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Shaping open, distance and e-learning in post school education and training: A call for a revised agenda

Abstract

The impact of the COVID-19 pandemic has brought the attention of distance education issues to the fore in a way not seen before. All forms of educational provision and sectors were affected by the pandemic. The aim of this conceptual leading article is to highlight three pertinent issues that need to be taken into account in Open, Distance and e-Learning (ODeL) to ensure the relevance of the Post School Education and Training (PSET) sector in the Fourth Industrial Revolution (4IR) and beyond. Based on a review of the literature, the article highlights three pillars of successful use of technology to enhance quality in PSET, especially in the wake of the worldwide transition to remote teaching and learning. The revised agenda comprises the questioning of previously held beliefs about learning and teaching; the responsiveness of curricula and ensuring the quality of ODeL offerings. It argues that unless traditional beliefs about teaching and learning are questioned and curricula are streamlined to align with the demands of the knowledge society, the value of PSET may be trivialised in a context that is so rapidly changing. It also argues that sound quality assurance mechanisms should be put in place to ensure sufficient depth in student learning experiences, rigour in assessment processes and confidence in graduates by employers and society at large. Using the theory of Connectivism as a lens, the authors provide a framework with some recommendations for sound ODeL teaching and learning practices that are relevant for the demands of the 4IR and beyond. The framework focuses on five pillars, which are foregrounding a student-centred approach; embracing appropriate technologies to support teaching and learning; strengthening the capacity to support success; ensuring appropriate assessment processes and regular curriculum revision and renewal.

Keywords: *Open, Distance and e-Learning; post school education and training; remote teaching and learning; quality, connectivism, curriculum.*

1. Introduction

The advent of new Information and Communication Technologies (ICTs) associated with the Fourth Industrial Revolution (4IR) has the potential to influence teaching and learning in the Post School Education and Training (PSET) sector in a profound manner. In many countries, educators have capitalised on the affordances of ICTs to

digitise content, to provide more flexible learning opportunities and to improve the quality of student learning. While these trends were slowly taking place, the onset of COVID-19 forced institutions to shut down campuses and limit person-to-person physical contact for the greater part of 2020. Under these conditions, all PSET institutions had no option but to resort to emergency remote teaching and learning (ERTL). This transition was facilitated through ICTs. Thus, the resistance that has stalled the integration of ICTs in education for the past two decades has started thawing. In countries such as South Africa, the presence of technologies is now conspicuous in all PSET institutions, albeit to varying degrees. The transition echoes similar changes in other parts of the world (Jordan, 2020). In the South African context, PSET includes higher education and Technical and Vocational Education and Training (TVET) colleges (Department of Higher Education and Training [DHET], 2013).

Knowledge and societies advance with each industrial revolution. According to Jung (2020: 136), 4IR is used “to describe recent rapid changes in technology, industry and society in general”, thus making it an important aspect of many countries’ national agendas. The 4IR is “based on the confluence of multiple digital, physical, and biological technologies” (DHET, 2020: 8). The core aspect of 4IR for educational institutions is an educational outlook that should be guided by the dynamism of production, work and global values (Prensky, 2019). This outlook advocates a lifelong learning approach that comprises multiple sites and times for learning (Plunkett *et al.*, 2008). A form of learning is required that promotes skills of adaptation, innovativeness, creativity and lifelong learning. PSET, together with the public and private sectors, will need “to repurpose and reconfigure curricula considering lifelong learning and the need for a broader and more agile PSET system to respond to skills needs as they arise” (DHET, 2020: 8).

COVID-19 has severely disrupted current education provision, which provides an opportunity for reflection and recalibration in the PSET sector as part of building a more resilient education system (Kanwar & Daniel, 2020). The aim of this position article is to call for a revised agenda for ODeL in the PSET sector to be ready for the anticipated 4IR and beyond. Three pillars for the successful use of technology to enhance quality in the PSET sector are proposed: the questioning of previously held beliefs about learning and teaching; the responsiveness of curricula development to align with changing trends and ensuring the credibility and quality of education offerings. Using the theory of Connectivism, we interrogate beliefs underpinning traditional teaching and learning practices in PSET as well as approaches to curriculum development. The article argues that unless traditional beliefs about teaching and learning are questioned and the curriculum is streamlined enough to align with the demands of the knowledge society and of the workplace, the value of PSET may be trivialised in a context that is so rapidly changing. It also argues that sound quality assurance mechanisms, as highlighted in Section 3 of this article, should be put in place to ensure sufficient depth in student learning experiences, rigour in assessment processes and confidence in graduates by employers and society at large. In other words, the curricula and pedagogy of ODeL should be so designed that PSET protects what Teichler (2015) refers to as the horizontal diversification of higher education. This article is a conceptual article that draws on extant literature in the field, as well as the researchers’ experiences of working in ODeL in the PSET sector. The article provides a critical reflection of trends and opportunities for the sector.

2. Theoretical framework

Literature is replete with the factors required for the successful implementation of ICTs in teaching and learning, particularly in higher education (Salmon, 2004; Bates, 2015; Commonwealth of Learning, 2020). According to Shrivastava (2018), the unabating prevalence of the internet demands that everyone learn how to utilise technology effectively. Still in its embryonic stage, Connectivism is a learning theory propounded by Siemens (2004; 2005) and Downes (2012) due to the ubiquity of technology and its influence on teaching and learning. According to Siemens (2005), the major learning theories (Behaviourism, Cognitivism and Constructivism) have failed to pay attention to learning that occurs outside of people (i.e., learning that is stored and manipulated by technology). Duke, Harper and Johnston (2013: 7) define Connectivism as “actionable knowledge, where an understanding of where to find knowledge may be more important than answering how or what that knowledge encompasses”. Therefore, Siemens (2005: 7) asserts “Connectivism provides insight into learning skills and tasks that are needed for learners to flourish in a digital era”. Related to this, Huezo (2017) sees technology as altering what, how and where we learn. Some authors claim there is a link between the new theory and the older three major theories (Huezo, 2017), while others indicate that the theory is inadequate to address learning in an interactive networked space (Bell, 2011). Regarding the latter group, Clarà and Barberà (2014: 197), for instance, identify “three important psychological and epistemological problems with the theory, namely the lack of a solution to the learning paradox, the under-conceptualization of interaction and the inability to explain concept development”.

The argument of whether Connectivism is a theory of learning and its possible inadequacies in this regard goes beyond the scope of this article. Rather, given the pervasiveness of technology in the 21st century and the potential wide-ranging impact of the 4IR, our guiding question is: How should PSET respond to teaching and learning in order to prepare its stakeholders for the world they have to live and work in? According to Siemens (2004), Connectivism is relevant to all facets of life, stressing its implications for educational management and leadership and the design of learning environments. When new tools are used, this changes how people work, operate and learn. Bell (2011:100) emphasises that “those concerned with education, such as policymakers, researchers, managers, teachers, and learning technologists, want to understand learning in this evolving technological context and to think about how education might be affected as a result”.

One of the tenets of Connectivism is that it places learners at the centre of learning experiences (Hendricks, 2019). Our discussion in this paper regarding the pillars of a revised agenda for PSET will revolve around the principles of Connectivism (Siemens, 2004):

- Learning and knowledge rest in a diversity of opinions.
- Learning is a process of connecting specialised nodes or information sources.
- Learning may reside in non-human devices.
- The capacity to know more is more critical than what is currently known.
- Nurturing and maintaining connections is needed to facilitate continual learning.
- The ability to see connections among fields, ideas and concepts is a core skill.
- Currency (accurate, up-to-date knowledge) is the intent of all Connectivist learning activities.
- Decision-making in itself is a learning process.

3. A rising agenda for shaping odel in PSET

We have outlined the theory of Connectivism as a basis for questioning previously held beliefs about learning and teaching; the responsiveness of curricula to the current education landscape and the need for appropriate quality assurance mechanisms to ensure favourable student learning outcomes.

3.1 Questioning of traditional values and beliefs of teaching and learning in PSET

The COVID-19 pandemic resulted in disruption to all educational sectors (Bozkurt & Sharma, 2020; Kanwar & Daniel, 2020). Similar to the schooling sector, the PSET sector had to grapple with finding ways to continue teaching and learning while campuses were shut down during national lockdowns. While universities in South Africa have been encouraged to expand online and blended learning offerings (DHET, 2013), very few universities had substantial offerings in these areas before the COVID-19 pandemic. Pre-pandemic, the PSET sector focused mainly on in-person educational experiences that limited the numbers of people able to participate (DHET, 2020).

One of the objectives in the South African White Paper for Post-School Education and Training (DHET, 2013) was to expand access, improve quality and increase the diversity of educational provision. However, improved student access, success and throughput rates remain challenges to overcome. The PSET sector has to deal with low participation, high attrition and “the historical, geospatial, economic inequalities of the country and the world students live in” (Czerniewicz *et al.*, 2020: 949).

The use of technologies enabled the continuation of teaching and learning during COVID-19. In preparation for ERTL, PSET institutions were required to assess their existing practices and identify alternative and diverse ways of teaching and learning. Traditional contact institutions looked to distance education methods of provision. “Institutions that despised remote and distance education, and looked down on online learning suddenly embraced online, remote and distance learning as if they were long lost cousins, albeit from the poorer side of the family” (Czerniewicz *et al.*, 2020: 949). While most institutions swiftly pivoted to an online mode, some institutions initially decided to postpone teaching and learning on the assumption that only classroom teaching could enable quality learning experiences (Salmi, 2020).

As seen in the paragraph above, ODeL is often stigmatised as being lower quality than in-person learning (Hodges *et al.*, 2020). Yet research shows that online teaching and learning done well can generally be considered as effective as traditional classroom teaching and learning (Nguyen, 2015). More importantly, practitioners and researchers should move beyond comparing educational modalities, and rather focus on the design of courses and how students learn in different settings (Nguyen, 2015). While ERTL cannot be considered the same as online learning (Hodges *et al.*, 2020), the pivot to ERTL required educational institutions to re-evaluate some of their assumptions about teaching and learning, and critically interrogate long-established teaching practices. The effect of the pandemic has pushed educators to reconsider questions such as: How do teachers teach? How do students learn? What does a blurring of boundaries between the physical and digital mean for student learning? (Motala & Menon, 2020).

ODeL, including distance education and online learning, are well-established forms of educational provision (Holmberg, 1995; Wong, Zeng & Ho, 2016). During COVID-19, these

modes of provision were utilised where contact classes could not easily respond to disruptions that resulted in their closure (Commonwealth of Learning, 2020). For contact-mode institutions, where synchronous activities (such as lectures and tutorials) are the dominant form of teaching and learning, asynchronous approaches needed to be adopted to better respond to the learning needs and connectivity challenges of students (Czerniewicz *et al.*, 2020). This challenged a common belief for many lecturers and students that learning only happens in the classroom. The role of traditional lectures and the need for lectures to ensure student learning was questioned. During the pandemic, many academics raised concerns about the lack of human interaction in online learning (Salmi, 2020), yet perhaps not realising that interactivity is often not a feature of large-class lectures (Wolhuter & Jacobs, 2021).

During and before ERTL, many PSET students were disadvantaged by not having access to digital devices, were unable to afford data costs and lived in environments un conducive to studying (DHET, 2020; Mhlanga & Moloj, 2020; Motala & Menon, 2020). While the move to ERTL was associated with many challenges for staff and students (Salmi, 2020), it did provide an opportunity to consider alternative forms of teaching and learning. A greater focus was put onto active and interactive learning, such as problem-based learning, self-directed learning, peer learning and the flipped classroom (Salmi, 2020). To address student connectivity challenges, data-light practices had to be adopted instead of data-heavy virtual classes (Czerniewicz *et al.*, 2020). It also highlighted the need to align assessment approaches with curricula and pedagogical practices (Biggs, 1999; Salmi, 2020). In addition to teaching practices, assessment practices had to be interrogated. Previously held beliefs have been challenged, such as a skewness toward summative assessment, particularly around recall (Wolhuter & Jacobs, 2021) or that summative assessments should be in the form of invigilated examinations (Salmi, 2020). Institutions were forced to adopt alternative assessment practices, such as more continuous assessments, a greater focus on formative assessments or the use of alternative summative assessments such as portfolios or open-book exams (Salmi, 2020). However, Pokhrel and Chhetri (2021: 138) noted that authentic assessments and timely feedback were challenging for educators and education systems during ERTL.

The move to ERTL highlighted certain poor pre-pandemic pedagogical practices, such as a lack of well-designed learning interactions and suboptimal assessment practices (Czerniewicz *et al.*, 2020). Although the pandemic has forced PSET institutions to adopt ODeL methods, unfortunately, “the content and design is pretty much the same” as before (Ashour, 2021: 9). For teaching and learning to be effective, institutions need to be conscious of not just the “what” to be taught, but also its “how” (Jung, 2020). This has resulted in the need for educational institutions to focus more on the contextual realities of their students, the resources they have available and opportunities for learning (Czerniewicz *et al.*, 2020). Institutions also needed to reconsider their support systems for students (Salmi, 2020). Additionally, Okebiorun (2020: 261) decries “the rigid structure of time periods, methods and grade-level progression” still being used by PSET systems that do not prepare students with the right skills for the future of work. Katola (2014) also laments the reliance on rote-learning, which is not geared towards professional competencies, but just aims at passing examinations. Ashour (2021: 9) asserts that “universities need to customise curricula and course delivery for online delivery. More creative assessment tools should also be created”.

There is also forecasted impact on the PSET sector due to the 4IR, artificial intelligence and increased digitisation (Motala & Menon, 2020). The effect of the pandemic has sped up

the digital transformation of education (Mhlanga & Moloji, 2020). Looking forward, technologies can be seen to help address many of the challenges facing the PSET sector, such as increasing student enrolment numbers without an associated increase in staff and infrastructure, and supporting the needs of students from diverse backgrounds (Nguyen, 2015; Universities South Africa, 2020). Students leaving the PSET sector and entering the workforce are likely to encounter future shifts and challenges. Therefore, teaching and learning strategies are required that “create well-educated, socially conscious citizens equipped with the knowledge, skills and attributes for a rapidly changing era” (Motala & Menon, 2020: 82).

3.2 The responsiveness of the curriculum

Although the term “curriculum” has different meanings, Mulenga (2020: 21) highlights that it “embodies the intentions of education; it is the programme of education. A curriculum therefore carries the beliefs, values, attitudes, skills, knowledge and all that education is about”. Nonetheless, curricula should also be flexible, to match the needs of a society. In its theory and approaches, curriculum entails curriculum as product, process, context and praxis (Mgqwashu, 2016), which Khan and Law (2015) advise should be integrated. Yet often curricula are not responsive. A DHET (2020: 9) report regarding the PSET sector notes that “[c]urrent curricula, programmes, and courses are misaligned with labour market demands, while mechanisms to review and update programmes and curricula are highly bureaucratic and operate in long, slow cycles”. The challenge of curriculum and societal needs misalignment gained greater international focus around 2015 “amid growing global debate on globalisation and migration, climate change, and technological advancements such as artificial intelligence” (OECD, 2020: 2). According to the series of thematic reports from the OECD Education 2030 project, “countries began to revisit questions on the kinds of competencies students would need for the future and how these could best be fostered through curriculum” (OECD, 2020: 2).

According to Mulenga (2020: 22), by satisfying the needs of a changing society, “the conceptualisation of a curriculum will continue to slowly accommodate itself with the present educational needs so as to suit the arising needs”. The world is witnessing social and economic changes “driven by advances in knowledge and rapidly advancing technologies... Knowledge is increasingly becoming a key element of economic production in any society, with innovation, research, and science representing important components of knowledge” (Ashour, 2021: 3). Mulenga (2020: 26) asserts “there is evidence of an increased need for individuals to develop capabilities to flexibly adapt to rapidly changing globalised social and economic models”, indicating an emphasis on metacognitive knowledge.

The PSET sector is not exempted from this change, especially with the COVID-19 pandemic and the 4IR accelerating the need for innovation. There is a huge need for a “growth mindset” in the sector, with a call for overhauling the outdated curricula inherited from previous colonial masters, which is still being used for teaching and learning on the African continent, coupled with archaic methods and approaches (Okebiorun, 2020: 260). The PSET curriculum needs to address 21st century skills in their entirety. In addition to personal development in the cognitive, interpersonal and intrapersonal realms, 21st century skills include critical thinking, communication, collaboration, creativity, innovation and entrepreneurship (Ashour, 2021). Additional competencies include “those related to local, global, and digital citizenship that enhance individuals’ ability to respond constructively in challenging situations. The cognitive skills of the population, not just school completion, are strongly related to the country’s

economic development” (Ashour, 2021: 4). These imply the PSET sector needs to change to match societal needs.

There are concerns regarding the preparedness of graduates for the demands of the world of work, indicating a gap between qualifications and labour market demands (DHET, 2020; OECD, 2020). To support this, Terblanche and Bitzer (2018) observed that the TVET college curriculum in South Africa needs restructuring in order for it to support more innovative responses to industry requirements. Several scholars (Ashour, 2021; Kraak & Paterson, 2016) have recommended the elimination of redundant courses, a focus on lifelong learning, the promotion of research and innovation and industry involvement in curriculum development. To ensure relevance, Khoza and Mpungose (2020) assert that it is time for higher education to start embracing digitalised curricula. They define a digitalised curriculum “as a plan for teaching, learning, and research, driven by specific hardware, software, and theories/pedagogies” (2020: 1). A digitalised curriculum enables institutions to move away from a performance curriculum (that answers the “what” question) to a competency-based curriculum that answers the “how” question. This is because the key principles of the “competence-based curriculum are learning activities, outcomes, facilitation, learning community, and distance learning” (Khoza & Mpungose, 2020: 5). Yet many academics remain resistant, showing that “they have not been convinced of the importance of a digitalised curriculum” (2020: 2) although this can be overcome through encouraging creativity, reflection and inspiration. Breaking the curriculum down into more manageable chunks, which can be recognised through micro-credentials, is also a way in which increasing numbers of institutions around the world are seeking to be more responsive (Brown *et al.*, 2021).

Curricula should also be thought of in the ways that they are mediated. Ashour (2021: 9) states that “universities need to customise curricula and course delivery for online delivery. More creative assessment tools should also be created”. Lastly, Okebiurun (2020: 269) calls on the PSET sector to periodically review its curricula, focus on the professional learning of its workforce and introduce “compulsory general courses on ICTs for all students in various faculties and departments”.

3.3 The need for adaptable quality assurance mechanisms

This section focuses on how quality should be enhanced in technology-supported teaching and learning. The section draws mainly on the latest developments that have been ushered in by the advent of COVID-19 challenges, which forced institutions to resort to ERTL. It argues that under these conditions, quality assurance in higher education should be used as an instrument that ensures sufficient depth in student learning experiences.

Quality assurance “is also accepted as a daily reality at individual institutions. The problem is that there’s no evidence to show any widespread qualitative change in classroom practices or students’ learning experiences” (Tadesse, 2016: 2). Yet, the investment in quality assurance in universities is aimed at enriching students’ learning experiences to ensure maximum learning gains. Institutional quality assurance mechanisms need to ensure that students engage with content in ways that promote the development of problem solving and critical thinking skills (Mohee, 2019), innovativeness, and ability to apply what is learnt to solve real life problems. Quality assurance is meant to demonstrate to internal and external stakeholders that the university practices are professional and credible, such as the quality of graduates that are produced.

“Quality” and “quality assurance” are elusive terms, especially when used within education contexts. In a university context, some consensus has to be reached in terms of what constitutes quality in order to work towards a common purpose and build a desired culture. As Barnett (1994: 171) argues, universities carry particular social and cultural identities. These identities influence not only public perceptions of institutions, but also of the graduates that come out of the institutions. While quality assurance practices were common in higher education institutions before COVID-19, with an emphasis on colleagues supporting one another in a shared commitment to continuous improvement (Mohee, 2019), the sudden closure of campuses at the beginning of 2020 forced institutions to resort to ERTL, which meant that the quality assurance processes that were in place, could not serve such a rapid transition. The COVID-19 pandemic fast-tracked the use of educational technology to support teaching and learning. Whilst this has positive implications in terms of greater flexibility in learning, it has posed potential threats to the integrity of learning as many quality assurance measures were not setup for this form of educational mediation. Owing to the rapid transition to ERTL, many institutions did not have time to put in place mechanisms to ensure that content was appropriately curated for online mediation, sufficient support for remote learning was planned, effective communication between students and the university would happen and credible assessment processes would take place. Quality assurance, as used in this article, is a proactive process that entails putting in place mechanisms to ensure that desired educational goals will be achieved. A lack of such robust quality assurance measures in ERTL therefore poses serious threats to the credibility of higher education.

While many universities had a Learning Management System (LMS) in place before the pandemic, the move to ERTL emphasised the importance of this technology for continued teaching and learning. An LMS is a software application for the administration, documentation, tracking, delivering and reporting of educational courses (Gupta, 2019). It provides a lecturer with a way to create and deliver content, monitor student participation and access student performance. At the same time, an LMS provides a good opportunity for quality assurance of processes by peers at a distance. It makes peer reviewing of processes easier, faster and cheaper than in conventional in-person environments, especially in areas of programme design, materials development and student assessment. Quality assurance in ODeL needs to address the following mechanisms: programme design, learner support, materials development, student assessment, supporting infrastructure and facilities and staff complement and staffing (number and competence) (Mohee, 2019). In addition to the quality assurance mechanisms described by Mohee (2019), in the South African context, the National Association of Distance Education and Open Learning in South Africa (NADEOSA) quality criteria for distance education (NADEOSA, 2021) provide quality assurance guidelines for ODeL settings.

A critical quality aspect of ODeL is how the learning pathway is designed for learners to navigate their way through the learning process with ease and achieve the planned learning outcomes. The careful design of high-quality online learning is not about the provision of textual materials or video clips for students to go through (OER Africa, 2021). However, in practice, this was what was often put in place during ERTL. Therefore, essential guidelines on course layout, learning and teaching strategies, learning activities and assessment, and on technological aspects of the virtual environment are needed. Designing an online learning pathway requires the designer to think seriously about what the student should achieve and how best that can be achieved in a virtual environment. The following key questions need

to be asked when designing learning experiences: Where does the learning start? What are students going to learn? How will they learn? How will I know they have learnt this? How will I ensure good quality learning? (Saide, 2012). It is important to note that quality issues are thought about throughout the design process, and not as an afterthought.

High-quality learning design is underpinned by sound learning theory. In this regard, Connectivism and other theories of learning can support learning design processes. This was a major gap at the start of ERTL, where learning resources were often digitised without much consideration for how they would be used. In using technology in teaching and learning, it is the chosen pedagogy and not the technology that comes first (Cowling & Birt, 2018). A good learning designer brings in technology to support the preferred pedagogical approach. For example, social interaction and learning collaboration is possible in ODeL. Utilising technological tools to promote cognitive, social and teacher presence can address a sense of isolation in ODeL and enhance the quality of learning (Garrison, Anderson & Archer, 2001).

4. Discussion

Now that we have considered the need to question previously held beliefs about learning and teaching; the responsiveness of curricula to the current education landscape and the need for good quality assurance mechanisms, we will interrogate some of the implications of these pillars using the lens of Connectivism. We will also provide some recommendations for relevant ODeL practices in the PSET sector.

4.1 Foregrounding a student-centred approach

The basic tenet of Connectivism is that “knowledge is distributed across a network of connections, and therefore learning consists of the ability to construct and traverse those networks” (Downes, 2012: 85). The networks are made up of nodes (learning communities), which could refer to any source of information, including journals, databases and websites (Goldie, 2016). Downes (2012) asserts the following characteristics of successful networks, which the authors deem necessary for any learning that is student-centred:

- Diversity – entities in a network have distinct and unique states.
- Autonomy – entities within networks govern themselves.
- Openness – membership of a network is fluid.
- Interactivity – knowledge is derived through interactions.

Commenting on the above, Goldie (2016) asserts that regardless of distance, students have the opportunity to learn from one another, knowledgeable others and various systems due to the affordances of technology. Therefore, the theory places learners at the centre of the learning experience (Hendricks, 2019). In Connectivism, learning starts “when knowledge is actuated by learners connecting to and participating in a learning community” (Goldie, 2016: 1064). Pozzi (2011) describes this as the “crucial importance of meaning’s constructing and making connections among specialized communities; and the enhancement of “collaborative and cooperative aspects of learning” (Section 3, para. 1). The questioning of traditional values and beliefs of teaching and learning means shifting attention from lecturer-centred approaches to student-centred ones in which the focus is now on what students need to learn, why they need to learn it, and how they are going to do so (Jon M. Huntsman School of Business, 2021). An approach that is student-centred, rather than lecturer-centred, must

enable students to develop self-directed learning (Commonwealth of Learning, 2020). In this way, the lecturer enables student learning through a process of connecting specialised nodes or information sources (Siemens, 2004).

Muganga and Ssenkusu (2019: 16) claim there has been a gradual shift from teacher-centred approaches to student-centred approaches, yet “western countries have begun to adopt these methods at all levels of education, while much of the developing world continues to rely mainly upon teacher-centred learning”. Keiler (2018) argues that the move towards student-centredness faces challenges such as teachers’ concerns about classroom management, the pace of curriculum, how students would fare in external examinations, and the reluctance of teachers to transition from traditional methods. However, utilising the principles of Connectivism can help educators to transition from lecturer-centredness to student-centredness.

4.2 Embracing appropriate technologies to support teaching and learning

The prevalence of technology in teaching and learning confirms that learning and knowledge rest in a diversity of opinions and may reside in non-human appliances or technology (Siemens, 2004). Technology should be embraced as integral to any plan for reshaping PSET in the future to ensure students have access to high-quality educational opportunities that address the growing demand for “digital skills” in the labour market (DHET, 2020). In order to continue using ODeL methods, PSET institutions need to customise their curricula and course delivery in alignment to online education models and theories (Ashour, 2021: 15). A multimodal approach considers formats that are conducive for learning within particular contexts, which may include printed and digital resources that enable flexible and equitable forms of teaching and assessment (Czerniewicz *et al.*, 2020). Appropriate tools and technologies are required that support dialogue and communication, as well as interactions between students and teachers, students and other students, and students and materials (Commonwealth of Learning, 2020).

Moving towards greater technology-mediated education enables opportunities to transform the learning experience for students to succeed in an increasingly digital world. Connectivism suggests that the process of learning focuses on connecting specialised information sets (Siemens, 2005). It is therefore important to direct students to a variety of sources of information and help them make connections between the different pieces of information they get from these different sources. Students need to be equipped to critically evaluate information from diverse sources. Thus, presenting sizable amounts or chunks of information and structuring reflection activities around that information is essential in designing for online learning (Shank, 2018).

4.3 Strengthening the capacity to support success

A major requirement for succeeding in technology-mediated learning is equipping staff and students with the skills required for digital fluency (Czerniewicz *et al.*, 2020; Universities South Africa, 2020). Furthermore, general capacity-building opportunities for academics around blended and online learning, teaching and assessment approaches are required. “Pedagogy and course design are the most important challenges in adopting innovative uses of technology in distance education” (Ashour, 2021: 9), necessitating the further training of faculty members. Digital inequalities and digital divides remain a concern in South Africa (Stats

SA, 2019) and in many other countries, which is an impediment to successfully preparing for the 4IR. Globally, many young people (25 years and below) do not yet have internet access at home (UNICEF, 2020). Therefore, teaching and learning approaches that are suitable for local contexts and focus on “low-bandwidth” technologies will ensure wide student participation beyond the pandemic. Government interventions and public-private partnerships must ensure that affordable devices and connectivity are equitably available to PSET students going forward (DHET, 2020). Educational providers can work in partnership with service providers to offer zero-based access for education courses, providing data bundles as part of the course package or having physically-distanced contact sessions in spaces offering free Wi-Fi hotspots (UNICEF, 2020).

Another area to support student success is to provide appropriate academic, technological and emotional support to students (Commonwealth of Learning, 2020). These support mechanisms are an integral part of the design process and constitute a key quality component in online learning. Students need to know where to access support as and when they need it. Online support should also aim to give students autonomy and create awareness of their responsibility to shape how learning happens. The role of the teacher is to guide and support learning. Thus, in designing learning, one should be clear on how students will be supported.

4.4 Ensuring appropriate assessment processes

ERTL has posed tremendous challenges to student assessment processes. In fact, the experience has challenged traditional forms of assessment in universities. In many instances, either assessment has been watered down or its credibility has been severely undermined. Many people, including students, have expressed concern about virtual assessment processes (Guangul *et al.*, 2020). There is a need to rethink assessment so that more rigorous and authentic forms of assessment are used in universities (Villarroel *et al.*, 2020). Whilst this concern has been linked to ERTL, it is equally relevant for traditional teaching and learning settings. The integrity of assessment systems and processes is a key aspect affecting the academic standing of an institution. Bearman *et al.* (2020) suggest three questions that should be considered in designing an online assessment:

- Is this assessment particularly critical?
- Does the assessment focus on knowledge recall or application?
- How will you communicate changes (for example new content, revised assessment deadlines) with students and help them prepare?

The first question above suggests that if the assessment that was originally administered under contact conditions is not critical, then alternative forms that do not require online invigilation should be administered. These alternatives could be coursework-related assessment tasks that require students to demonstrate mastery of key course concepts or skills. As Bearman *et al.* (2020) rightly point out, knowledge recall assessments easily lend themselves to cheating. Open-book examinations, which test higher-level skills, are a better option. The last question reminds institutions of the need to make students aware of how they will be assessed timely enough for them to prepare. Enabling students to practise before they do an actual assessment will go a long way in preparing students adequately for the new format assessment. It is important to make the assessment questions authentic and to give students rubrics so that they know what the expectations are (Bearman *et al.*, 2020; Villarroel *et al.*, 2020).

4.5 Regular curriculum revision and renewal

Regarding the responsiveness of the curriculum, Mulenga (2020) asserts that a clear measure of the quality of a curriculum for PSET is how the process of curriculum development keeps on accommodating itself with the fluidity of societal changes. There is an increasing need to prepare people to deal with accelerating social and economic change and for curricula that is responsive to the pace of technological change (DHET, 2020). In order to prepare students, institutions will have to consider “a paradigm shift in attitude towards curricula, teaching pedagogies, and how to provide students with the highly flexible, mobile mindset that they will need in the 21st century workplace” (Motala & Menon, 2020: 93). In relation to students acquiring 21st century skills, “quality assurance for higher education should focus on competencies acquired by students on the different programmes rather than the document descriptions of degrees and diplomas in curriculum documents” (Mulenga, 2020: 23). Makumane and Khoza (2020: 95) advocate for curricula to “encompass societal needs (social reasoning), facts as representative of a specific discipline (professional reasoning) and the unique strategies adopted by the educator to attain desired goals (personal reasoning)” without neglecting one for the other.

Lastly, none of the above areas discussed can take place without high-quality educational management and leadership. Mulenga (2020) rightly laments poor management due to lack of focus on institutional visions and missions, but rather serving political agendas. According to Terblanche and Bitzer (2018: 108), “educational leaders and managers are needed who keep abreast of emerging trends”. Seasoned leaders are needed to manage the PSET sector: those who see decision-making in itself as a learning process and who are constantly dissatisfied with the status quo, will know that knowing “more is more critical than what is currently known” (Siemens, 2004).

5. Conclusion

The current COVID-19 pandemic has brought to the fore the teaching and learning challenges with which the PSET sector has been struggling. However, despite the additional challenges caused by the COVID-19 pandemic, the experiences in 2020 and 2021 could be an opportunity to reimagine and reshape a different future for ODeL in the PSET sector. Caution must be taken not to simply revert to suboptimal pre-pandemic teaching and learning practices after the pandemic is over. As discussed in the annual conference of the National Association of Distance Education and Open Learning in South Africa (NADEOSA) held 11–13 May 2021, that led to the conceptualisation of this special issue, the PSET sector must reflect on current practices and perhaps emerge with better practices that are aligned with 21st century skills needs, to better contribute to the socio-economic development of the country and the continent. The authors believe that a focus on the following areas discussed in this article, will help establish improved learning and teaching practices to address the needs of the PSET sector in future: a) foregrounding a student-centred approach to teaching and learning, b) embracing appropriate technologies for learning and teaching, c) strengthening the capacity to support staff and student success, d) ensuring appropriate assessment practices and e) regular curriculum revision and renewal. They are also areas for further research. We trust that the call for a revised agenda for ODeL in the PSET sector will help the sector move forward to meet the challenges that lie ahead. Additionally, aside from this lead article, authors in this special issue have lent their voice to this same sentiment through their thought-provoking articles.

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