

## The Future of Sustainable Tourism Education in the Digital Transformation Age Beyond COVID-19 in Namibia

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### Abstract

Tourism educational institutions have been pushed towards implementing virtual learning due to the changing educational landscape and the teaching environment after COVID-19. This paper seeks to discuss the future of tourism education in the digital transformation age in Namibia post-COVID-19. A qualitative approach was used to collect data using a key informant technique. Interviews were conducted till a saturation level was reached at 20 and the data was then analysed and categorized using themes. The results show that sustainable tourism education should focus on increasing the natural environment, and ecological and cultural sustainability. The development of virtual reality (VR) and augmented reality (AR) technology should enable students to engage in realistic simulations of sustainable tourism practices and learn about their effects on local communities and ecosystems. Online forums and international collaborations have fostered cooperation and knowledge-sharing, allowing Namibian educators and students to absorb global best practices and add their perspectives to the conversation around sustainable tourism. However, the future of tourism education in the digital transformational age requires stable internet connectivity, increased government support and the ability of academics to deal with new students' demands. The utilisation of digital technology to develop a more inclusive, immersive, data-driven, and globally linked learning experience is crucial for the future of sustainable tourism education in Namibia. The article concludes that sustainable tourism education will require academics to acquire new knowledge and expertise to cope with the new developments in the use of artificial intelligence and expand their area of scholarship.

**Keywords:** Sustainable tourism education; digital transformation; knowledge production; sustainability; technology

### Introduction

The landscape of higher education has changed because of COVID-19, which has also had an impact on various developments in the classroom. Virtual learning has been pushed into tourism education institutions to suit the changing needs of students and reach a larger audience. Universities, healthcare systems, and other institutions have all been severely affected by the COVID-19 epidemic (Zezela & Okanda 2021:6). Higher education institutions' success has been impacted by the environment in which knowledge is produced and how that knowledge is measured. The emerging disciplines and sub-disciplines have created a framework for the current knowledge acquisition system, and have steadily differentiated knowledge.

Academics are expected to be knowledgeable about technology and be administrators, researchers, teachers and supervisors. Digital technologies have become necessary for efficient online teaching and learning, including learning management systems (LMSs), the right tools,



and internet access, among other things. According to Duke et al. (2013), blended learning offers an answer to the problem since it incorporates both types of instruction, including face-to-face instruction. This gives students more access to learning resources based on their financial situation or where they fall on the digital divide. There is a dearth of knowledge in Namibia on how to address the digital divide that prevents university students from accessing online teaching and learning materials (Mhlanga et al., 2022). However, Chromebooks, tablets and smartphones are developing into important and useful instruments for closing the digital gap. By enabling users to access and download courses, manage and track progress, take notes and actively participate in discussions with peers and co-learners, online platforms like learning management systems (LMS) and learning destination sites (LDS) are transforming learning experiences (Aljanazrah et al., 2022). Despite the demands of the digital transformation to implement online learning (Kurniawati et al., 2022), face-to-face instruction cannot be replaced since it is the cornerstone of educational institutions (Mhlanga et al. 2022). Information and Communication Technology (ICT) development, availability and use in Africa, however, face several obstacles to be addressed. These include a lack of institutional infrastructure, insufficient bandwidth and a restricted capacity to apply teaching and learning tools in the classroom.

Additionally, concerns about the performance results and appropriateness of ICT adoption in Africa have been raised by critiques of Western techno-positivism inherent in the ICT policy discourse (Njenga & Fourie, 2010) and further uncover a lack of will on the part of policymakers to create comprehensive, contextually appropriate ICT strategies across Africa (Kurniawati et al., 2022). Studies on digital and technology-enhanced learning have looked more broadly at online learning, including how academics and students perceive e-learning environments, learning management systems, the availability and accessibility of digital resources and the required ICT infrastructure to support digital and remote learning, particularly beyond COVID-19 (Harle et al., 2021). There have been significant investments made to upgrade ICT infrastructure, connectivity and tools (such as learning management systems and digital repositories) as a result of the potential and impact of ICTs on teaching and learning in African higher education (Harle et al., 2021). Digital worldwide connectivity has emerged as a result of pervasive technology and device access (Fennell, 2021). This essential component can assist in creating an inclusive and sustainable educational model (Aljanazrah et al., 2022). To suit the business demands of their programmes, academics are expected to become curriculum designers in numerous fields, which necessitates ongoing professional development.

## **Literature review**

Digital disruption has created new business models and the ability to deliver services with premium value in entirely new ways (Adeyinka-Ojo, Lee, Abdullah, & Teo, 2020). The industry is being digitalized primarily to support the expansion of online sales and service operations. Additionally, the connectivity of the physical and digital worlds makes it easier to interchange data and enhance inter-party communication. Blockchain technology and its many applications, including the use of digital currencies (such as bitcoin), the creation of smart contracts, the implementation of public services, the management of digital innovations and sales, the tracking of records, the automation of supply systems and the development of apps, are some of the key technological advancements that will reshape the future of tourism (Bolici et al., 2020; Chamboko-Mpotaringa & Tichaawa 2021). The majority of higher education institutions hurried to implement various distance learning and teaching strategies. Different presumptions regarding learners and the learning process were made while learning took place (Fennell, 2021). Due to their quadruple mission of teaching and learning, research and

scholarship, public service and engagement, and innovation and entrepreneurship, higher education institutions have a fundamental role to play in fostering the development and nurturing of demand-driven digital and technical skills (Zezeza & Okanda 2021: 6). During the learning process, students actively engage with the new content, combine it with previously learned knowledge and even reorganise and consider prior knowledge. Institutions of higher learning play a crucial part in fostering the development of technical and digital skills that are driven by market needs (Khonje et al., 2021; Kurniawati et al., 2022). To prepare young people for the jobs of the twenty-first century, which increasingly require digitalized competencies, existing skills and job mismatches must be eliminated, youth employability skills must be improved, and educational institutions must be strengthened and reconfigured (Zezeza & Okanda, 2021).

How learning is immersed has a fundamental impact on learners and depends on rich circumstances. Due to the social dynamics of class, location, gender and age, the COVID-19 crisis exposed diverse institutional resource needs, information technology access and the capacity to switch to online teaching and learning. The pandemic also highlighted difficulties in accessing digital technology and bandwidth for academic staff and students (Zezeza & Okanda, 2021). Considering their ability to navigate network connections to obtain, use, and share knowledge, students are seen as active participants in teaching and learning rather than passive takers of it (Mhlanga et al., 2022; Kurniawati et al., 2022). Traditionally, learning starts with concepts and facts before moving on to application through group learning exercises. A connectivism perspective on learning emphasises the need to know where to locate information and how to see connections between ideas, themes and concepts in e-learning (Mhlanga et al., 2022; Fiore, 2022). The development of higher-order problem-solving abilities is a challenge for the students. The imperatives for lifelong and life-wide learning, changes in the credentialing economy, widespread and accelerating digital disruptions and expanding public service and involvement demands all universities to restructure themselves (Zezeza & Okanda, 2021). To ensure meaningful engagement in teaching and learning, higher education institutions should make sure that students have access to the Internet and the appropriate educational technologies (Mhlanga et al., 2022; Fiore, 2022; Duke et al., 2013).

### ***The theory of diffusion of innovation in sustainable tourism education***

The digitalization phenomenon is the primary driver of the sector's major changes, which are mostly related to the spread of big data, the emergence of the platform economy, artificial intelligence and the enhancement of the customer experience (Bolici et al., 2020). When individuals learn about innovation like the use of ICT in sustainable tourism education, there is a social process called diffusion that takes place (Dearing & Cox, 2018). According to Roger K. Merton's theory of innovation diffusion, there are five characteristics of an innovation that have been found to influence how quickly a community adopts innovation (Cullen 2001). The five qualities are relative advantage, compatibility, complexity, trialability and observability. They are also referred to as the five traits. The importance of peers in the transmission of a particular innovation in a social system is demonstrated through the diffusion of innovation theories (Dibra 2015). The rate of innovation uptake is also influenced by social standing. According to Agag and El-Masry (2016), it was predicted that respondents would adopt ICTs such as the Internet, email and mobile phones more quickly due to their social standing and job environments, which would require them to stay up with technological advancements.

### ***Connectivism theory and digital teaching and learning practices***

The connectivism hypothesis offers a fresh perspective on what it takes to support online learning in a constantly changing digital environment. According to the theory, Internet



technologies play a part in expanding options for instruction and learning as well as for knowledge sharing online (Duke et al., 2013). Based on connectivism, learning happens when peers connect and cooperate to exchange ideas, thoughts and viewpoints. Thus, through connectivism, a group of individuals can give the legitimacy of their actions, enabling information to flow more swiftly throughout other communities (Chamboko-Mpotaringa & Tichaawa 2021; Kurniawati et al., 2022). Educators must comprehend the needs of their students and their environment to choose the best methodology to employ. It is necessary to develop learning experiences and resources for online learning that lead to the acquisition and application of knowledge and skills (Khonje et al., 2021). Using social media in the classroom is one method educators put connectivism into practice. For instance, information can be shared, conversations can be heard, and homework assignments can be announced using a class Twitter account (Asimah et al., 2022). This may increase student participation in class and encourage teacher-student dialogue. The content developed should offer a variety of stimulating and engaging learning encounters and it should be put together with the student in mind.

### ***Lifelong Learning and Digital Transformation in Tourism Education Institutions***

Africa successfully began implementing computer-mediated teaching and integrated learning in the 1990s. The idea was considered broadly as the integration of digital technologies and business processes, as well as the use of innovation to dramatically speed up the execution of commercial endeavours in a digital economy. According to Siemens (2022), digital transformation is the process of implementing digital technology in the higher education industry to transform conventional teaching and learning. Faculty development, however, ought to have come first as we entered the digital era (Chamboko-Mpotaringa & Tichaawa 2021). The workforce in tourism education has several challenges in the digital age, including issues with wages, living conditions and training. Until very recently, the issue has been that the government has provided insufficient financial assistance to all higher education institutions, particularly those that were historically underprivileged (Badat, 2010; Bates, 2018). To create human capital expertise, tourism education institutions must endeavour to build collaborations with the private sector, identify skills and workforce requirements, and implement a growth path. While staff and students have begun to adjust to the new normal (Zezeza & Okanda, 2021), digitally transforming an educational institution or even the entire system necessitates rethinking the roles of all parties involved in the educational process, promoting practises like flipped classroom learning, gamification, or crossover learning, as well as the adoption of new managerial practises where ICT reshapes the workplace.

The complexity of the context in which lectures, classes, research and community involvement take place should be embraced by tourism education institutions. One difficulty is figuring out how to use digital transformation as a long-term asset that provides benefits after the epidemic (Abad-Segura et al., 2020). The private sector's aptitude and desire to advance access to connected devices is the pervasiveness and accessibility of cutting-edge and reasonably priced devices in the developed world (U.S. Chamber of Commerce, 2022). The spatial distribution of Internet facilities also exhibits significant disparities (Zezeza & Okanda, 2021). As a result, tourism education institutions should foster a climate that encourages self-awareness, self-directedness and self-motivation among academics.

### **Methodology**

A qualitative approach was used to collect data using a key informant technique. Qualitative research focuses on gathering information through conversational and open-ended communication. Qualitative research techniques are made to disclose how a target audience

behaves and views a given subject (Saldana, 2011; FitzPatrick, 2019). During interviews, active listening, probing and follow-up questions were employed to encourage participants to share their perspectives honestly. One benefit of this approach is the excellent opportunity it offers to acquire precise information about people's beliefs and motivations. The researchers' ability to interpret respondent body language and match the responses was improved by the use of in-depth interviews. Through the use of qualitative data collection, it was possible for the researchers to examine how decisions are made and to gain in-depth knowledge.

Triangulation, which is a research technique that resembles looking at a subject from a variety of perspectives to develop a more thorough understanding, was effectively applied in this study. To test and cross-verify the findings and to ensure their dependability and trustworthiness, this research approach was employed twice with different data sources (Hatch 2002). Findings were drawn from the comprehensive, extensive and nuanced data that was gathered. Data were recorded through transcriptions, written notes, and audio recordings. When the number of interviews reached saturation at 20, textual analysis was used to analyse and categorise the data. When analysing data, text analysis stands out from all other qualitative research methodologies because it allows researchers to examine the study's information's hidden potential and decode the words and activity data (Bazeley 2013). Unstructured data was converted into structured data through the application of thematic analysis to discover repeating patterns, themes and original findings. The findings' robustness and applicability across diverse segments of the hospitality and tourism industry were strongly supported by the results, which were impressively consistent and aligned (Maxwell 2013). The findings were then evaluated in the context of the entire study, which deepened our understanding of the phenomenon under study.

### **Findings and discussion**

The findings indicate that ecological and cultural sustainability, as well as improving the natural environment, should be the main goals of sustainable tourism education. Students will be able to participate in accurate simulations of sustainable tourism practices and learn about their effects on local communities and ecosystems as a result of virtual reality (VR) and augmented reality (AR) technologies. Increasing national investments in ICT infrastructure is necessary to advance the technological transformation of higher education (Zezeza & Okanda, 2021). The purpose of tourism education should be to explore how regional regeneration might result from tourism-led economic development. With this hands-on strategy, learning outcomes should be enhanced and aspiring professionals should be better prepared to deal with issues in the real world (Fennell, 2021). More people will have access to the products and services of the digital economy as well as resources and information that can save their lives if there is less delay in putting modern gadgets into the hands of local homes and companies (U.S. Chamber of Commerce, 2022). Beyond COVID-19, tourism education will adopt a hybrid strategy in which traditional classroom techniques will be supplemented with online instructional resources.

#### ***Online platforms and virtual reality to enhance students' learning experiences***

With the advancement of virtual reality (VR) and augmented reality (AR) technology, students will be able to participate in accurate simulations of sustainable tourism practices and discover how they affect nearby communities and ecosystems. Digital skills and employability skills are critical to the hospitality industry. Hence, those graduating from existing institutions of higher learning must have a proactive understanding of technology (Adeyinka-Ojo et al., 2020). One of the respondents indicated that,

*“As these digital platforms became available to students, students can experience, such practices through animated tutorials and videos without actually visiting such places, more so physically going there. They can experience real scenarios in a virtual world.”* (Respondent 6).

When someone learns about an innovation that they believe could have significant effects on them or the people they serve, they frequently become unsure of how to react, which prompts them to look for more information so they can decide whether the innovation's merits are strong enough to warrant further investigation (Dearing & Cox 2018). The purpose of tourism education should be to explore how regional regeneration might result from tourism-led economic development. The learning outcomes should be enhanced, and prospective professionals should be better prepared to address issues in the actual world with this pragmatic approach. Beyond COVID-19, the study of tourism has adopted a hybrid approach that combines conventional classroom instruction with online learning resources. The pupils now have a responsibility for learning instead of the lecturer because the learner is required to design their own educational experience. According to connectivism, the educator's job is to forge relationships with communities, foster learning ecologies and release learners into their surroundings (Siemens, 2003). One respondent indicated that,

*“Lately, virtual reality ensures that guest lectures may be done right in the comfort of your own home, which gives greater exposure and is very close to the “real thing”. Costs are less although the initial cost was high for acquiring initial equipment. This enhances student experiences”* (Respondent 9).

When integrating innovation into a social system, educators should exercise caution by considering both the traits of the intended audience and the innovation itself. In addition, being aware of these traits enables good planning to prevent negative effects on the social environment (Minishi-Majanja & Kiplang'at, 2005). The landscape of higher education has changed because of COVID-19, which also had an impact on various developments in the classroom. To adapt to changing student needs and reach a larger audience, higher education institutions are being urged to use virtual learning. For instance,

*“By leveraging online platforms and virtual reality experiences students can broaden their understanding of sustainable Tourism Practices, develop a sense of responsibility towards the environment and gain valuable insights that can shape their future actions as responsible travellers. Interactive features of online platforms and VR can make their learning process fun and engaging for students.”* (Respondent 11).

Adopting asynchronous learning, allowing flexible timelines, supporting connectivity, providing safe learning environments, replicating the class structure, providing language support, setting digital expectations early, fostering cross-cultural understanding, offering remote support services, and implementing micro-inclusions are some of the solutions that can be adopted by tourism education institutions. By creating secure virtual places for international and marginalised students and faculty to speak openly and by encouraging instructors, staff, and students to adopt subtle, inclusive methods to show that international students are welcome and respected (Zezeza & Okanda, 2021). Respondent 1 observed that,

*“AI complements the traditional teaching approach. Students can source data from various sources through Open AI-powered language models. They can analyse information on best practices of sustainable tourism. Software developed to calculate carbon emissions of travellers to promote sustainable tourism consciences among tourists. Students can use these applications for their practical application to real-world problems related to climate change and the impact of tourism on the environment.”* (Respondent 1).

As a result, it is necessary to redefine or restructure innovation to modify and re-invent it to meet the circumstances of the specific organisation and its perceived problem (Minishi-

Majanja & Kiplang'at, 2005). Theoretically, connectivism eliminates any hierarchy in the value of information by supporting individual viewpoints and accommodating the diversity of beliefs. As a result, social systems change from one normative condition to another when opinion-leading individuals and organisations accept an innovation (Dearing & Cox 2018). Under connectivism, students are viewed as "nodes" in a network. A book, webpage, person, etc., are examples of objects that can be connected. The foundation of connectivism is the idea that knowledge is formed when connections are made between different "nodes" of information, or "links," and that these connections are then maintained through time.

### ***Data analytics and artificial intelligence (AI) in tourism education***

The data-driven approach might result in more environmentally friendly tourist practices in Namibia. The industry's inclusivity and diversity might ensure that students from isolated areas are encouraged to engage in top-notch, globally connected sustainable tourism learning experiences. Namibian educators and students could learn about international best practices and contribute their insights to the discussion about sustainable tourism through online forums and international collaborations that promote cooperation and knowledge-sharing. To help students, analyse travel trends, keep track of environmental effects and create ethical tourism plans, data analytics and artificial intelligence (AI) should also be taught in the curriculum for sustainable tourism. For instance,

*“Universities have moved their programmes online for the use of online platforms, such as Moodle and e-learning. Also, teaching is being facilitated via MS Teams, Zoom, Skype and Google Meet platforms. Also, library information and articles are now on Google Scholar and other platforms where students can get peer-reviewed articles.”* (Respondent 7).

However, the institution's capacity to grow its workforce and offer learning opportunities will determine how successfully digitalization in tourism education is implemented. The data-driven approach might result in more environmentally friendly tourist practices in Namibia. The industry's inclusivity and diversity might ensure that students from isolated areas are encouraged to engage in top-notch, globally connected sustainable tourism learning experiences. The creation of a policy to direct the advancement and application of innovation is a crucial sign of adoption (Minishi-Majanja & Kiplang'at, 2005). For instance, Respondent 3 noted that *“Online forums and international collaborations could foster cooperation and knowledge-sharing, allowing Namibian educators and students to absorb global best practices and add their perspectives to the conversation around sustainable tourism.”*

Respondent 2 was of the view that *“Digital Technology promotes and enables student-centred education. As students are tasked to apply real-life experiences through digitalised activities or assessment content is not limited to theory anymore, but practical and real-life experiences.”*

Therefore, the adoption and spread of technical innovation depend on how new the innovation is perceived to be, how valuable it is, and what information is learned from the social context (Bolici et al., 2020). Given the complexity of the subject matter and the nature of the skills needed in the sector, tourism education cannot be entirely digital.

### ***Reshaping the curriculum and promoting new teaching practices***

The implementation should make sure that staff members at higher education institutions are continually trained to be relevant. Differentiated competencies, access to information technology, and institutional resources were revealed by tourism education institutions as they moved to digitalized teaching and learning. Simulations were a useful teaching method for hospitality and tourism education that helped students develop higher-order cognitive skills.



Some of the hospitality popular ones are CRASE (the Cornell Restaurant Administration Simulation Exercise), CHASE (Cornell Hotel Administration Simulation Exercise), CHESS (Competitive Hospitality Education Simulation Series), HOTS (Hotel Operational Training Simulation), and FIST (Foodservice Instructional Simulation Technique). Similarly, in tourism education, Computer reservation systems or central reservation systems (CRS), Airfare construction, ticketing, and itinerary costing require software that provides students with the necessary experience to integrate the activities into the real-world economy (Chandra et al., 2022). Therefore, the ability of academics to meet the needs of new students and increasing government assistance is essential for the future of tourism education in the digital transformational age. Respondents indicated that,

*“Digital technologies have opened a new door of opportunities for both our students and educators in sustainable tourism education. For example, we can conduct online classes whereby we invite guest lecturers who are specialists in global sustainable tourism practices around the world to share their hands-on experience with international students. Students can engage and network with various experts in the study of sustainable tourism.”* (Respondent 1).

As a result, educational institutions and organisations in Namibia will undoubtedly adopt online learning and virtual classrooms, which will make education accessible to a wider audience. More specifically, the epistemic value is linked to interest, novelty and satisfaction, whereas the functional value is seen as the main motivator of choice depending on the characteristics of certain products. In addition, the epistemic value has a "stronger influence on intention if mediated by attitude" (Bolici et al., 2020). The use of digital technologies to transform conventional teaching and learning was referred to as "digital transformation" in the context of higher education.

*“Digital technology provides students with instant access to a vast amount of information related to sustainable Tourism. Enhances experiential learning, promotes collaboration and equips students with the skills necessary to tackle the challenges of sustainable tourism in the digital age. Digital technologies provide tools for measuring and reporting sustainable performance in Tourism.”* (Respondent 11).

If higher education institutions are to continue to be relevant for Africa's regeneration, it is increasingly clear that the traditional teaching approaches, modes of knowledge production and consumption and institutional conceits of exclusivity are no longer tenable in light of the new realities and pressures (Okanda & Zeleza, 2021). Additionally, the social value is linked to social stereotypes and the conditional value results from taking predetermined contingencies into account. The emotional value also reflects particular emotions. In general, the method through which consumers assess a product's worth also shapes their opinions of the good (or service).

### ***Leveraging digital transformation initiatives in Namibia tourism education***

The idea integrates digital technologies with business procedures to dramatically speed up the adoption of digital innovation. Whether or not they conduct a cost-benefit analysis, people may do a secondary search for evaluative judgements of trustworthiness, knowledge and approachability, that is, opinion leaders, who are more discerning and less susceptible to persuasion if the innovation seems to be promising and consequential to them (Dearing & Cox 2018). Beyond the COVID-19 pandemic, Namibia's sustainable tourism education is ready for significant advancements and changes in the digital age. Through the use of digital means, the country can integrate international cooperation and understanding across cultures into sustainable tourism education. Respondents indicated that,

*“Collaboration is provided between universities, whereby students can engage with international peers through online learning platforms and webinars. Students can share their*



*experiences about their destinations concerning sustainable tourism development.”* (Respondent 1).

According to Everett Rogers' meta-review of empirical studies, the first to adopt (innovators) typically do so out of curiosity about novelty and a sense of freedom from social norms. The next to adopt (early adopters, some of whom are opinion leaders) typically do so out of a measured assessment that an innovation's advantages outweigh its disadvantages. Like innovators, laggards are less prone to societal pressure and are more willing to take their time (Dearing & Cox 2018).

*“The festival and Events sector is moving towards gamification. Students studying sustainable tourism should understand how these technologies are influencing the perceptions of future travellers and how local communities benefit from these types of technologies to ensure sustainable tourism practices are implemented. Sustainable tourism measures need to be put in place.”* (Respondent 5).

This necessitates improving links with employers to improve experiential learning and work-based learning. In addition to creating a significant demand for digital skills for the new jobs of the twenty-first century, virtual learning also necessitates and opens up new avenues for engaging business, the economy and society (Zezeza & Okanda 2021).

### ***Advancing digital transformation in Namibia tourism education***

With the move to online teaching, research has shown that many institutions of tourism higher education lack adequate digital infrastructure, have connectivity issues, and have insufficient computing power. Many struggled with inadequate digital infrastructure, connectivity, and capacity, which made it challenging for them to move their administration, research, and education online. These difficulties were exacerbated by ongoing financial hardships that were made worse by drastic budget cuts due to a fall in student enrolments and decreased government financing. In the majority of Namibian institutions, fundraising has mostly been insignificant (Zezeza & Okanda, 2021). Nonetheless, Academics were compelled by COVID-19 to use new teaching technology despite the lack of defined implementation standards. One of the respondents mentioned that,

*“Field trips with digital Documentation, Data analysis and visualization, Social Media Campaigns, Gamification, Collaboration online projects, and Virtual Reality Experiences are becoming key tools for teaching.”* (Respondent 11).

The use of online teaching and learning effectively required extensive trial and error because tourism lecturers lacked the necessary expertise and experience. Due to their lack of prior knowledge in efficient online teaching and learning, university lecturers had to conduct a lot of experimentation. In the post-pandemic era, this scenario strongly points to the necessity of ongoing training for lecturers, which may pave the way for collaboration among tourism educational technology providers, online education companies, and higher education institutions (Fiore, 2022; Siemens, 2022). For example,

*“Indigenous people who are often part of the touristic experience at a destination should not be used in technology like gamification without proper consultations and, they need to economically benefit from any new technology involving them or their culture. Often, there is not much information shared with local people on the negative impact of some technology used to promote or provide a Virtual Reality to enhance tourist experience.”* (Respondent 5).

The country's strategy for digital transformation has been hampered by tourism education institutions' poor culture of change adaptation, financial costs, national legislation, unreliable internet and lack of capacity building. Instead, the socioeconomic situation as well as other monetary concerns, the availability of human resources, politics and culture, all have a significant impact on how quickly any invention is adopted (Minishi-Majanja & Kiplang'at,

2005). Differences in mobile phone and internet coverage compared to other countries exacerbate the issue. The education sector needs the right skills to fully accept and manage the technology associated with online learning during the pandemic and to meet its goal of getting the best results from new technology (Siemens, 2022). Universities will be expected to anchor their research and innovation in the technical infrastructure that supports and enhances the potential of the Fourth Industrial Revolution for Namibia in light of the disruptions and digital opportunities generated by COVID-19 (Zezeza & Okanda, 2021).

### **Implications for Sustainable Tourism Education**

The digital transformation of higher education is a reality that policymakers and educators in the tourism industry now generally embrace. Top-down viewpoints, autonomous designs from the online teaching context and excessive abstraction and detachment from teaching practice are all barriers to digital transformation (Wall, 2013). Organisational consideration is another aspect that may prevent digital transformation. The organisational aspects include employee rotation, employment terms, incentives and rewards and motivation. For the higher education enterprise, some universities have begun to make large investments and technology-based platform interventions. To develop online capabilities, tourism education should begin creating relationships with foreign institutions. The use of interactive online information in place of traditional classroom instruction is also believed to be a benefit of blended learning, especially when the curriculum is standardised (Fiore, 2022). According to Aljanazrah et al. (2022), online testing was found to be unfair and unreliable for gauging students' development. For instance, the online test was thought to be unjust and unreliable for gauging learning. This is because some students have a propensity for cheating, while others are not given enough time to complete online assignments.

### ***Opportunities for online learning***

By offering online interactive content, online learning offers a chance to replace traditional classroom time and reduce expenditures. New demands and realities detect that technology can help reduce social isolation by bridging the gap between the wealthy, the poor and people of other ethnicities. Inadequate or unreliable Internet, high data costs, lack of technical skills, and regular power outages prevented access to actual virtual tools. Technological self-efficacy can boost virtual leisure and recreation reality experience and temper its effect on well-being (Asimah et al., 2022). Additionally, there might be a chance to work together with stakeholders in the wireless ecosystem on their free service offers, such as access to emergency services or security upgrades. These programmes could assist in providing Namibians with the advantages of connectedness in all facets of their lives (U.S. Chamber of Commerce, 2022). Diverse pupils and learning styles should be supported in digital transformation design. Prioritising cooperation between governments, academic institutions and businesses could help maintain the advances made in previous years (Bates, 2018). The amenities ought to encourage individualised learning and support student success. By encouraging integrated working and interactivity across physical and virtual locations for educators and students, online learning may produce compelling learning. Digitalization has disrupted the traditional trade system, by creating a new complexity. Digitalizing the system can be done through social media such as Instagram, Facebook, Twitter, WhatsApp, Path, LinkedIn, and email (Matura et al., 2021) added that it was possible to carry out digitalization with the help of search engines like Yahoo and Google or other platforms such as blogs and websites (Kurniawati et al., 2022).

Online education should not be utilised to reinforce pre-existing intra-and inter-institutional historical disparities. Innovation and entrepreneurship, public service and participation, research and scholarship, and teaching and learning should all incorporate



digitalization. It should be noted that goals and principles are themselves established and internalised through imitation, so the logical causes of imitation are those that cause a person to choose (to imitate) an innovation because he considers it to be "the most useful or most well-founded" (i.e., the one that most closely aligns with his own goals or principles) (Djellal & Gallouj, 2014). In addition, Mhlanga et al. (2022) claimed that technology can help reduce social isolation by bridging the gap between the rich, the powerful and people of different racial backgrounds. To improve the digital proficiency of lecturers and students, online teaching and learning can ingrain technology-mediated modalities that include face-to-face and blended techniques. With the use of online learning, curriculum design and delivery may be changed to include students and take their learning preferences into account. Careers in tourism education are becoming more and more important and this technological advancement calls for the development of hybrid hard and soft skills.

### ***Diffusion of innovation***

Agenda setting is the first step in the innovation process, where one or more people in an organisation identify a significant issue and then look for an invention as a solution. According to Rogers (1995), the issue typically arises from a performance gap or the difference between how well an organisation is doing and its potential. According to Minishi-Majanja, and Kiplang'at (2005), the organization's members notice the gap and it serves as a powerful push for them to look for an innovation to address the stated issue. According to Rogers and Scott (1999), an innovation will be adopted more quickly, if more people believe it to have a relative advantage over other things. According to Rogers and Scott (1999), innovations that are easier to grasp are adopted more quickly than those that call for the adopter to acquire new knowledge and skills. It was discovered that because mobile phones do not take a lot of skill to use, respondents embraced them more quickly than Internet users (Dibra 2015). An innovation's observability, a feature that can be "seen" while being used or tested by others, can tell whether it has a comparative advantage and is compatible (Lewis 1997). ICT-related innovations necessitate a sizeable initial capital outlay for the hardware and software as well as for building human resource capability to properly manage and maintain the technology (Dibra 2015). Adopting ICT necessitates significant financial outlays, which could be regarded as incurring significant risks. The dangers involved included spending excessive amounts of money on ICT acquisition at the expense of creating the human resources needed to administer and maintain ICTs. Any ICT project's success depends on the adopters' dedication to diverse communication methods that serve distinct purposes at various stages of the innovation-decision process (Rogers 1995).

### ***Connectivism and digitalization***

Since the inception of e-learning, various frameworks such as Virtual-U, W (e) Learn, Online Human Touch (OHT), and Communities of Practice (CoP) were designed to enhance innovative ways of teaching and learning with ICT (Chandra, et al., 2022). However, the most important idea for online learning is the collaborative learning principle. Gamification has been made possible through connectivism. To make learning more engaging and competitive, gamification turns assignments and activities into games. Educators can incorporate gamification into the classroom by using one of the many learning-based apps and instructional technologies available (Chandra et al., 2022). As a result, an entertaining, game-like learning tool helps pupils learn faster. Students can earn points for sturdy progression through lessons and educators can monitor students' progress. As a result, it enables students to participate in critical engagement with the educator. However, academics are not trained to create online

instructional resources. It is the unpredictability of the future that requires students to internalize the value of sustainability (Rezapouraghdam et al., 2022).

Using current standards, the content should be transferred from a face-to-face to a digital format. However, some academics are unsure about how to digitize face-to-face content. So, it is clear that the tools are available, and digitization and expansion of online learning options and opportunities are available, but the missing element is the will and intent of academics to engage and upgrade themselves so that they are equipped to educate and inform students (Munjal & Sharma, 2023). Digitization has made possible the use of animated videos, which transform static, linear videos into interactive ones with branching, quizzes and clickable hotspots to enable viewers to actively connect with the material. Disruptive technologies in the form of artificial intelligence, virtual and augmented reality, robotics, sharing applications and cryptocurrency have further introduced complexities to the digital landscape of the hospitality and tourism industry (Adeyinka-Ojo, et al., 2020). In contrast to surface learning, which just involves memorizing, the use of simulations engages pupils in deep learning that enhances understanding. They also make the classroom atmosphere more interesting and enjoyable. Simulators transform passive experience into active experience.

## Conclusion

Given the complexity of the subject matter and the nature of the industry-specific skills needed, tourism education cannot be entirely digital. As the world becomes more connected, technology will play a significant role in deciding the path of tourism education in the future. Universities must promote relationships with the business sector, assess skills and workforce requirements, create human capital mass and use a growth agenda to advance digital transformation. To generate demand for digital skills and jobs for the twenty-first century, the use of virtual learning necessitates the involvement of society, the economic sector, and industry at large. As a result, educational institutions and organisations in Namibia will undoubtedly adopt online learning tools and virtual classrooms, thereby making education accessible to a wider audience. The future of sustainable tourism education in Namibia depends on the effective use of digital technology to create a more inclusive, immersive, data-driven, and globally connected learning experience. Therefore, lecturers need to broaden their scholarly interests and horizons to keep up with the current breakthroughs in the use and relevance of artificial intelligence in sustainable tourism education. The article concludes that digital technology, telecommunications firms, stakeholders and external organisations should establish meaningful collaborations. Consequently, technological improvements would give the next generation of tourism industry professionals the tools they need to use data to make decisions that strike a balance between economic growth, environmental conservation and cultural appreciation.

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