particular, Dr Ozcan-Deniz's guidelines focused on embedding VR capabilities and collaboration within an educational organisation.

While Dr Ozcan-Deniz's practical guidelines are important, they unfortunately do not address the importance of the ideation phase that should accompany any viable VR programme.

VR Implementation Requirements

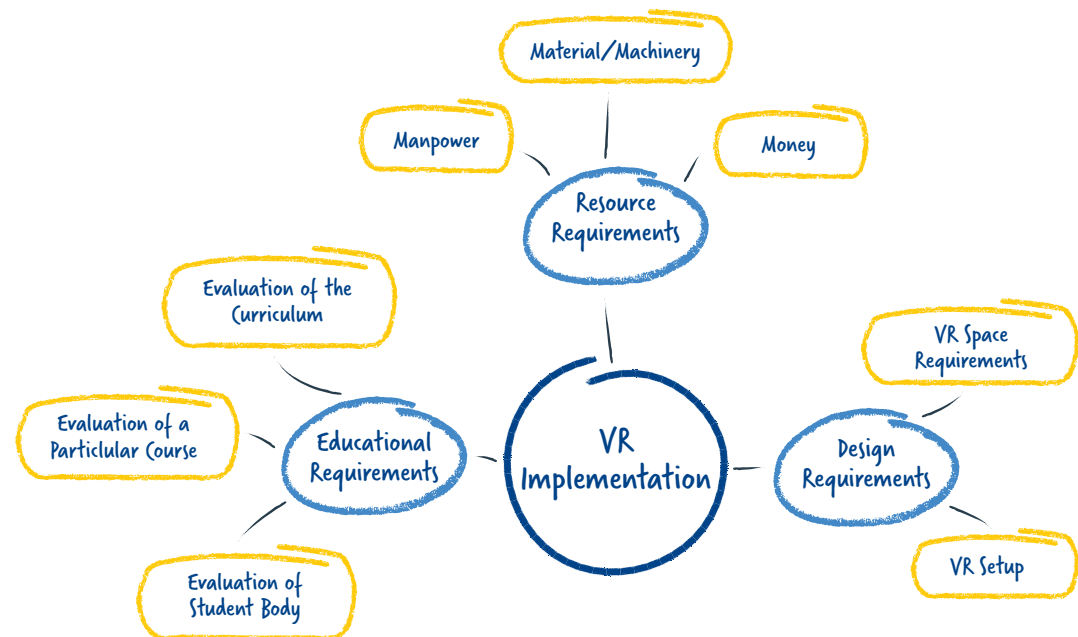


Figure 1: VR implementation requirements
Source: Ozcan-Deniz (2019)

Contemplating the approach

Like Ozcan-Deniz, the author also believes that ensuring space for experimentation, failure, and unrestrained playtime is essential to creating a foundation for VR. At this stage, the ability to look beyond defined ecosystems and acceptable processes also has merit if the potential for innovation across sectors and subgroups is to be successfully harnessed. For instance, one of the ways the Henley Explore team came to VR as a potential educational tool was due to an article in Wired magazine (Rubin, 2018) on how VR was changing the adult entertainment industry. The article argued that since a VR shoot is filmed from a first-person perspective, the approach must be less voyeuristic and more intimate. Rubin (2018) explained that it has the potential to shift the focus of an entire industry simply because of the empathy a first-person encounter has on the human psyche.

'With the frame gone, the viewer is in the scene. And once you're in the scene, thanks to presence, you're no longer a voyeur. You're a participant. No more detachment, no more desensitization' (Rubin, 2018).

Consequently, our thoughts were that if empathy could be injected into the adult entertainment industry, what could it do for business leaders facing social, environmental, and ethical concerns in the changing global world?





What we did: Henley Business School Africa's VR LAB experience

The Henley Explorer VR development process is evident in the roll out of three VR LAB experiences created by the business school's VR explorers and discussed below.

VR LAB ONE: Become acquainted with the basics

Initially the team developed a VR LAB ONE experience for HBS Africa staff, faculty, and clients. This was in the form of a fun and interactive orientation to the VR device. It included a guided session that took the participants through a range of different VR experiences from interactive VR to VR films, existing or commissioned by the Henley team, as well as social VR experiences on the AltspaceVR platform. While the focus of the session was on play and exploration as an introduction to the VR experience, some 'what if' or 'wouldn't it be great if' ideas inevitably surfaced.

The VR LAB ONE experience was also designed to demonstrate the use and application of VR as an empathy machine, which enabled participants to experience a range of emotions, without losing their sense of embodiment and presence in the moment (Palmer, 2021; Shin, 2018). A shorter version of the VR LAB ONE sessions was used to familiarise students ahead of an immersive learning experience, support the use of the technology, and iron out potential problems ahead of learning interactions.

Example:

A local bank was wondering what it could offer individuals in its graduate class of 2020 (who were attending an HBS Africa programme at the time) by way of an immersive experience, since the usual on-the-ground immersion to Kenya would not be possible due to the COVID-19 travel embargo.

15.

Facilitating the experience

The Henley Explore team guided the bank's Learning and Development team through VR LAB ONE. It entailed familiarising the group with using the Oculus Quest 2 VR device and guiding the individuals through different VR experiences, which were designed to help them navigate VR. The team used First Steps for Oculus 2 and Batmersive, a computer-generated imagery Lego production. Once attuned to the VR world, the class experienced the VR film Maasai, part of the Nomads series produced and created by Canadian duo Felix and Paul, which allowed them to experience life in a Maasai village in Amboseli, Kenya, in an incredibly immersive way. Then, through the Waves of Grace VR film, the class was able to experience the impact of the Ebola outbreak on life in Liberia, as seen through the eyes of Deontee Davis, an Ebola survivor. Both experiences demonstrated the power of VR as an 'empathy machine', supported by the qualities of presence and embodiment. Finally, the Henley Explore team guided the audience into AltspaceVR, where the class and facilitators met up – taking the form of avatars – to connect and explore some of the different worlds that members of this social VR world had created.

ABC

The outcome

The VR LAB ONE experience was enough to convince the banking team that a virtual immersion, supported by VR technology, could create a singular and impactful experience that held value and impact for graduate participants. The next step was to engage in a VR LAB TWO design process.



VR LAB TWO: Setting up

The next stage in developing the Henley Explore experience was developed using the VR LAB TWO co-creation and design space. This involved a series of sessions with clear outcomes that were held with clients and faculty. This phase was also marked by the continued development of production and content partnerships, which included attracting the attention of the faculty, student body, and clients, and inviting them to utilise VR methods as part of the learning process.

Example:

In the VR LAB TWO design process, the Henley Explore team worked with the banking team (as explained in the previous example) to identify the key themes and outcomes of the virtual immersion. Speakers from the bank were identified to take part in the programme, after which the Henley Explore team outlined the scope of the project.

Facilitating the process

In partnership with the BlackRhino VR team in Kenya, a detailed design outline was fleshed out. The design included the creation of immersive VR films for the programme, the inclusion of social VR speaker events in AltspaceVR, discussions with speakers on the Zoom video communication platform, and opportunities to integrate and consolidate the learning. A special final experience involved a Swahili cooking class with Chef Audrey Atieno from Kikwetu Kitchen, all the way from Nairobi, Kenya.

VR LAB THREE: Prototyping new content

VR LAB THREE involved another series of sessions that enabled the team to further expand on the experiences of staff, faculty, and clients, as the team was able to share additional content produced using VR methods. Prototyping new content and building on existing plans and projects were key at this point in the framework, which again invited input and ideas from the role players to keep the output fresh and relevant.

Example:

Using VR LAB THREE as a create-and-prototype space, the Henley Explore team focused on conceptualising and creating two VR films for the programme, and worked on testing the Swahili Kitchen concept that was introduced in phase two. The team worked closely with speakers to ensure they were comfortable working and presenting in AltspaceVR.

Execution

The execution of the VR immersion involved rolling the experience out over six days for 25 students who were attending virtually from various locations. Each student was equipped with an Oculus Quest 2, with support provided by Henley Explore and the BlackRhino VR team.

VR LAB immersion impact

Reflecting on the experience

Measuring the impact of VR immersions is an area of current focus for the Henley Explore team as well as for participants and academics seeking to better understand the impact of immersive VR on outcomes based on presence, immersion, and interactivity (Hsu and Wang, 2021). However, an early indicator of the success of virtual engagements by HBS Africa was evident in the detailed student evaluations, which took place following the conclusion of the banking immersion highlighted in this white paper.

In class, the students talked about being 'together for the first time' when they were in AltspaceVR. The sense of presence translated into a tangible sense of togetherness for them. It was interesting to observe some students standing and talking in groups, while others would have more private conversations in groups of two. The nature of the interaction simulated the way individuals would engage in a physical space, which is simply not possible on platforms such as Zoom or Microsoft Teams.

Insights shared

Participants in the VR endeavour shared their views in the feedback/evaluation forms after completion of their hands-on VR experiences, stating:

- 'The immersion was fantastic and gave me a realistic as possible feel of Kenya. The experience was fun, interactive, and had a lot of learning as well. It has been the closest I have come to leave the country.'
- 'The virtual immersion was educational and enjoyable. Through this immersion, we got to interact with Kenya from a more personal level and really felt what it was like being on the ground, especially through films.'
- 'This was the very best way to learn, as the VR immersion puts you in the practical place you are learning about, rather than being told what it's like, it is better to experience.'
- 'I felt like I spent a week in Kenya. I was able to get a glimpse of the Kenya the guests were talking about through the VR films and that was an incredible experience.'

Conclusion

As the body of research grows and more practical business school case studies emerge regarding the use of VR as a learning tool, the practical value of incorporating innovative digital platforms and technologies into the business school facilitation mix will become increasingly evident. Already, it is becoming clear that new approaches must be harnessed to grow and develop relevant, empathetic, and socially minded leaders (Brown and Crawford, 2021) who are capable and aptly equipped to understand and tackle the complex social, governance, and environmental issues of our time.

At the very least, digital technologies like VR can be used to complement traditional facilitation methods and enhance proven and effective interventions and immersions, which help to strengthen future leadership skills, such as adaptability and understanding (Richardson, 2015). At best, the ability of these technologies to evoke a profound emotional response can fundamentally change how we learn, remember, and provoke action (EU Business School, 2019).

The likes of VR – and the future technologies that will, no doubt, grow from this base – have the potential to revolutionise the business school learning model (not excluding other disciplines) into a more experiential, innovative, and personalised learning journey. However, as the HBS Africa experience shows, a successful shift towards VR cannot be achieved without support across the business school, without embedding time to play and explore the multiple touchpoints, and without sufficient funding and faculty support. The Henley Explore VR LAB ONE, TWO AND THREE process offers insights and thoughts about an evolving journey, opening the floor for further interrogation over time. As more business schools share their VR developmental journeys, increasingly concrete models will doubtlessly emerge. This is to be applauded if the impact of exciting new technologies on the global learning ecosystem is to be fully exploited.



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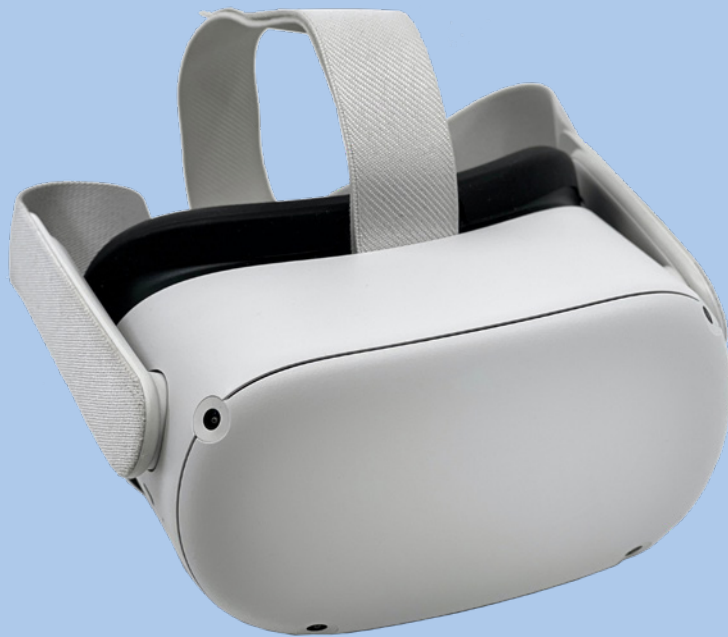
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Henley
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AFRICA



Contact

Prof. Danie Petzer
Head of Research
daniep@henleyza.ac.za

www.henleyza.ac.za

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