Chapter 5

Implementation or Enactment Principles Underpinning the Digitalised Curriculum During the COVID-19 Era in one Lesotho Higher Education Institution

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Abstract

The education sector, as with other developmental sectors, was adversely affected by the unprecedented emergence of the Coronavirus disease 2019 (COVID-19), famously known as the COVID-19 pandemic. This novelty introduced a hasty paradigm shift in higher education institutions (HEIs), with most having to move from traditional to digitalised curriculum (DC), which is a plan of or for teaching and learning using educational technologies. DC was adopted in order to continue the process of knowledge-building. It is against this background that in this chapter, I sought to explore implementation or enactment principles underpinning DC during the COVID-19 era at one university in Lesotho, as a hasty shift perpetuated by the uncertainty suggested an inclination to performance-based DC, which favours lecturers over students, or competence-based DC, which favours students over lecturers. This chapter draws from the connectivism theory and the natural identity framework to undergird and provide solutions for effectively using DC. In this chapter, I argue that DC should display balanced principles

of both the performance-based curriculum (implementation) and competence-based curriculum (enactment), without inclination to either, lest there be an imbalance of knowledge-building. Knowledge-building is promoted by an equilibrated combination of factual and social knowledge-building to produce pragmatic knowledge-building. The current status quo, through analysis of two conveniently sampled published studies in Lesotho on the use of DC during the pandemic, is that lecturers, with most being digital refugees who learned to use digital technologies through gunpoint measures by their HEIs due to the uncertainty, prioritised prescribed factual or structured content over future or unstructured content. The implication of this latter assertion is that students are denied an opportunity to actively interact with knowledge to address their specific needs in order to mould their unique identities. In this chapter, thus, I argue for the adoption of a pragmatic DC, which encourages lecturers to reflect on their experiences with educational technologies and which enables them to address the tension between performance- and competence-based digitalised curricula by establishing a balance amongst factual, social, and habitual perceptions to promote self-actualised individuals through equilibrated knowledge-building. I argue that natural identity, a framework developed by an African curriculum theorist, be adopted by lecturers to help them re-reflect and re-critique their actions in their use of educational technologies in view of handling uncertainties or novelties such as the COVID-19 pandemic.

Keywords: *connectivism, educational technologies, pragmatic, HEI, knowledge-building*

Introduction

The education sector, as with other sectors, was adversely affected by the unprecedented emergence of the COVID-19 pandemic (Adedoyin & Soykan, 2020; Butler-Adam (2018); Sintema, 2020). This pandemic introduced a hasty paradigm shift, especially in higher education institutions (HEIs), whereby teaching and learning modes had to be adjusted to

accommodate the recommendations put forth by the World Health Organization (WHO) in view of curbing the rampant spread of the contagious and deadly virus (Makumane, 2021a; Sokhulu, 2020). This paradigm shift included HEIs, most of which were operating on the face-to-face mode of teaching and learning, having to opt for online teaching and learning in order to continue the process of knowledge-building (Khoza, 2020). This was a result of national lockdowns that were implemented in different stages in order to limit physical contact and to encourage physical distancing as the virus is believed to spread through human droplets generated by coughing, sneezing or speaking (Stadnytskyi *et al.*, 2020).

These lockdowns had an adverse impact on the teaching and learning processes, with a hasty shift from face-to-face to online teaching mode (Adedoyin & Soykan, 2020; Mashinini, 2020). According to Adedoyin and Soykan (2020), this shift to online platforms requires effective and efficient instructors who possess a comprehensive understanding of the demands embedded within the use of educational technologies. Following, Khoza (2021a) asserts that this comprehensive understanding is reliant on lecturers' perceptions, which are shaped by professional knowledge, social skills, or personal values through exposure to specific digital environments that inform new actions. Khoza (2021a) further avers that perceptions are categorised into factual perceptions, which are framed by linear, structured, or prescribed content and schooled (factual) knowledge; social perceptions, shaped by nonlinear or unstructured information informed by societal opinions and horizontal knowledge; and pragmatic perceptions, which are framed by unique experiences and beliefs that inform actions and form personal or habitual perceptions. Perceptions in this chapter are categorised into these three propositions, which are seen to influence implementation (factual perceptions) or enactment (social) depending on an individual's unique experiences with educational technologies (Ed-Techs) that mould habitual perceptions towards DC.

The two terms, 'implementation' and 'enactment', which are usually used interchangeably, are distinctly different, especially with regard to the expectations they deploy on prescribed curriculum. The gap that this chapter aims to fill is through differentiating between the two concepts to determine if DC is implemented or enacted, as a hasty shift perpetuated by the uncertainty or novelty suggested an inclination to either performance-based DC (which favours lecturers over students) or competence-based DC (which favours students over lecturers). In this chapter, I argue for the adoption of a pragmatic DC by lecturers, which encourages them (lecturers) to reflect on their experiences with educational technologies in order to mould their unique perceptions with regard to DC. Pragmatic DC is seen to address the tension between performance- and competence-based digitalised curricula in order to effectively develop knowledge, skills, values, and attitudes ideally driven by education (Khoza, 2021b; Makumane, 2021a). However, Fomunyam and Khoza (2021) purport that curriculum, being a pre-planned document, gives little room to the changing state of knowledge. Notably, the COVID-19 uncertainty changed the landscape and demanded a hasty adoption of DC, thereby forcing change in the knowledge-building process, demanding a change in the state of knowledge. This resulted in the forceful use of Ed-Tech, which required a paradigm shift as lecturers and students had to use platforms that were somewhat peculiar to them in the teaching and learning process. This latter affirmation applies in one HEI in Lesotho, where the gunpoint use of Ed-Tech seemingly destabilised digital immigrants, causing technostress and anxiety as they were used to the traditional face-to-face mode of teaching and learning (Khoza, 2020; Makumane, 2021a). This chapter, thus, aims at exploring how the uncertainty informed a change in the state of knowledge, either through implementation and/or enactment principles.

Conceptualising Curriculum and Digitalised Curriculum (DC)

The word curriculum is derived from the Latin word, *currere*, which means to run (Le Grange, 2017; Le Grange & Reddy, 2017; Pinar, 2012). The notion of *currere* in curriculum studies was introduced by Pinar in the 1970s (Le Grange, 2017). This notion, according to Pinar (2012), favours student experience as one of the important aspects in education. In other words, the concept of *currere* aims at understanding the impact that education has on students' understandings of their lives and that of society (Le Grange, 2017; Pinar, 2012). Pinar proclaims that *currere "reconceptualises curriculum from course objectives to complicated conversation"* (2012, p. 47). This suggests that Pinar sees curriculum as a complex conversation between lecturers and students, with the lecturer having a task to afford students meaningful learning experiences, thus summoning social perceptions. Le Grange (2017) is in accordance with Pinar's affirmation (Makumane, 2023) and adds that for lecturers, curriculum could denote a group of courses taught to students, as well as the teaching and learning activities proposed. The activities proposed should correspondingly be aligned to the prescribed objectives.

To explicate this further, curriculum as a concept is defined as *"what is planned and prescribed to be taught to students or what is intended"* (factual perceptions) (Hoadley & Jansen, 2013, p. 29). Kelly (2009) and Sowell and Stollenwerk (2000) support this claim and purport that a curriculum outlines *what* should be taught and instructed to students and the objectives that are to be attained. Following, Hewitt (2006) avers that curriculum is the knowledge that is to be acquired by students through their interaction with content. This denotes that a document is prescribed by HEI, to be taught and learned in the classroom. Lecturers then use different perceptions to ensure that what is prescribed is effectively attained. Additionally, some studies consider curriculum as a series of planned learning or of educational experiences envisaged for students (Berkvens *et al.*, 2014; Braslavsky, 2002; Glatthorn, 2005; Pinar, 2004; Van den Akker *et al.*, 2009). Berkvens *et al.*

(2014) and Van den Akker *et al.* (2009), from one perspective, view curriculum as a plan for teaching or learning that outlines desired goals.

Hoadley and Jansen (2013) and Pinar (2012) identify this as 'curriculum-as-plan'. This term was earlier coined by Aoki (1999) to refer to a prescribed curriculum that is expected to be rigidly followed by lecturers. In other words, the intended curriculum presents goals that are to be attained as well as content, teaching or learning methods, and materials to be used, as prescribed by the curriculum developers. However, Fomunyam and Khoza (2021) assert that curriculum as a plan is liable to be interpreted differently by lecturers, and thus its implementation or enactment will vary. This latter assertion suggests that the use of a curriculum is influenced, to a greater extent, by lecturers' perceptions (factual, social, and habitual). In principle, curriculum-as-plan seemingly creates tension for lecturers as they are tasked with ensuring that they adhere to the requirements of the prescribed curriculum (implementation-factual), whilst also having to promote knowledge-building that addresses the needs and experiences of their students (enactment-social) (Fomunyam & Khoza, 2021; Le Grange, 2017). Moreover, Le Grange (2017) notes that lecturers are seemingly overwhelmed by the tension presented by this conundrum. This denotes that habitual perceptions are essential in ensuring that a balance is established between addressing the needs of the students and those of the discipline through the application of schooled knowledge (Makumane, 2018; 2021a). Anderson-Levitt (2008) posits that there is no guarantee that what has been prescribed in the intended curriculum is how it is actually implemented or enacted in the actual classroom. Therefore, this gives rise to the enacted curriculum and the attained curriculum, which both outline a different angle from the intended curriculum.

From this viewpoint, Pinar (2004) sees curriculum as a plan **of** teaching or learning that encompasses students' real life experiences. Also known as curriculum-in-practice, this is where lecturers use the curriculum as per their interpretation or perceptions. Curriculum-in-practice therefore permits

lecturers to apply habitual perceptions as well as social perceptions. This is because lecturers deduce their own interpretation of the curriculum through their personal understanding(s), which is influenced by their habitual background and their unique interpretation of the current context. In addition, the lecturer is influenced by society, in this instance the students, in deciding how to teach, depending on the actual environment and needs of the students. Curriculum in this chapter can thus be defined as a plan **of** and **for** learning that outlines what should be learned (prescribed), how it should be taught (intended) and the outcome(s) that should be achieved (assessed). In this regard, a curriculum should afford both the lecturer and the student a stimulating experience by promoting free and independent thought along with social and individual empowerment.

The above definition is extended to digitalised curriculum, which, according to Khoza and Mpungose (2020), may have principles of both the performance-based curriculum (implementation) or those of the competence-based curriculum (enactment). This suggests that lecturers using DC are liable to be inclined more to either type of curriculum, while still adopting the principles of the other. Digitalised curriculum in this chapter is thus defined as a plan for or of teaching, learning, and research that relies on Ed-Tech resources (Khoza & Mpungose, 2020). This latter statement denotes that DC addresses the notion of 'what' (plan for) and 'how' (plan of) in education. Furthermore, the adoption of Ed-Tech resources indicates that DC introduces the use of the Fourth Industrial Revolution (4IR) technologies and resources that were demanded by the uncertainty that was experienced by the emergence of COVID-19 in order to ensure continuation of the teaching and learning process. According to Agumba *et al.* (2019), the 4IR demands a change in traditional conception of teaching and learning, requiring a comprehension of knowledge-building strategies through the use of Ed-Tech. As with other HEIs around the globe, one HEI in Lesotho was forced to adopt the use of DC, which evidenced the concepts of implementation or enactment as influenced

by the hasty adoption of Ed-Tech resources by both digital natives and digital immigrants.

Contextualising DC in One HEI in Lesotho

The forceful imposition of educational technologies, especially in the era of the uncertainty or novelty, has glaringly evidenced the existence of two types of technology users: digital natives and digital immigrants or refugees. Khoza and Biyela (2020), in support of Prensky (2001), posit that digital natives are technology users who were born during the digital era. In other words, digital natives are conversant with Ed-Tech resources and have interest, to some extent, in digitalised information that is referred to as future content, which is displayed on screen (Prensky, 2001). Conversely, digital immigrants are seen as refugees who learn to use Ed-Tech resources, usually through forced measures, by their HEIs in view of disseminating prescribed 'what' content (Khoza, 2021a; Prensky, 2001). Seemingly, the emergence of COVID-19 caused technostress that was particularly perceptible with digital immigrants, who were forced to neglect their legacy content (print media) to move to digital platforms that display information on screen (Khoza, 2020; Makumane, 2021b; Mpungose, 2019).

The forceful move to educational technologies during the uncertainty unearthed the need to fully embrace the 4IR. The 4IR, which encompasses the use of Ed-Tech resource to alter individual engagement in activities, including pedagogical activities, represents an upgrade from the Third Industrial Revolution, which introduced the use of the Internet and personal computing (Schwab, 2017; Sokhulu, 2020). Butler-Adam (2018) puts forth that the 4IR in education is essential as it helps blur the lines between future content and legacy content and facilitates understanding of how the world operates. Butler-Adam (2018, p.1) further notes that embracing the 4IR requires individuals to have "*skills required to implement, manage, and work with the new technology, and with one another*".

Consequently, lecturers at one HEI in Lesotho, the National University of Lesotho (NUL), had to embrace the 4IR in order to effectively use the DC that was initiated by the COVID-19 pandemic. Notably, this HEI already had a learning management system (LMS) in existence prior to the pandemic, but it was seldom used by both lecturers and students as they preferred the face-to-face mode of teaching and learning (Makumane, 2021a; 2023; Mashinini, 2020). Makumane *et al.* (2022) attest that most HEIs have been experiencing resistance to LMSs by lecturers, and NUL was no exception. Makumane (2021a) earlier posited that the LMS was hardly used after its launch in 2010, as it was viewed as impractical and ineffective, especially in terms of interactivity and socialisation with content. In addition, the LMS was introduced without a clear exposition of the underpinning theory and implementation framework, therefore attempts to use it, especially by digital immigrants, created confusion, frustration, and resistance (Makumane, 2021a). In other words, before the pandemic, digital immigrants were content in using the traditional face-to-face mode of teaching and learning as it represented their objective reality. Khoza (2022) asserts that objective reality is a result of perpetual actions by an individual or a society that are eventually regarded as natural and end up being a user-interface in a given context. Therefore, the objective reality of digital immigrants, in this instance, was that the face-to-face mode of teaching and learning was effective and that the LMS was unnecessary (Mashinini, 2020). Thus, even though there was an LMS at their disposal, these immigrants considered it a 'disruptive tool' that seemingly added no value to their user-interface.

However, the emergence of the COVID-19 pandemic initiated a national lockdown that introduced a 'gunpoint' use of the LMS by both the digital immigrants (refugees who learn to use educational technologies) and natives (technology users born during the digital era) as this HEI had to adopt an online teaching and learning mode to continue the educational process (Mashinini, 2020). This hasty adoption of Ed-Tech resources proved favourable to digital natives, who, according

to Mpungose (2020), are mostly students who have amassed experience and knowledge of technologies through their constant informal use of social media sites (SMSs). This latter assertion implies that the gunpoint use of Ed-Tech resources favoured the objective reality of digital natives, seemingly at the expense of digital immigrants, whose user-interface was the traditional face-to-face mode. This objective reality contestation between digital immigrants and digital natives warranted an exploration of the type of digitalised curriculum adopted as a result of the forceful migration to Ed-Tech resources during the uncertainty. The digitalised curriculum is defined as a plan for or of teaching and learning using educational technologies (Khoza & Mpungose, 2020). This suggests that DC may be dominated by performance-based (plan for- 'what') or competence-based (plan of- 'how') curricula (Khoza, 2019; Khoza & Mpungose, 2020). On the one hand, performance curriculum is dependent on facts and schooled knowledge (legacy content) (Bernstein, 1999; 3). This denotes that when utilising this curriculum, lecturers are informed by facts relating to their discipline in order to effectively attain set objectives and to answer the 'what' question in education.

The principles of performance curriculum include prescribed content, objectives, time for instructions, resources, and summative assessment. On the other hand, competence-based curriculum addresses the 'how' question in education, addressing students' socialisation needs, with lecturers seen as facilitators who give students an opportunity to interact with content. This type of curriculum is socially influenced and it is driven by learning activities, facilitation, learning community, distance learning, and outcomes (Khoza & Mpungose, 2020; Mpungose & Khoza, 2020). These two types of curricula influence lecturers' practice, suggesting either implementation (performance-based) or enactment (competence-based). In other words, a lecturer's practice could be considered either as implementation or enactment, depending on the type of curriculum at hand and

on the strategies exerted in using the curriculum. These two processes are elaborated in the proceeding section.

Implementation Versus Enactment Through Perceptions

Implementation and enactment are usually presented as synonymous terms that allude to the same stage of the curriculum (practised); therefore they are often used interchangeably. However, this may be misleading as there are nuances between these two processes owing to their reliance on the intentions within which a curriculum was conceived. Implementation, on the one hand, subscribes to the positivist conception as it hints at the idea of using the curriculum precisely as envisaged by its developers (Cho, 1998; Sowell & Stollenwerk 2000). This denotes that lecturers are expected to apply the principles of a performance curriculum, which include prescribed content, objectives, time for instruction, resources, and summative assessment (Mpungose & Khoza, 2020). The exigency in implementing a curriculum is to put it into practice without any modifications, thereby following prescribed steps accordingly. This, according to Cho (1998), is also known as the fidelity strategy. Penuel *et al.* (2014) posit that, in the fidelity strategy, lecturers faithfully adhere to stipulated curriculum materials and objective(s). *"Fidelity of implementation can be defined as the degree to which [lecturers] or stakeholders abide by a curriculum's original design when implementing it"* (Bümen *et al.*, 2014, p. 220). In other words, the implementation process depicts translation of an idea from its conceptual realms into practice, precisely as it was intended.

In accordance, Fullan (2018, p. 113) argues that implementation *"is a process consisting of materials, skills and behaviour, and beliefs and understanding."* This indicates that in order for users to effectively implement a curriculum, they need to have the requisite skills and competences (social perceptions) as well as in-depth cognitive understanding (factual perceptions) of an intended curriculum in order to

efficiently implement the curriculum at hand. Fomunyam and Khoza (2021) posit that a curriculum that supports this latter assertion is a discipline-based curriculum, which encourages specialisation and depth of knowledge of content that induce relevant concepts, techniques, and practices requisite in the discipline in question. This alludes to a performance-based (technical) curriculum, which requires lecturers to engage students' cognitive domain hierarchically, while adhering to facts as presented by the discipline (Bernstein, 1999; Tyler, 2013). In other words, implementation requires linear, structured, or prescribed legacy content in order to help students acquire school or vertical knowledge (Hoadley, 2018; Hoadley & Jansen, 2013). Khoza (2021a) avers that teaching and learning in this regard address the 'what' question in education (what content, resources, assessment?).

In the use of DC, learning management systems (LMSs) are used to teach legacy or prescribed content and "*prescribed teaching structure, with their principles, are strictly followed by [lecturers], in order to instruct students according to what is mandated by their institutions*" (Khoza, 2021a, p. 4). Implementation, thus, seemingly inhibits the use of social and habitual skills (habitual perceptions) that render lecturers capable of addressing the needs of the students (social perceptions) and the use of their unique identities (pragmatic or habitual perceptions) in varying contexts. This rigidity may hinder an effective teaching or learning environment that is usually the end product of lecturers' deliberate adaptation of context to address societal or students' needs as influenced by their unique experiences within their contextual environment. Ornstein and Hunkins (2009) submit that curriculum implementation often fails for two reasons: the distorted understanding of how information and policy idea(s) fit into real life context; and the lack of understanding of the relationship between curricula and the social-institutional contexts. The emergent transition from face-to-face to online learning and the swift transition from traditional to DC seem to perpetuate the distorted understanding of implementation in the digital realm, especially since some LMSs, due to the

pandemic and its exigencies, were hastily adopted without clear implementation frameworks (Makumane, 2021a; 2023). Khoza (2021a) highlights the importance of lecturers understanding the use of educational technologies in order to help students master prescribed content to qualify in their respective disciplines.

Enactment, on the other hand, subscribes to the constructivist view, discarding the rigidity that is seen in implementation and allowing flexibility, interaction, and adaptation of the curriculum to the teaching and learning context(s) and to prior experiences. Hoadley and Jansen (2013) conceive that the enacted curriculum represents the stage of what happens to the intended curriculum in the contexts of institutions and, more specifically, during the process of teaching. This implies that the enacted curriculum depicts decisions made by the lecturer, as influenced by their pragmatic or habitual perceptions, which are reflected in what takes place in an actual classroom as per the interpretation, or sometimes the subversion, of the intended curriculum. This calls for a pedagogically responsive curriculum, which is designed to address students' diverse needs and to allow for meaningful learning to take place (Fomunyam & Khoza, 2021). Enactment of curriculum favours competence-based curriculum, which addresses the 'how' questions of learning (Khoza & Mpungose, 2020). In this regard, a lecturer identifies resources to be used by students in order to facilitate effective learning that encompasses students' learning needs. The principles of competence-based curriculum include facilitation, learning activities, learning community, distance or online learning, and outcomes. This requires lecturers to use their social perceptions, which are informed by society and promote collaboration, interactivity, and group work in order to achieve learning outcomes (Khoza, 2021a).

Khoza (2021a) asserts that enactment is informed by non-linear or unstructured information from opinions of different societies to create future content, every day, or horizontal knowledge. Additionally, Khoza (2021a) attests that future content is created through the use of social media

sites (SMSs) such as Facebook, WhatsApp, YouTube, inter alia, which connect lecturers with students for interaction and socialisation. According to Khoza and Biyela (2020), SMS can be used as teaching and learning resources to communicate future content. However, such content is usually not aligned with prescribed or legacy content by HEIs, which in turn results in students being *"unable to align their knowledge and skills of generating unstructured or future content from various sources with HEI structured, prescribed or legacy content"* (Khoza & Biyela, 2020, p. 2). This assertion seems to implicitly imply that the use of LMSs, which favours structured, legacy content, and SMSs, which promote unstructured, future content, could be merged in order to address HEIs lecturers' and students' needs. In other words, DC should be seen as a merger of implementation, through the structured use of LMS, and enactment, through the unstructured use of SMS, in order to effectively attain outcomes.

In sum, the process of implementation and enactment, at face value, seem deceptively similar. However, these two processes are greatly determined by perceptions held by lecturers using DC, which may be dominated by performance-based or competence-based curricula, but which has principles of both curricula (Khoza & Mpungose, 2020; Makumane, 2023). Mustafa (2011) argues that a competence-based curriculum advocates for the use of problem-centred activities, which implicates students actively in their construction of knowledge. Such activities allow lecturers to adapt the curriculum to the prevailing context as per students' needs. This assertion implies that lecturers, while using the competence-based curriculum, engage in the process of enactment, as they are afforded the flexibility to apply their social perceptions based on their interpretation of the digital context through the use of SMSs.

A performance-based curriculum is vertical in nature as it follows a hierarchical organisation of knowledge from the lowest to the highest point (Hoadley & Jansen, 2014). This suggests that both the already-existing knowledge and the new knowledge must be vertically aligned in view of

displaying a logical, consistent order of introducing content (Khoza, 2016). In other words, lecturers using performance-based curriculum are informed by their factual perceptions. The flexibility of altering the curriculum to suit the context is thereby limited, lest the curriculum becomes misconstrued, misinterpreting the facts. Thus, this form of curriculum is implemented as the lecturer rigidly adheres to its use the way it was intended, in view of effectively attaining the set goals. Perceptions in this chapter are categorised into factual, social, and habitual perceptions. These perceptions, it would seem, are influenced by the two processes of practised curriculum: implementation or enactment. This chapter is premised on the assumption that a balanced DC promotes both legacy or structured and future or unstructured content, which equally contribute to self-actualised individuals through their exposure to what Biesta (2015) terms to be good education. Good education can be supported through the use of theories of learning that are able to balance the three propositions (factual, social and habitual), and these theories are connectivism and natural identity framework.

Theorising DC for Implementation or Enactment

Connectivism as a learning theory was introduced by Siemens (2004), seemingly as an extension to the three existing learning theories that were introduced prior to the digital era where technology had impacted learning. Siemens (2005) affirms that the three broad learning theories - behaviourism, cognitivism, and constructivism - are used to scrutinise instructional environments. These three theories are hinged on the assumption that learning occurs 'inside a person' (Siemens, 2005, p. 3). However, these theories do not consider learning that happens outside of people as influenced by technology. Connectivism, thus, is seen as a learning theory that embraces technology whilst looking into learning social environments in a networked world. According to Şahin and Safieh (2012), connectivism is a 21st century learning theory that supports the use of digital technologies and permits spontaneous and exponential knowledge exchange through

digital platforms. In other words, knowledge production through the connectivism lens is mostly social, with new information being continually acquired through interactions with what Siemens (2004) terms nodes, which are individuals or groups or networks or computers that help in the acquisition of knowledge. Mpungose (2020) posits that connectivism as a theory acts as a lens that helps conceptualise learning in the digital age, creating connections or relationships through the Internet and technological resources. This suggests that in connectivism, students depend on both prescribed legacy content (implementation) and future content (enactment) to effectively attain set outcomes. Therefore, lecturers are seen as both discipline experts and facilitators who help students consume and also construct knowledge through exploration within and outside their contexts (Anderson, 2016; Mpungose, 2020).

Downes (2010) argues that the use of DC should encourage active participation with lecturers engaging students and promoting socialisation to encourage professional and social knowledge-building. Connectivism thus suggests active participation from students, thereby discarding passive learning that inhibits networking and creating a knowledge community through SMS and online platform usage. Siemens (2005) avers that it is essential to establish a balance between prescribed or structured formal education (implementation) and informal learning (enactment) as both forms contribute significantly to knowledge-building, especially in the digital age. Therefore, connectivism requires knowledge management through "the sharing of cognitive tasks between people and technology" (Bell, 2011, p. 102). In other words, using nodes, connectivism ideally promotes factual perceptions through acquisition of schooled knowledge transmitted from lecturer to students (the 'what' question of education); social perceptions through socialisation with content and creation of networks to promote collaborative learning through digital platforms (the 'how' question of education); as well as habitual perceptions, whereby students are able to make informed learning choices

through skills acquired from legacy and future content to mould their unique identities (the 'who' question of education) (Khoza, 2021a; Makumane & Khoza, 2020). Downes (2010) characterises these propositions into three perspectives: knowledge (factual), learning (habitual) and community (social), and these three perspectives influence each other.

Table 5.1 presents principles of connectivism as outlined by Downes (2009).

Connectivism in this chapter is complemented by the natural identity framework in Figure 5.1.

Table 5.1: Connectivism Learning Framework by Downes (2009)

Connectivism principles
1. Learning and knowledge rest in the diversity of opinions.
2. Learning is a process of connecting specialised nodes or information sources.
3. Learning may reside in non-human appliances.
4. The capacity to know more is more critical than what is currently known.
5. Nurturing and maintaining connections is needed to facilitate continual learning.
6. The ability to see connections between fields, ideas, and concepts is a core skill.
7. Currency (accurate, up-to-date knowledge) is the intent of all connectivist learning activities.
8. Decision-making is itself a learning process. Choosing what to learn and the meaning of incoming information is seen through the lens of a shifting reality. Although there is a right answer now, it may be wrong tomorrow because of alterations in the information climate, affecting the decision.

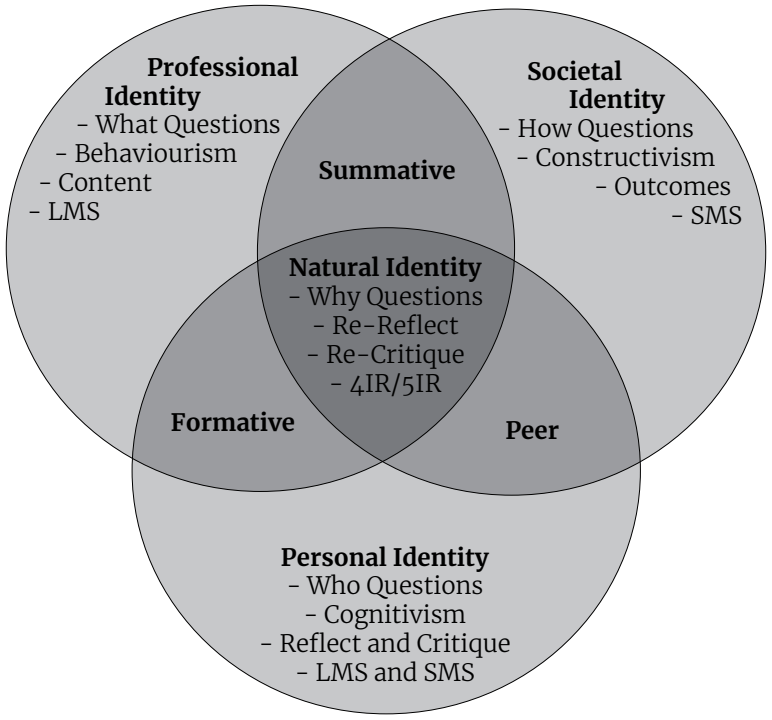

Figure 5.1: Natural Identity Framework Adapted from Khoza (2021a)

This framework, which was conceived by Khoza (2021a) in response to the COVID-19 crisis to theorise DC, addresses the 'what', 'how' and 'who' questions in education, and extends to address the philosophical 'why' question in education. In other words, natural identity combines the three perceptions (factual, social, and habitual), and helps lecturers to re-reflect and re-critique their actions, guided by their experiences, in the knowledge-building process (Khoza, 2021a; Makumane, Khoza & Piliso, 2022). The 'why' question in education addresses challenges regarding the 4IR and the COVID-19 revolution, which prematurely introduced the Fifth Industrial Revolution (5IR). Makumane et al. (2022) posit that the gunpoint use of Ed-Tech pertaining to the emergence of the COVID-19 pandemic demanded a new revolution as it required HEIs to adopt a hasty paradigm shift. Thus, through

natural identity, lecturers re-reflected on their conscious, subconscious, and unconscious cognitive processes in order to engage their future actions to help them effectively attain set outcomes in their use of 5IR. Khoza (2021a) posits that when lecturers are aware of their natural identity, *"they can adapt to any uncertainty or novelty because they accept the natural actions and work with them, even if the professional [factual], societal [social], and personal [habitual] actions fail"* (p. 17). This assertion suggests that natural identity, in addition to the three perceptions, helps lecturers re-orient the process of knowledge-building in the advent of a novelty.

The two theories, connectivism and natural identity, frame this chapter and provide solutions for effective use of DC. Seemingly, the use of both theories suggests that DC should ideally constitute a balance amongst factual, social, and habitual perceptions to promote self-actualised individuals through equilibrated knowledge-building. In addition, natural identity as a phenomenon should be embraced in HEIs in order to handle unforeseen novelties or uncertainties that might disrupt the 'norm' in the teaching and learning process. In other words, in using DC, the principles of performance-based DC and competence-based DC need to be equilibrated in the use of 4IR or 5IR in order to help lecturers re-reflect and re-critique their actions for effective attainment of educational goals. The proceeding section looks into the perceptions of DC as indicated in conducted studies during the pandemic to determine the principles evident in the use of DC.

Implications of Actual Perceptions in Using DC in Lesotho During the COVID-19 Pandemic

Several studies were conducted amidst the COVID-19 pandemic on the hasty adoption of DC by the HEI in question, and the implications thereof (Makumane, 2021; Mashinini, 2020). These two studies were conveniently sampled and are scrutinised in this chapter to establish whether the principles of performance-based or competence-based curricula are present in the use of DC during uncertainty.

Mashinini (2020) conducted a study in view of exploring successes and challenges of using online modes of teaching and learning in one HEI in Lesotho. Secondary data from the Internet and primary data from 50 purposively sampled participants was used, with questionnaires used to collect data. The findings indicate that lecturers and students were resistant towards the adoption of educational technologies and seldom used the HEI's LMS. The participants cited technological illiteracy and their unfamiliarity with the LMS. In addition, the findings articulate that the LMS had limitations as it did not allow for interactions between lecturers and students and amongst students themselves.

> *"The [LMS] does not offer the actual teaching facilities like Blackboard and so on for live online teaching and learning. Instead, it allows lecturers to mostly post their lecture notes and feedback, and students to access the materials and post their academic work back to lecturers for assessment" (Mashinini, 2020, p. 173).*

The above findings are two-fold: the latter part of the findings suggest inclination of DC to the principles of performance-based DC, which include prescribed content that lecturers post on the LMS, objectives that drive the content being taught, and resources (LMS), while neglecting those of competence-based DC as students were not able to socialise with content. This assertion suggests that DC in this instance favoured lecturers over students as the curriculum was being implemented, promoting factual perceptions at the expense of social and habitual perceptions. The former part of the findings implies that lecturers did not embrace natural identity, which would have helped them handle the uncertainty. This denotes that knowledge-building with 4IR or 5IR was compromised, as factual knowledge-building was favoured over social knowledge-building, which further malformed habitual knowledge-building.

Makumane (2021a) conducted an interpretive case study with the express intent to explore students' perceptions on the use of an LMS at one Lesotho HEI amidst the COVID-19

pandemic. Ten participants were conveniently sampled from 21 purposively sampled students and data was generated through email-conducted reflective activities and LMS focus group discussions. The findings demonstrate that the LMS did not permit flexible communication between students and lecturers, thereby inhibiting socialisation with prescribed content to effectively achieve stipulated outcomes. In addition, the findings suggest that the LMS promotes professionalisation (factual perceptions) as content is presented hierarchically but lacks the promotion of technological knowledge (social perceptions). This had a bearing on habitual perceptions, as students could not use their unique experiences with educational technologies to find suitable learning approaches.

> *"Participants' statements on the appreciation of [LMS] and their recommendation for adoption of SMSs that they are accustomed to implicitly imply their need to use their unique experiences with digital technologies proved to have a bearing on the content acquired and on the efficiency of technological knowledge in the attainment of goals" (Makumane, 2021, p. 12).*

This latter assertion suggests that participants deemed it essential to professionalise and socialise with content in order to effectively manage their learning using 4IR or 5IR. The implication of these findings is that DC was ineffectively used as it lacked some principles of both connectivism and natural identity framework. In other words, DC is seemingly inclined towards factual perceptions by promoting acquisition of schooled knowledge, thereby addressing the 'what' question in education. However, collaborative learning (the 'how' question), creation of unique identities (the 'who' question), and the natural identity (the 'why' question) are disregarded, and this seemingly hinders effective learning during uncertainty.

Concluding and Initiating the Beginning

The use of DC has become an inevitable necessity in HEIs owing to the emergence of the COVID-19 pandemic. The uncertainty forced HEIs to embrace educational technologies to forge ahead with the process of knowledge-building. This hasty paradigm shift compelled curriculum scholars to respond to the pandemic through curriculum theorising and theories. Natural identity framework by Khoza (2021a) is such a theory that emerged to address the 'why' question in education, whereby individuals become aware of their natural identity in order to adapt to any uncertainty or novelty. This chapter was hinged on this theory, scrutinising DC used in one HEI in Lesotho to determine whether it is implemented (performance-based DC) or enacted (competence-based DC). It further sought to explore the presence of the principles of a pragmatic DC, which addresses the tension between performance-based DC and competence-based DC to equilibrate the process of knowledge-building for effective attainment of outcomes through the use of 4IR or 5IR. This chapter discovered that DC used in one HEI in Lesotho tended towards principles of performance-based DC and abandoned those of competence-based and pragmatic DC.

The implication of the negligence of these principles is that the quality of the DC is greatly compromised. The seemingly unintentional oversight of these principles evidences lack of preparation by HEIs in using educational technologies due to a hasty migration from the traditional face-to-face to online mode of teaching and learning in the midst of the COVID-19 pandemic. The inclination to a performance-based DC (implementation) in this HEI translates into capacitating students with cognitive knowledge that qualifies them in their respective disciplines. It is noteworthy that failure to enact the DC had an adverse impact on the incorporation of unique interactions and experiences with the digital environment, as implementation necessitates rigidity in following a systematic approach in the teaching and learning process. In sum, the DC is not equilibrated to produce what Biesta (2015) terms 'good education', which

is a breed of a balance amongst implementation (factual), enactment (social), and pragmatic (habitual) skills. Thus, through the theory of connectivism, it became apparent that it is essentially to ensure a balance between prescribed or structured formal education (implementation) and informal learning (enactment) as both forms contribute significantly to knowledge-building, especially in the digital age (Siemens, 2005; Makumane, 2023). In this way, pragmatic DC would ensue to help nodes make informed teaching and learning choices through skills acquired from legacy and future content to mould their unique identities. To take it further, the natural identity framework provides an undergird for lecturers, and students, to re-reflect and re-evaluate their actions as influenced by the three propositions of DC (factual, social, and habitual) and to handle any aftermath of their actions in the teaching and learning process. This natural identity, it would seem, may help them adapt to any uncertainty, and should therefore be seen as a safeguard against unanticipated novelties or natural forces that might threaten the education sector, as was the case with the emergence of COVID-19. Thus, HEIs, especially those in sub-Saharan Africa, where 4IR or 5IR technologies are scarce and seen as a realm of speculation (Ayentimi & Burgess, 2018), should create a platform where academics naturally find their identities to help them address their factual, social, habitual, and natural needs in order to support effective use of DC to promote equilibrated knowledge-building.

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