Covid-19: Interdisciplinary Explorations of Impacts on Higher Education

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TRANSITIONS IN PEDAGOGIES

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A multimodal model for learning, teaching and assessment in higher education

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Introduction

The Covid-19 pandemic has had a cataclysmic impact on all aspects of human existence, including the higher education sector. This pandemic has forced contact Higher Education (HE) institutions to move to emergency remote teaching with a shift to blended or online teaching or adopt a hybrid approach of combining print materials with online learning. Whilst some educators were prepared for online teaching, others who were not so tech-savvy had to quickly adapt to teaching online.

Due to the Covid-19 pandemic, many institutions of higher learning were forced to suspend the planned curriculum as the academic calendar was restructured and universities had to adapt for remote emergency teaching. Planned assessments and exams were suspended and educators had to find innovative and alternative assessment strategies. More flexible ways of incorporating online content and assessments had to be considered. Many institutions turned to continuous assessments conducted on online platforms. This radical shift from a face-to-face and/or blended approach to online and/or hybrid platforms have raised serious questions about the readiness of higher education (staff and resources) for the 21st century student, referred to as Generation Y (millennial) and Generation Z.

Higher education and generational diversity

A generation is a social construction in which individuals born during a similar time period and is influenced by, historic and social contexts in such a way that their experiences differentiate from one generation cohort to another (Lester, Standifer, Schultz & Windsor, 2012:341). Karl Mannheim (1928) postulates that people belonging to the same age group who witness common crucial, socio-political and historical events during developmental stages of their life, form a generational group. Lyons and Kuron (2014:141) argue that Mannheim's theory is not specifically concerned with the impact of generation on individual attitudes and behaviours, but rather the dynamic interaction of generations as a mechanism for social change. The Generation Theory was made popular by William Strauss and Neil Howe's book *Generations: The History of America's Future, 1584 to 2069* (1991). Currently, there are five living generations namely the Greatest Generation, the Silent Generation, Baby Boomers, Gen X, Millennials, and Gen Z (Hodges, 2019).

It is important to also note that although Generation Z students are described in literature as a homogenous group, there exist anomalies in the characteristics between first world countries and developing countries. These anomalies are entrenched by socio-economic factors which include the disparity in educational provision, unemployment, urban versus rural and the digital divide (Duffet, 2017:4). Brown and Czerniewicz (2010) argue that what is clearly evident from research in higher education is the varied set of digital skills of South African millennials.

There seems to be a paradoxical situation in higher education as millennials, Generation Z students (with varying digital competencies) and the Baby Boomer and Generation X educators all occupy the same space (Robson, 2015:1). The Covid-19 pandemic has had widespread impact on HE and educators must be knowledgeable about the factors that affect Generation Z students which Trevino (2018:88) outlines as:

- Student well-being
- Technology
- Parent involvement
- Flexible classroom modalities
- Campus safety

In addition to the above, educators must be cognisant of the types of devices that students have access to, data and other contextual constraints, and structure their teaching accordingly.

The Covid-19 pandemic has brought about tremendous distress to both students and educators who are experiencing high levels of burnout and depression (Marshall & Wolanskyj-Spinner, 2020). Both students and staff are undergoing a change in the learning environment and plans for the future are changing in a relatively short period of time. It is imperative that educational institutions play an active role in addressing distress management. Educational institutions should provide access to trained personnel in stress management. As students and staff move primarily to online learning platforms it is imperative that online support communities are provided. We must be cognisant that the HE sector in South Africa services primarily Generation Z students with educators who hail primarily from a different generation. Generation Z students are true digital natives: they are able to access information online, they have a very short attention span and connect to and switch between a variety of devices (Hart, 2018). In order for HE to be germane, it is imperative that they “adapt their courses, programs, processes, environments, and initiatives” (Trevino, 2018: 44).

HE institutions in South Africa are faced with further challenges with the high intake of first year students who come from diverse socio-economic backgrounds. Many of these students come from under-resourced schools with very little or no exposure to Information and Communications Technologies (ICTs) in teaching and learning (Strydom, Mentz & Kuh, 2010). HE is still grappling with issues of equitable access and social justice. Covid-19 compelled HE institutions to revise the curriculum and change the mode of delivery in order to salvage the 2020 academic year. Both educators and students had to quickly assimilate 21st century digital skills. These transitions were done under emergency conditions so there was very little time to plan for students who come from diverse backgrounds and have different learning styles and abilities.

The lockdown during Covid-19 has placed the spotlight on the South African HE landscape and its under-preparedness for 21st century teaching to Generation Z students. It has forced HE to re-examine its current teaching, learning and assessment strategies. University education should be flexible, inclusive and adaptable and Generation Z students should be offered multiple ways of acquiring knowledge, applying this knowledge and engaging in learning (Alexander, Ashford-Rowe, Barajas-Murphy, Dobbin, Knott, McCormack, Pomerantz, Seilhamer & Weber, 2019). It is crucial that HE takes full advantage of this ‘pause’ that Covid-19 has provided to address the expectations and needs of Generation Z students in order to attract and retain these students. This will definitely impact on the retention, success and graduation rates of students. Teaching and learning practices also need to be re-evaluated in line with Generation Z student needs. HE staff must be cognisant of

the students' contextual realities and have a responsibility to help students achieve both epistemic access and success. This includes providing disadvantaged students with data and devices and adopting a more flexible approach in the delivery of the curriculum.

Covid-19 has foregrounded that HE must cater for the diverse student body with different learning preferences and expectations of personalised learning. HE institutions are compelled to leverage innovative teaching and learning approaches. The increasing use of the internet and digital technologies by HE students also calls for a transformation of the teaching and learning environments in HE institutions that should be facilitated by an effective combination of various modes of delivery, models of teaching and styles of learning. One such approach discussed in this chapter is multimodal teaching, learning and assessment, which should be implemented by HE contact institutions as it has the propensity to provide more engaged learning experiences while recognising the potential of ICTs.

Learning theories for multimodal teaching and learning

The Covid-19 pandemic has certainly changed the face of teaching and learning in HE which has helped usher in a new dispensation for teaching and learning. For the first time students from predominantly contact HE institutions had to grapple with teaching and learning happening outside a traditional classroom. In HE educators draw from a variety of learning theories and teaching strategies as they traverse the teaching terrain (Ershler & Stabile, 2015). Before the onslaught of the Covid-19 pandemic, there were significant shifts in HE as many educators moved from Behaviourism to Constructivism to underpin their work (Ershler & Stabile, 2015).

Constructivism is a philosophy of learning that articulates mechanisms by which knowledge is co-constructed by students. Constructivism expects students to “engage in interpretation, organisation and inference creation about knowledge, with the cognitive structures they have previously constructed” (Ershler & Stabile, 2015:14). As students interact with the material and each other, meaningful learning takes place. Constructivism tends to emphasise knowledge construction, rather than knowledge transmission (Beyers, 2009:220). Constructivism emphasises the building or construction that takes place when people engage in learning activities by active engagement and understanding the environment according to their experiences, perceptions and mental models. In constructivism, learning is seen as a personal interpretation of the world where the learners construct or interpret their own reality based on their perceptions and experiences (Alonso, López, Manrique & Viñes, 2008:390). “The learning environment based on constructivist

and socio-constructive setting” is a key component of active learning (Gazibara, 2018:184) and it empowers students through the integration of ICTs into all aspects of the teaching and learning process (Beyers, 2009:224). Constructivism is strongly aligned with an outcomes-based curriculum and the teacher has the responsibility of guiding students to achieve the module outcomes (Starkey, 2015). Scardamalia and Bereiter (2006) critiqued constructivism by saying “if learners construct their own knowledge, how is it possible for them to create a cognitive structure more complex than the one they already possess?” (Scardamalia & Bereiter, 2006:103).

It is clear that students in the digital era can network and collaborate in online spaces and constructivism does not account for the learning that takes place in digital spaces (Siemens, 2004).

Theory of connectivism

The Covid-19 pandemic has forced the 21st century students to process and apply information in a very different way and at a different pace than was the case in previous centuries. The span of time between learning something new, being able to apply it and finding that it is outdated and no longer useful, continually decreases. Gonzalez (2004) refers to this as the “half-life of knowledge”, which is the time span from when knowledge is gained until it becomes obsolete. The cycle of knowledge development, from personal to network to organisation, enables students to remain current in their field through the connections they have formed. Students create knowledge as they attempt to understand their experiences (Siemens, 2004).

The learning landscapes in the digital age are networked, social and technological (Dunaway, 2011:678). Generation Z students have available a wide range of online information resources, collaborative knowledge systems, open access publications of scholarly communication, online databases and other library resources. This is made possible by networked information using the internet. Students use technology to form their own information networks which include learning communities where students participate in the knowledge creation process (Dunaway, 2011:675). The inclusion of technology and making the connection using technologies as learning activities begins to move learning theories into a digital age.

According to Siemens (2004):

Connectivism is driven by the understanding that decisions are based on rapidly altering foundations. New information is continually being acquired. The ability to draw distinctions between important and unimportant information is vital. The ability to recognize when new information alters the landscape based on decisions made yesterday is also critical.

Connectivism can therefore be seen as having evolved with the growing interest in the teaching and learning potential of Web 2.0 technologies and practices. Connectivism is “the integration of principles explored by chaos, network and complexity and self-organization theories” (Siemens, 2004). Central to connectivism is the idea that learning takes place across networked communities and information technologies (Dunaway, 2011:675). Connectivism sees learning as residing outside oneself, which can be within an organisation or a database, where learning is focused on connecting specialised information sets, where the connections that enable learning is more important than the current state of knowing. Connectivism is the ability to learn from both animate and non-animate sources. The nurturing and maintaining of connections are required to facilitate continual learning. Current and accurate knowledge is the intent of connectivist learning activities. Connectivism also sees decision-making as a learning process. The starting point of connectivism is the individual where personal knowledge comprises of a network, which feeds into organisations and institutions, back into the network, then continues to provide learning to the individual. Connectivism emphasises the importance of the ability to be able to recognise connections, patterns and similarities and the ability to synthesise ideas and information (Dunaway, 2011:676). Siemens's (2004) theory also acknowledges that real-life learning is messy and complex and that acquisition of knowledge takes place in a nonlinear manner.

Multimodal learning environments

Multimodal learning environments can be defined as learning environments that use verbal and non-verbal modes to present subject matter. In multimodal learning environments, academics present the learning material by using both verbal and visual means. Modules that are multimodal provide a dynamic learning space for students, as it combines the use of multimedia and ICT, and can be presented in various modes and cater for different learning styles as discussed below (Gilakjani, Ismail & Ahmadi, 2011).

During the unprecedented situation of Covid-19, HE institutions in South Africa and around the world have implemented e-Learning platforms for teaching and learning. Many HE institutions have not considered the perceptions of students, particularly Generation Z students, with regards to the use of e-Learning platforms. An interesting study conducted by Pikhart and Klimova (2020) reported that some of the current e-Learning platforms are not attractive to Generation Z students. They want to participate in the creation of its content and collaborate and interact with each other in ways that they are used to in other social media platforms, such as Facebook. Academics and e-Learning course designers should heed to this. The

implications of the research findings by Pikhart and Klimova (2020) are important as they also suggest a new approach to the exploitation of e-Learning platforms connected to Web 4.0 by tapping into the potential of artificial intelligence, deep learning, machine learning and computational linguistics.

Many learning theorists have argued that learning styles may be defined as the combination of cognitive, emotional and physiological factors that determine each individual's most effective process for learning. A variety of systems exist for categorising these factors into standardised classifications. Other researchers contend that since students have different learning styles, it is essential to provide a variety of instructional approaches, learning material and activities (Association for Quality and Participation [USA], 2003). Seemiller, Grace, Dal Bo Campagnolo, Da Rosa Alves and De Borba (2019) show that while a learning style refers to how learners take in and process information, learning methods are the skills and actions learners engage in to participate in learning. Seemiller and Grace (2016) examined the learning styles and motivators of Generation Z students, particularly how these students learn, engage and communicate. Academics and other key stakeholders in HE should make changes to optimise the educational impact on Generation Z students. Seemiller and Grace (2016:15) emphasise that the HE landscape has changed and that it is imperative that key stakeholders in HE embrace new models of education and support services, especially the physical environment: facilities, learning environments, libraries, and tools for learning that can accommodate current HE students.

Iftode (2019) indicates that establishing learning styles is a complicated process. He also emphasises that understanding and defining students' learning styles is an important process as it is the key to active involvement. He identifies Generation Z as having an "auto-didactic and independent learning type" and having a strong desire to choose what and how to study.

A technology-mediated, multimodal teaching and learning environment can include numerous "elements such as simulations, interactive diagrams, images, video and audio materials, interactive quizzes and crosswords, PowerPoint lectures with audio, and hyperlinked examples." (Gilakjani et al., 2011:1321). Shatto and Erwin (2017) indicate that using technology and mixed teaching methods will maximise the extent to which Generations Z students feel engaged. Innovative teaching using different forms of technology may be required to fully engage them. Methods such as flipped classrooms and active learning allow students to actively participate (e.g. case studies, group projects, use of clickers for voting, blogs, and critical thinking assignments). Narratives and storytelling are gaining popularity and can be especially

useful when discussing varying viewpoints. They also indicate that allowing students to bring their own devices (cell phones, tablets and laptop computers) into the learning environment is an easy way to increase involvement.

Blended learning and/or online learning provides a multimodal teaching and learning environment which addresses the learning styles of the Generation Z student. This chapter will first discuss the concept of blended learning and thereafter discuss the concept of online learning.

The concept of blended learning

There are many varying definitions of blended learning offered in the literature. Graham (2004), drawing from numerous authors, defines blended learning as a combination of face-to-face instruction with computer-mediated instruction. Currently, this is the most widely used definition in the area of blended learning. However, Heinze and Proctor (2004) define blended learning as being “learning that is facilitated by the effective combination of different modes of delivery, models of teaching and styles of learning, founded on transparent communication amongst all parties involved with the course”. Blended Learning (Figure 4.1) can be conceptualised as a wide variety of ICT integrated activities with conventional face-to-face classroom activities.

The outbreak of the Covid-19 pandemic and the subsequent lockdown has necessitated a rapid move to online learning. During this pandemic, online learning has been seen as an important means of access for students due to adhering to physical distancing. Educators, as well as students had to develop the skills to teach and learn online in a very short space of time. Many HE institutions are now seeing the benefits of online learning and that this could drastically change the way contact institutions operate in the future.

Expansions of online activities with a slow phase-in of face-to-face activities with the easing of lockdown rules are being implemented in South Africa. Most of the HE institutions have invested in eLearning management systems such as Moodle and have established support for staff and students to maintain the technological stability for their online activities. Synchronous online activities are being conducted using software packages such as Microsoft Teams and Zoom. Some educators are using social media platforms such as WhatsApp and Facebook. The current Covid-19 pandemic has forced HE institutions to confront issues dealing with access and success as they transition to new pedagogies.

Figure 4.1 Blended Learning Conceptualisation
(Source Picciano, A.G.2009. Blending with Purpose: The Multimodal Model)

Educators are now compelled to review their taken-for-granted assumptions of teaching and learning as they construct the rationale for adopting or developing particular instructional strategies and use platforms in order to achieve the module outcomes. Knowing why a particular strategy works makes the exercise of teaching and learning more meaningful. A coherent framework avoids the “tyranny of adopting clever techniques” and the distortion that may arise from the separation of theory and practice (Garrison & Vaughan, 2008:13). Understanding how students acquire and develop knowledge in a blended learning environment is crucial. Therefore, a blended learning model/online model that addresses the needs of students that come from a diverse background and have a variety of needs is suggested. The Multimodal Model takes into account students that come from different backgrounds, different generations and with a variety of learning styles. Educators should therefore use multiple approaches to address the needs of a diverse student body.

Transition from “telling to partnering”

Covid-19 has necessitated shifts in pedagogies from “telling to partnering” (Prensky, 2010:14). In “partnering”, educators do not just lecture to students, but provide students with scenarios, questions and tools that can be used. Prensky (2010)

defines partnering as, “letting students focus on the part of the learning process that they can do best, and letting teachers focus on the part of the learning process that they can do best.” (Prensky, 2010:13).

Students become partners in the learning and take responsibility for their learning. Teaching staff give students responsibility for the following (Prensky, 2010:13):

- Finding and following their passion
- Using whatever technology is available
- Researching and finding information
- Answering questions and sharing their thoughts and opinions
- Practicing when properly motivated (e.g. through games)
- Creating presentations in texts and multimedia

Prensky (2001) advises that the methodology and the content must change to include more future content. We would like to add that educators must also make pedagogical shifts in the type of assessments that they design as well. The shift must take place from traditional paper-based assessments to multimodal assessments.

Table 4.1 How partnering work is shared
(Source Prensky (2010:16) How partnering works)

Teacher	Student
Doesn’t tell, asks.	Doesn’t take notes, finds out.
Suggests topics and tools.	Researches and creates output.
Learns about technology from students.	Learns about quality and rigor from teacher.
Evaluates students’ output for rigor and quality; supplies context.	Refines and improves output, adding rigor, context and quality.

Assessment in a multimodal teaching and learning environment

Assessment serves multiple purposes whether it is conducted in a face-to-face or multimodal teaching and learning environment. Ramsden states that “... assessment is a way of teaching more effectively through understanding exactly what students know and do not know. Assessment is about several things at once. ... It is about reporting on students’ achievements and about teaching them better through expressing more clearly the goals of our curricula” (Ramsden, 1992:182).

Ramsden (1992) asserts that “from our students’ point of view, the assessment always defines the actual curriculum” (Ramsden, 1992:187). Although this view should shift our thinking in HE on assessment, especially during the Covid-19 pandemic, the opposite is true. Assessment, especially summative assessment, is generally

considered the “last activity” in the learning and teaching process and staff across HE institutions need to restructure the teaching and learning in accordance with the newly structured assessments. Although researchers like Gibbs (1999) and Biggs (1999) have argued about the crucial role of assessment in learning and teaching this has not made much impact on the assessment practices in HE. Practices at HE institutions reveal that some teaching staff are still not reconsidering assessment as crucial when redesigning the academic programme (Boud, 2007).

Purposes of assessment

The four purposes of assessment as outlined by Lockett and Sutherland (2000:2-3) are diagnostic, formative, summative and quality assurance. We will briefly discuss these purposes of assessment.

Diagnostic Assessment is used for student placement in a specific learning programme and also identifies areas for remediation.

Formative Assessment provides feedback to students about their progress and this is useful in the learning process.

Summative assessment is used to promote students at the end of a semester/year and programme. Summative assessment is also used for quality assurance.

Assessment is thus viewed as Assessment of Learning (Gipps, 1994), Assessment for Learning (Gipps, 1994) and Assessment as Learning (Torrance, 2007). We will briefly discuss these three concepts.

Summative assessment (**Assessment of Learning**) is used to “sum up a person’s achievement” (Knight, 2001:3) and provides “feedout” where students display particular competencies and are awarded an exit level certificate. Summative assessment is high-stakes in that the promotion of the student hinges on passing.

Most of the literature on formative assessment (**Assessment for Learning**) uses the definition provided by Black and Wiliam (1998) which is, “encompassing all those activities undertaken by teachers and/or by their students which provide information to be used as feedback to modify the teaching and learning activities in which they are engaged” (Black & Wiliam, 1998:7-8).

Formative assessment contributes to student learning through the provision of information about performance (Yorke, 2003) and Boud (2000) adds that it is “a fine-tuning mechanism for how and what we learn” (Boud, 2000:155).

Torrance (2007) argues that although assessment has shifted from assessment of learning to assessment for learning the focus on “procedures and practices come to completely to dominate the learning experience and “criteria compliance.” He terms this shift in learning to assessment as learning (2007:282). The over-emphasis on “criteria compliance and award achievement” has resulted in students becoming more reliant on their assessors (Torrance, 2007:282). In order to improve throughput, the assessment objectives are transparent, and students receive coaching from tutors and practice (drafts and redrafts) to improve their grades. Torrance (2007) warns that in so doing we are “in danger of removing the challenge of learning and reducing the quality and validity of outcomes achieved” (Torrance, 2007:282). Boud (2007) offers an alternative which he terms sustainable assessment.

Sustainable assessment

Boud (2007) argues that the problem with the prevailing view of assessment in HE is that it “constructs the learners as passive subjects” (Boud, 2007:17) and this contradicts the view of the student as being an active, co-constructor of knowledge. He challenges the notion that feedback is the only process that impacts on learning. He advocates that a more “productive way to reframe assessment discourse [is] around the theme of informing judgement: that is informing the capacity to evaluate evidence, appraise situations and circumstances astutely, to draw conclusions and act in accordance with this analysis” (Boud, 2007:19). By placing “informing judgement centrally” lecturers will be able to assess graduate attributes as an integral part of assessment (Boud, 2007:20).

Assessment directs student learning, and it impacts on the methods of learning that students will take. Boud (2007) outlines the three features of assessment informing judgement as follows:

1. The first feature makes a direct connection between assessment and learning and how assessment equips students to engage in professional practice.
2. The second feature is that assessment develops reflexivity and self-regulation which is crucial in the development of the active learner. Students are able to monitor their own performance, to see one’s own learning in the context in which it is deployed and to respond with awareness to the exigencies of the tasks in which one is engaged. Feedback from various sources is used to complete the feedback loop.
3. The third feature is the variety of contexts in which learning takes place. The context of assessment in HE is usually the course and not the world of work. In doing this, knowledge seems separated from the world of practice although this is where the knowledge will be applied. “Authentic assessment” (Wiggins, 1989:1) refers to assessment practices that are closely aligned with real work settings.

The assessment choices that lecturers make will impact on students adopting either a deep or surface approach to learning. Students are usually resistant to deep approaches to learning especially if they have obtained success using surface learning. According to Ramsden (1992:188), students adopt a “strategic approach” to learning where the objective is to achieve the highest marks possible.

Multimodal teaching, learning and assessment design

Emergency remote teaching has provided an ideal opportunity for educators who were reluctant to embrace online assessments to consider the various options available to meet the learning needs of the Generation Z student and find innovative ways of reaching every student. In this section, we discuss the multimodal teaching, learning and assessment design and the various options available for multimodal assessment.

There are many ways in which the content within a module can be delivered. The key factors that affect Generation Z students and their different learning styles can be provided for by using different ways of delivering the content. The model above (Figure 4.2) suggests that when providing and presenting content multiple technologies, media and visual simulation can be used to demonstrate processes and procedures. Rich digital images can be used for art, history and literature. Course management systems such as Moodle can provide basic content delivery for synchronous and asynchronous teaching.

Dialectic or questioning is an activity that allows teaching staff to probe what students know and to help them refine their knowledge. Discussions can be stimulated by asking the right questions. Threaded electronic discussion boards can be used on learning management systems such as Moodle.

Incorporating reflection can be a powerful pedagogical strategy. Activities that require students to reflect on what they have learnt and share these reflections with teaching staff and fellow students extend and enrich reflection. Blogs/blogging or individual reflective journaling activities are some of the tools that can be used to reflect on their learning practices. Learning journals require students to reflect on their learning during the course of a module. It provides insight to the instructor on how the student has linked the knowledge and learning with his/her life. Journals allow the educator “to look for growth over time – growth in knowledge, in critical thinking, in the development of comprehension or appreciation of a topic” (Conrad & Openo, 2018:79-80). Journals can be used in formative and summative assessments.

Pedagogical Objectives/Activities -> Approach/Technology

Figure 4.2 Blending with a Purpose - The Multimodal Model
(Source Picciano, A.G. 2009. Blending with Purpose: The Multimodal Model)

Collaborative learning is where students work in groups. Collaborative learning can be used as a technique for problem solving. Wikis allow students to generate content that can be shared with others.

The final component of the model (Figure 4.2) is synthesising, evaluating and assessing learning. Essays, tests, assignments, quizzes and e-portfolios are the major methods used in assessing students learning online. Oral class presentations can be done via Microsoft Teams, Zoom, YouTube videos and podcasts. The e-portfolios can be presentations of images, video and audio. E-portfolios are usually compiled by students to demonstrate their competency linked to a particular outcome. Conrad and Openo (2018) report that the e-portfolio “permits learners to accumulate, build on, and reflect on the shape of their learning experience throughout their programs, making cogent observations and connections amongst learning experiences over a period of time” (Conrad & Openo, 2018:74).

In a multimodal teaching and learning environment students need to be supported socially and emotionally. Educators, academic advisors and tutors should be available to consult with students to explain complex concepts or just for advice on academic issues. This can be done online via e-mail, social media or face-to-face.

Conclusion

The Covid-19 pandemic has created an ideal opportunity for HE to pause and reflect on their current teaching, learning and assessment philosophies and practices and its preparedness to teach the 21st century Generation Z student. The Covid-19 pandemic has highlighted the dire need for educators to utilise theories like connectivism to underpin their teaching and for students to become partners in the learning process. A multimodal model is recommended for the design and implementation of teaching, learning and assessment activities. Multimodal teaching and learning environments provide a dynamic and flexible learning space for students as it combines the use of multimedia and ICTs and can be presented in different modes and caters for the different learning styles. The multimodal design model encourages teaching staff to provide as many learning modalities as possible to supply Generation Z students with a variety of pathways to learning that corresponds to their skills and strengths.

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