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Digital Transformation in South African Public Higher Education Institutions - A Pedagogical Approach

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ABSTRACT

Traditional teaching and learning approaches were disrupted by COVID-19, which led to a considerable movement towards online and remote education, with public universities having to adapt to new remote learning methods and a delayed academic calendar. While these changes allowed for continued learning during the pandemic, they also came with challenges and had implications on student performance and well-being. This transition brought to light the necessity for effective pedagogical practices to engage students in virtual classrooms, which also exposed existing disparities in access to technology and internet connectivity. Studies have focused on student access and success in transformative digital learning by redressing socioeconomic issues. Keeping students engaged and connected to what is being delivered has yet to be explored in Public Higher Education Institutions (PHEIs). Numerous tools are available to engage and connect students during teaching and learning. However, these are not optimally utilised in PHEIs due to a lack of knowledge of their existence; lecturers' preferences; lack of skills in using engaging tools; conventional teaching style that is assumed to be working; and lack of will to adapt and change with the times. Changing from conventional classrooms to hybrid and online classrooms requires changing teaching methods and especially pedagogies. This study aimed to identify how PHEIs could better benefit from using 21st-century pedagogies in virtual classrooms now that the pandemic is over. A qualitative research approach was used to gather data. A desktop literature review was used from a constructivist paradigm to assess and select data to include in the study methodologically. Data was analysed using theme analysis. This study found that blended learning and virtual learning have high propensity and knowledge retention rates amongst students, given that the pedagogies used by lecturers align with the new requirements of active and engaging learning. This study covered a broad aspect of pedagogies underpinning learning in 21st-century classrooms and theories. Recommendations were made for improved active engagement in the 21st-century classroom.

Keywords: *Pedagogies, Covid19, Learning, Public Higher Education Institutions, Student Engagement*

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Introduction

The COVID-19 pandemic affected industries worldwide, including South African Higher Education Institutions (HEIs). The COVID-19 pandemic was one of the most disruptive events in modern history, affecting virtually every aspect of human existence, especially public education.[1] Curricula taught in person for decades were

[1] Andreas Schleicher, *The Impact of COVID-19 on Education: Insights from "Education at a Glance 2020"* (OECD Publishing, 2020).

abruptly forced into a remote learning environment due to the COVID-19 pandemic.[2] As a result, lecturers and students could not adequately plan how to replicate the effectiveness and efficiency of in-person learning in the remote learning environment. Many industries struggled to adapt to the pandemic's new reality.[3] According to UNESCO data, the COVID-19 closures and related pedagogical modifications affected more than 1.5 billion pupils globally (90.1% of total enrolled learners) in the first six months after the pandemic began.[4] However, the pandemic also presented these environments with new opportunities and challenges, highlighting the significance of resilience and adaptability in a crisis. The need for PHEIs to increase productivity has grown, resulting from recent high dropout and poor graduation rates in South African HEIs, government funding, and the unstable economic climate brought on by the COVID-19 pandemic.[5] PHEIs systems cling to conventional teaching, learning, and awarding qualifications (degrees) even though the world has changed significantly.[6] Due to persistent issues facing Higher Education, such as diminishing government grant funding, rising student enrolment rates (resulting in high student-to-staff ratios) and high dropout rates. The productivity of HEIs in South Africa is rapidly coming under significant examination.

Evidence demonstrates that some HEIs in the country continue to perform poorly in terms of throughput rates and research, despite significant efforts made by the South African democratic government through a variety of policies to improve the effectiveness, productivity, and equity of the higher education sector and close the gap between previously disadvantaged HEI (predominantly black, Indian, and coloured universities) and favoured HEI (predominantly white universities). According to Moloi only 35% of new and 48% of contact students finish their study programs within the allotted time.[7] This is further supported by a study conducted by Marwala and Mpedi which estimated that over 40% of all first-year students in South Africa do not finish their degrees. In the 2010 cohort, just 22% of students earned a three-year degree within three years, only 39% had finished their degrees by the fourth year, and so on.[8] They only finished their degrees by the sixth year, according to a 2019 government evaluation of the first 25 years of democracy.[9] The Council of Higher Education found that historically underrepresented HEI perform worse than their counterparts in these data, raising concerns about the effectiveness of initiatives meant to close the gap between historically privileged and underrepresented HEI. Therefore, to pinpoint areas for improvement, decision-makers are interested in comprehending the development and drivers of productivity and efficiency of institutions.

Previous studies about higher education have predominantly focused on the intention of studying, learning outcomes, and its teacher-student-centred relationship.[10] In this study, a literature review indicates a dearth of studies focussing on the connected teaching pedagogies for the 21st-century learning classroom. Lecturers' misconception exists about digital teaching and learning -if a lecturer is using PPTs with videos and images over Zoom, Teams, Google Classroom, or other media, then that is enough and 'engaging'.[11] The element of keeping students engaged and connected to what is being delivered has not been explored in PHEIs. Numerous tools are available to engage and connect students during teaching and learning. However, these are not optimally utilised in PHEIs, either due to lecturers' lack of knowledge of their existence, lecturers' preferences, lack of skills in using engaging tools, a conventional teaching style that is assumed to be working, and lack of will to adapt and change with the times. Changing from conventional classrooms to hybrid and online classrooms requires changing teaching methods and especially pedagogies. These changes were significantly imposed by the COVID-19 pandemic, which came with challenges and opportunities in teaching and learning in HEIs.

Thus this study seeks to explore digital transformation in South African PHIs regarding the pedagogical approaches that lecturers utilise to engage students in virtual and hybrid classrooms post-COVID-19. It also seeks to make recommendations arising from study findings. This study will examine the challenges and

[2] Schleicher, *The Impact of COVID-19 on Education: Insights from "Education at a Glance 2020."*
[3] Joshua Grodotzki, Siddharth Upadhya, and A Erman Tekkaya, "Engineering Education amid a Global Pandemic," *Advances in Industrial and Manufacturing Engineering* 3 (2021): 100058.
[4] UNESCO, "COVID-19 Educational Disruption and Response," COVID-19 Recovery, 2020, https://www.unesco.org/en/covid-19/education-response.
[5] Grodotzki, Upadhya, and Tekkaya, "Engineering Education amid a Global Pandemic."
[6] Grodotzki, Upadhya, and Tekkaya, "Engineering Education amid a Global Pandemic."
[7] Kholeka Constance Moloi, "The Complexity of Dealing with Change in the South African Schooling System: 20 Years into Democracy," *African Identities* 12, no. 3–4 (2014): 264–82.
[8] T. Marwala and L. Mpedi, *If We Want to Fix Our Economy, We Must Increase University Graduation Rates* (Johannesburg : Daily Maverick, 2022).
[9] Rudzani Israel Lumadi, "Turnaround Learner Discipline Practices through Epistemic Social Justice in Schools," *Education as Change* 24, no. 1 (2020): 1–21.
[10] Aileen Huang-Saad, Cheryl Bodnar, and Adam Carberry, "Examining Current Practice in Engineering Entrepreneurship Education," *Entrepreneurship Education and Pedagogy* (SAGE Publications Sage CA: Los Angeles, CA, 2020).
[11] Huang-Saad, Bodnar, and Carberry, "Examining Current Practice in Engineering Entrepreneurship Education."

benefits that the COVID-19 pandemic has posed on PHEIs teaching and learning pedagogies in virtual/online and hybrid classrooms, using references to support its analysis. The way of teaching and learning must adapt or even change to suit the new normality of remote education,[12] and this is important to study for improved student success in PHEIs.

When the idea of a university is mentioned, a common image that comes to mind is a lecture theatre with a professor speaking and students attending (sage on the stage approach). The conventional pedagogies in the digital space have also maintained a similar approach, where a lecturer delivers content to an often silent audience – underscoring the lack of student engagement and connected teaching approaches are absent.[13] The one productivity and efficiency gap of concern for most researchers can be redressed in the teaching and learning methodologies which this study seeks to fill.

This study's objectives are to:

a) Examines virtual/online (remote) and hybrid classrooms in digitally transforming Public Higher Education institutions (PHEIs).
b) Contrast teaching methods and pedagogies in online/virtual and hybrid classrooms.
c) Recommend tools available to lecturers and students that should be used to engage students.

This study gives a review of the literature on the effect of Covid-19 in teaching and learning in South African HEIs; a synopsis of conventional teaching and methods; a comparison of traditional, digital and hybrid; the probable teaching pedagogies in a digital classroom and the tools that can be used to engage students to promote success. Nancy Fraser's political social justice theory is used as a lens for this study. A systematic desktop literature review is used as a research method to gather study data. The inclusion and exclusion criteria are paramount for selecting relevant studies to be included in this study for review and will help with the data analysis for informed study findings. The conclusion summarises the study, and recommendations cement the study.

LITERATURE REVIEW

The COVID-19 pandemic has had a significant impact on teaching in South Africa. The South African government announced a nationwide lockdown in March 2020 in response to the pandemic, which led to the closure of schools and universities nationwide.[14] As a result, HEIs had to quickly shift to remote learning and teaching methods to continue educating students.

HEIs in South Africa implemented remote learning programs to ensure continuity of learning. This involved using online platforms, video conferencing, and other digital tools to deliver lessons and engage with students. However, the shift to remote learning was not without challenges, as many students did not have access to the necessary technology or internet connectivity to participate fully. The lockdown measures implemented to control the spread of COVID-19 resulted in the delay of the academic calendar in South Africa. The academic year was pushed back, with many schools and universities reopening several weeks or months later than usual.[15] The shift to remote learning and the delayed academic calendar meant students had less time for learning than in previous years, this reduced learning time affected student performance and achievement.[16] The pandemic and the resulting changes to the education system caused increased stress and anxiety for students and lecturers. Many students struggled with the isolation of remote learning, while lecturers faced additional pressures to adapt to new teaching methods and ensure that students were still receiving quality education.[17]

Conventional teaching methods and student success in South African HEI

Conventional teaching methods, such as lecture-based instruction, rote learning, and memorisation, can positively and negatively affect student success. Conversely, conventional teaching methods can effectively

[12] Grodotzki, Upadhya, and Tekkaya, "Engineering Education amid a Global Pandemic."
[13] Anita Lee-Post and Holly Hapke, "Online Learning Integrity Approaches: Current Practices and Future Solutions.," *Online Learning* 21, no. 1 (2017): 135–45.
[14] Crain Soudien, Vijay Reddy, and Jaqueline Harvey, "The Impact of COVID-19 on a Fragile Education System: The Case of South Africa," *Primary and Secondary Education during COVID-19: Disruptions to Educational Opportunity during a Pandemic*, 2022, 303–25.
[15] Z. Dano and C. Geach, " The University Calendar Was Delayed by the Lockdown," https://www.iol.co.za/education/universities-/university-calendar-delayed-by-lockdown-d9b17096-ed27-43ec-9857-46170f736f93, October 20, 2020.
[16] Dano and Geach, " The University Calendar Was Delayed by the Lockdown."
[17] J. Disord, "Prevalence of Anxiety during the COVID-19 Pandemic: A Systematic Review and Meta-Analysis of over 2 Million People," *PubMed Central* 318 (2022): 272-282.

convey large amounts of information quickly and efficiently.[18] Lectures, for example, can effectively introduce students to new concepts and ideas and provide a foundation of knowledge for more advanced learning.

However, conventional teaching methods can also negatively affect student success, according to Ismail, Sawang and Zolin.[19] Traditional teaching methods often involve a one-way flow of information from the teacher to the student, with little opportunity for student participation or engagement. This can result in a lack of student interest and motivation, negatively impacting learning outcomes.[20] Conventional teaching methods often emphasise rote learning and memorisation rather than critical thinking and problem-solving skills. This can result in students who can recite information but cannot apply it in real-world situations.[21] Traditional teaching methods may stifle student creativity and innovation. Students may feel constrained by the narrow focus on right or wrong answers and the pressure to conform to established norms Conventional teaching methods may not be effective for students with different learning styles, abilities, or cultural backgrounds. This can lead to disparities in student achievement and limit the potential for diversity and inclusion in the classroom.[22]

While conventional teaching methods can be effective for certain types of learning, they may also negatively affect student success by limiting engagement, critical thinking, creativity, and inclusivity.[23] Lecturers must consider alternative teaching methods that can better support diverse learning needs and promote student success, which can be achieved through changing pedagogies for teaching and learning. Lecturers must be wary of their classroom and the mode of delivery thereof.

Comparison of Traditional, Digital and Blended Learning Classrooms in South African HEIs

Contrasting the different learning classrooms for this study is essential as it depicts a picture of the current narrative of South African HEI. Below is a comparison of traditional, digital, and blended learning classrooms:

Traditional Classroom

In a traditional classroom, students attend classes in a physical location, with a teacher delivering lectures and leading discussions.[24] This approach to teaching is often based on textbooks, lectures, and homework assignments. Students must participate in class discussions, ask questions, and complete assignments on time.[25] Some of the characteristics of a traditional classroom include:

- Face-to-face interaction between teacher and students
- Limited use of technology
- Teacher-centered instruction
- Passive learning
- Limited flexibility and customisation

Digital Classroom

In a digital classroom, learning is delivered through digital devices such as laptops, tablets, and smartphones. This approach to teaching uses digital tools and resources to enhance student learning and engagement.[26] Students can access online resources, participate in virtual discussions, and complete assignments using digital tools.[27] Some of the characteristics of a digital classroom include:

- Greater use of technology
- More access to digital resources and materials
- Greater flexibility in how students can learn and interact
- More opportunities for customisation
- More active learning

[18] Annafatmawaty B T Ismail, Sukanlaya Sawang, and Roxanne Zolin, "Entrepreneurship Education Pedagogy: Teacher-Student-Centred Paradox," *Education+ Training* 60, no. 2 (2018): 168–84.
[19] Ismail, Sawang, and Zolin, "Entrepreneurship Education Pedagogy: Teacher-Student-Centred Paradox."
[20] Ismail, Sawang, and Zolin, "Entrepreneurship Education Pedagogy: Teacher-Student-Centred Paradox."
[21] Ismail, Sawang, and Zolin, "Entrepreneurship Education Pedagogy: Teacher-Student-Centred Paradox."
[22] Ismail, Sawang, and Zolin, "Entrepreneurship Education Pedagogy: Teacher-Student-Centred Paradox."
[23] Lee-Post and Hapke, "Online Learning Integrity Approaches: Current Practices and Future Solutions."
[24] Yan Sufeng and Song Runjuan, "Virtual Classroom and Traditional Classroom," in *International Conference on Education Technology and Management Science*, 2013, 114–16.
[25] Genie Black, "A Comparison of Traditional, Online, and Hybrid Methods of Course Delivery," *Journal of Business Administration Online* 1, no. 1 (2002): 1–9.
[26] Black, "A Comparison of Traditional, Online, and Hybrid Methods of Course Delivery."
[27] Sufeng and Runjuan, "Virtual Classroom and Traditional Classroom."

Blended Classroom

A blended classroom combines elements of both traditional and digital classrooms. This approach to teaching integrates online and face-to-face learning to create a more flexible and customisable learning experience.[28] In a blended classroom, students can access digital resources and materials, participate in online discussions, and complete assignments online. However, they also attend classes in a physical location and interact with the teacher and other students face-to-face.[29] Some of the characteristics of a blended classroom include:

- Combines face-to-face and online learning
- Uses a variety of digital tools and resources
- Allows for greater flexibility and customisation
- Encourages active learning and student engagement
- Provides opportunities for personalised learning

Traditional classrooms rely on face-to-face interaction and textbooks, while digital classrooms rely on digital tools and resources to enhance learning. Blended classrooms combine elements of both traditional and digital classrooms to provide a more flexible and customisable learning experience. Therefore, it arouses the need for adaptive pedagogical changes in these different classrooms, particularly the integration of digital transformation in classrooms.

Teaching Pedagogies for Digital Transformation in South African HEIs

The traditional teacher-centred approach to learning has been replaced by more student-centred approaches that focus on active engagement and collaboration.[30] Several pedagogies have emerged as effective in the digital and hybrid classroom. The Active Learning Pedagogy emphasises the importance of engaging students in learning through activities that require them to think, reflect, and participate actively. Active learning can include group discussions, problem-solving activities, and hands-on projects.[31] The Blended Learning Pedagogy combines face-to-face instruction with online learning activities. This pedagogy allows lecturers to leverage technology to enhance learning outcomes and provide more personalised instruction.[32] Project-Based Learning Pedagogy involves students working on long-term projects designed to be meaningful, engaging, and relevant to real-world problems. Students work collaboratively to plan, design, and execute projects that require them to think critically, solve problems, and develop essential skills.[33] The Flipped Classroom Pedagogy: In the flipped classroom, students watch video lectures or complete reading assignments at home, then come to class ready to engage in activities that build upon the material they learned outside class. is Isdagogy allows for more personalised instruction and gives students more control over their learning.[34] Moreover, Connected Learning Pedagogy emphasises the importance of connecting classroom learning to students' interests and passions and connecting students, their communities, and the world around them. This pedagogy focuses on developing skills such as collaboration, communication, and critical thinking in a meaningful and relevant way to students' lives.[35] As seen above, these pedagogies align some of the missing elements in conventional teaching methods. Hence, the is a need to study the contribution of each and how it can contribute to student engagement and, eventually, success.

Tools Available to Support Learning in the 21st-Century Classroom

To support blended learning and virtual teaching pedagogies, lecturers can use many digital teaching tools as a transformative approach to learning in HEIs. These are inclusive but not limited to the tools below. Learning Management Systems (LMS) platforms such as Blackboard, Canvas, and Moodle allow lecturers to create and manage online courses, assignments, and assessments. LMS also provides tools for communication,

[28] Sufeng and Runjuan, "Virtual Classroom and Traditional Classroom."
[29] Ismail, Sawang, and Zolin, "Entrepreneurship Education Pedagogy: Teacher-Student-Centred Paradox."
[30] John Jongho Park et al., "Remote Engineering Education under COVID-19 Pandemic Environment.," *International Journal of Multidisciplinary Perspectives in Higher Education* 5, no. 1 (2020): 160–66.
[31] Jeffrey E Froyd, Phillip C Wankat, and Karl A Smith, "Five Major Shifts in 100 Years of Engineering Education," *Proceedings of the IEEE* 100, no. Special Centennial Issue (2012): 1344–60.
[32] Sufeng and Runjuan, "Virtual Classroom and Traditional Classroom."
[33] Edi Rozal et al., "The Effect of Project-Based Learning through YouTube Presentations on English Learning Outcomes in Physics," *AL-Ishlah: Jurnal Pendidikan* 13, no. 3 (2021): 1924–33.
[34] Jacob Bishop and Matthew A Verleger, "The Flipped Classroom: A Survey of the Research," in *2013 ASEE Annual Conference & Exposition*, 2013, 23–1200.
[35] Froyd, Wankat, and Smith, "Five Major Shifts in 100 Years of Engineering Education."

collaboration, and feedback.[36] Video conferencing software such as Zoom, Microsoft Teams, and Google Meet allows lecturers to conduct live virtual classes, hold virtual office hours, and facilitate virtual group discussions. This software also allows for screen sharing and recording of sessions for later review.[37] Lecturers can use digital content and resources such as e-books, videos, podcasts, and interactive simulations to enhance student learning. These resources can be accessed online and combined with traditional classroom instruction.[38] Gamification tools such as Kahoot, Quizlet, and Gimkit can create interactive quizzes, games, and activities that engage students and promote learning.[39] Lecturers can also use social media platforms like Twitter, Instagram, and Facebook to connect with students and provide updates, resources, and announcements.[40] Further, they may use collaboration tools such as Google Docs, Microsoft OneDrive, and Dropbox, allowing students to work on group projects, share files, and collaborate on assignments in real time.[41] Adaptive learning tools such as DreamBox, Khan Academy, and Edmentum provide personalised learning experiences for students based on their individual needs and abilities,[42] which can also be used to supplement student learning.

Many teaching tools can support blended and virtual learning, from learning management systems and video conferencing software to digital content and resources, gamification tools, social media platforms, collaboration tools, and adaptive learning tools. Using these tools effectively, lecturers can enhance student learning and engagement in online and traditional classroom settings.[43]

THEORETICAL FRAMEWORK

This study uses Nancy Fraser's social justice model, which has also been employed by scholars to address social injustice in education,[44] including in higher education (HE) Initially created for political and social justice, Fraser's framework prioritises participation, which states that "all adults should participate meaningfully in society."[45] This can be accomplished by combining the redistribution of resources, both financial and non-financial, the recognition of individuals and groups, and the provision of space for the representation of identity groups that a person may be a part of or identify with.[46] This aligns with this study as students need not be treated as passive participants in learning but as active, engaged, learners who contribute to their earnings. The constructivism theory suggests that learners construct knowledge by actively engaging with new information and building upon prior knowledge and experiences.[47] Learning occurs through a probing and navigating network and people, resources, and technologies,[48] which can motivate the practical application of content and relevant learning experiences that can be applied to their lives.[49]

There are multiple ways in which people can be intelligent, and that intelligence can be nurtured and developed through varied learning experiences. This can be achieved through diverse teaching pedagogies that cater to different learning styles and preferences,[50] echoing Fraser's theory where student recognition is paramount. Students can develop their abilities and intelligence through effort, practice, and persistence. Pedagogies must recognise the importance of effort, practice and learning from mistakes.[51] (where engaged students can be open to constructing their meaning and be active participants in their learning.

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[36] Ahmad Ridho Rojabi, "Blended Learning via Schoology as a Learning Management System in Reading Class: Benefits and Challenges," *Jurnal Linguistik Terapan*, 2019, 36–42.
[37] Ravinder Singh and Soumya Awasthi, "Updated Comparative Analysis on Video Conferencing Platforms-Zoom, Google Meet, Microsoft Teams, WebEx Teams and GoToMeetings," *EasyChair Preprint* 4026 (2020): 1–9.
[38] Elena Fleaca and Radu D Stanciu, "Digital-Age Learning and Business Engineering Education–a Pilot Study on Students' E-Skills," *Procedia Manufacturing* 32 (2019): 1051–57.
[39] Fernando Almeida and Jorge Simoes, "The Role of Serious Games, Gamification and Industry 4.0 Tools in the Education 4.0 Paradigm," *Contemporary Educational Technology* 10, no. 2 (2019): 120–36.
[40] Terry Anderson, "Challenges and Opportunities for Use of Social Media in Higher Education," *Journal of Learning for Development* 6, no. 1 (2019).
[41] Fleaca and Stanciu, "Digital-Age Learning and Business Engineering Education–a Pilot Study on Students' E-Skills."
[42] Grodotzki, Upadhya, and Tekkaya, "Engineering Education amid a Global Pandemic."
[43] Lee-Post and Hapke, "Online Learning Integrity Approaches: Current Practices and Future Solutions."
[44] Carol Vincent, *Nancy Fraser, Social Justice and Education* (Routledge, 2020).
[45] Vincent, *Nancy Fraser, Social Justice and Education*.
[46] Vincent, *Nancy Fraser, Social Justice and Education*.
[47] Kate O'Connor, "Constructivism, Curriculum and the Knowledge Question: Tensions and Challenges for Higher Education," *Studies in Higher Education* 47, no. 2 (2022): 412–22.
[48] Serkan Boyraz and Gürbüz Ocak, "Connectivism: A Literature Review for the New Pathway of Pandemic Driven Education.," *Online Submission* 6, no. 3 (2021): 1122–29.
[49] Nataliya Machynska and Halyna Boiko, "Andragogy–The Science of Adult Education: Theoretical Aspects," *Journal of Innovation in Psychology, Education and Didactics* 24, no. 1 (2020): 25–34.
[50] Bulent Cavas and Pinar Cavas, "Multiple Intelligences Theory—Howard Gardner," *Science Education in Theory and Practice: An Introductory Guide to Learning Theory*, 2020, 405–18.
[51] Michael D Wolcott et al., "A Review to Characterise and Map the Growth Mindset Theory in Health Professions Education," *Medical Education* 55, no. 4 (2021): 430–40.

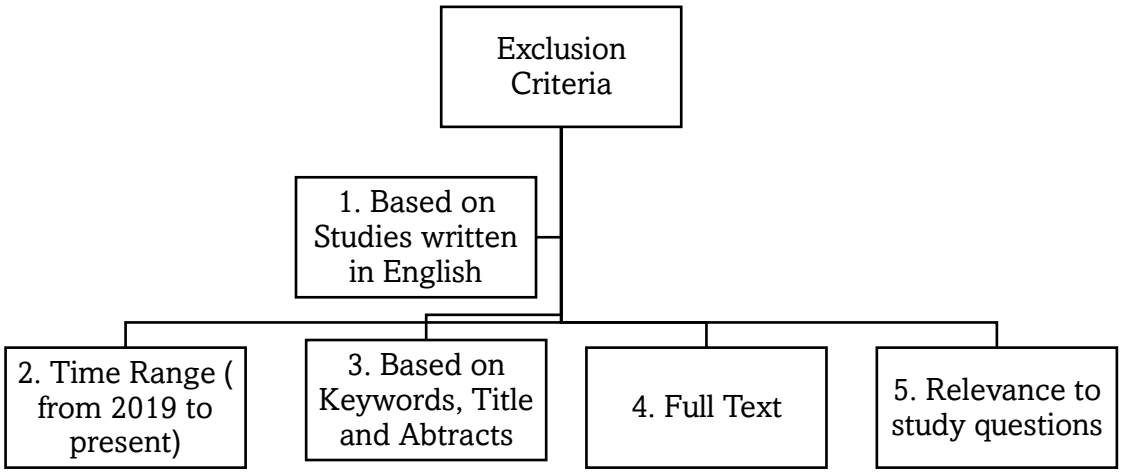
METHODOLOGY

A systematic desktop literature review was used to collect data for this study. Conducting a systematic review for this study involved several steps, as referenced by Hanelt *et al.*,[52]

Defining the research question: The research questions for this study were;
a) What is a virtual/online and hybrid classroom?
b) What is the difference in teaching methods and pedagogies used during online/virtual/hybrid classrooms?
c) Which tools are available to lecturers and students that should be used to engage students?

These questions were formulated using research study objectives.
Conducting a literature search*:* A literature review was conducted using secondary online sources to better understand the study and address study gaps. Google Scholar was used as a preferred database which was easily accessible to the authors of this paper. An exclusion and inclusion criteria of sources were used to guide the study to answer research questions.
Screening and selecting studies: The studies identified in the literature search were screened for relevance, with those not meeting the inclusion criteria were excluded. The remaining studies were then selected for inclusion in the review. Figure one depicts the exclusion criteria used for this study.

Figure 1: Inclusion and Exclusion Criteria For Literature Search



Source: Author's own

The exclusion criteria guided the review of literature in selecting relevant studies to be included in this study.
Assessing the quality of studies: The quality of the studies included in the review is assessed using standardised criteria. This ensures that the review only includes methodologically sound and reliable studies. Inclusion and exclusion criteria were used, as seen in Fig.1. The quality of the studies reviewed had to be between the year 2019-2023 and give insight into the relevance to different pedagogies. Given the study requirements, older studies were selected when they laid a foundation for current studies to contrast the old and new information.

Analysing the data: The data from the included studies were extracted and analysed using statistical methods. This allowed for quantitative synthesis of the findings, where appropriate.[53] Because this is desktop research, data was analysed using theme analysis by identifying common themes from selected studies. This included coding and familiarisation with study data to generate themes.

Synthesising the findings: The findings from the included studies were synthesised to provide an overall summary of the research on the topic. This included identifying gaps in the existing research and making

[52] André Hanelt et al., "A Systematic Review of the Literature on Digital Transformation: Insights and Implications for Strategy and Organizational Change," *Journal of Management Studies* 58, no. 5 (2021): 1159–97.
[53] Hanelt et al., "A Systematic Review of the Literature on Digital Transformation: Insights and Implications for Strategy and Organizational Change."

recommendations for future research.[54] Themes are provisioned and discussed to give insight into the study gap and literature. Systematic reviews are considered one of the highest levels of evidence in research, as they provide a rigorous and comprehensive summary of the existing research on a particular topic.

FINDINGS AND DISCUSSION

Student success depends on many factors, one of which is how students are being taught, which ensures knowledge retention. Student success is aligned with the characteristics of the changes in the 21st-century classroom. The 21st classroom has changed due to the nature of the demand for digital integration and the development thereof. Regardless of this nature of demand, some institutions have remained with the traditional teaching and learning methods. After the pandemic, most institutions reverted to full-contact learning, where a teacher-centred approach to teaching and learning remained. Blended Learning and fully Digital/Virtual learning classrooms occur, and there is an embrace of active, engaging teaching pedagogies. PHEIs comprise tech-savvy students where technology is embraced and integrated into teaching and learning to enhance students' success. The study findings are paramount in addressing what the literature is saying about the study gap. The study found that the COVID-19 pandemic changed the face of learning positively, regardless of socio-economic challenges that do not affect the gaps in teaching and learning pedagogies the study seeks to address. At the commencement of the study, some major themes were identified in the literature, which solidified the gap and addressed the study problem.

Theme 1: Remote learning during and post-COVID-19

Remote learning, also known as distance learning, has become a popular mode of education during and after the COVID-19 pandemic. Some common themes that are often associated with remote learning post-COVID-19 include:

1. Technology: Remote learning relies heavily on technology to deliver education remotely. Video conferencing, online platforms, and learning management systems have become common in remote learning.[55]
2. Equity: Remote learning has highlighted equity issues in education, particularly regarding access to technology and internet connectivity. Efforts have been made to ensure that all students have access to the necessary technology and support to participate in remote learning.[56]
3. Pedagogy: Remote learning has prompted a shift in pedagogy, with educators exploring new ways of delivering education remotely. There is a focus on creating interactive and engaging learning experiences that promote student engagement and learning.[57]
4. Social-emotional learning: Remote learning has highlighted the importance of social-emotional learning and mental health support for students. Educators are exploring ways to promote student well-being and support students' social-emotional needs in remote learning environments.[58]
5. Assessment: Remote learning has prompted a shift in assessment methods, with educators exploring new ways of assessing student learning remotely. There is a focus on creating valid and reliable assessments that can be administered remotely.[59]

Theme two: Blended Learning Post COVID19

Blended learning is an approach to education that combines traditional in-person classroom instruction with online learning experiences. Some common themes that are often associated with blended learning include:

1. Flexibility: Blended learning allows students to have more flexibility in terms of time, location, and pace of learning. They can complete some coursework online, which enables them to study at their own pace and in their own time.[60]

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[54] Hanelt et al., "A Systematic Review of the Literature on Digital Transformation: Insights and Implications for Strategy and Organizational Change."
[55] Y. Rajabalee, "Online Learning during the COVID-19 Pandemic: A Case Study of Higher Education," *International Journal of Educational Technology in Higher Education* 18, no. 1 (2021): 1–18.
[56] J. de la Torre, M. Coady, and J. Garcia, "Learning Loss during the COVID-19 Pandemic: Evidence from Peru," *International Journal of Educational Development* 84 (2021): 102382.
[57] Charles B Hodges et al., "The Difference between Emergency Remote Teaching and Online Learning," 2020.
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2. Personalization: Blended learning can be tailored to meet the needs of individual learners. Lecturers can use online resources to provide personalized learning experiences that cater to each student's needs and interests.[61]
3. Technology integration: Blended learning relies heavily on technology to deliver online instruction and to support classroom-based learning. Technology can be used to create interactive and engaging learning experiences that promote student engagement and learning.[62]
4. Active learning: Blended learning promotes active learning, involving students actively engaging in the learning process. This includes using technology to complete online assignments, participating in online discussions, and collaborating with peers.[63]
5. Collaboration: Blended learning allows students to collaborate with peers and teachers. Online tools can facilitate group work, peer-to-peer learning, and discussions that enhance learning outcomes.[64]

Theme three: Contrast between Student-Centred and Teacher-centred approaches

Student-centred learning focuses on the needs and interests of the individual student. In this approach, the teacher is a facilitator, guiding students to construct their knowledge and skills through active learning activities. Student-centred learning emphasises collaboration, problem-solving, critical thinking, and student autonomy.
In contrast, teacher-centred learning is a more traditional approach to education where the teacher is the primary source of knowledge and the centre of the learning process. The teacher lectures or presents information to students, who are expected to absorb and memorise the information. This approach emphasises rote learning and conformity, with little room for student autonomy or collaboration.

It is important to note that both approaches have their strengths and weaknesses, and the effectiveness of each approach depends on the context and the learning goals. A well-designed learning experience should include elements of both student-centred and teacher-centred learning, depending on the situation and the needs of the learners.

Remote learning provided a lifeline for education during the pandemic, but the opportunities that technological advances provide go far beyond a crisis-relief solution. Digital technology provides new answers to the questions of what and how individuals learn, as well as where and when they learn. Technology can provide lecturers and students with access to specialised information that goes beyond textbooks, in various formats, and in ways that span time and location.[65]

RECOMMENDATIONS

Blended learning, which combines traditional classroom instruction with online learning, has become an increasingly popular teaching approach in recent years. Here are some steps lecturers can take to successfully implement blended learning and new teaching approaches to improve student success and retention:

***Develop a Plan*:** Before implementing blended learning and new teaching approaches, educators should develop a comprehensive plan that includes goals, strategies, and timelines. The plan should consider student needs, resources, and infrastructure factors.

***Use Data to Inform Instruction*:** Educators should use data to inform instruction and tailor their teaching methods to meet the needs of individual students. This can include data on student performance, learning styles, and preferences.

***Implement Active Learning Strategies*:** Blended learning allows for more active learning strategies, such as collaborative learning, project-based learning, and flipped classroom models. These approaches can improve student engagement and retention by providing opportunities to apply what they have learned in real-world settings.

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***Foster a Supportive Learning Environment*:** Blended learning can be challenging for students not used to learning online or lacking access to the necessary technology. Educators should foster a supportive learning environment that encourages student participation, offers support and guidance, and promotes a sense of community.

***Incorporate Feedback and Assessment*:** Blended learning allows for more frequent and varied forms of feedback and assessment. Educators should incorporate these tools to monitor student progress, adjust teaching methods as necessary, and provide timely feedback to students.

***Provide Professional Development*:** Educators may need professional development and training to implement blended learning and new teaching approaches effectively. Professional development can help educators build their skills and knowledge, learn from best practices, and stay current on the latest technology and teaching methods. South African lecturers with limited resources can still use student engagement tools to enhance their teaching and promote student learning.

Here are some suggestions to help under-resourced lecturers:
***Use Open Educational Resources (OER*):** OER is freely accessible online learning resources that educators can use and share. South African lecturers can use OER to supplement their teaching and provide students with access to high-quality learning materials. Some popular OER repositories include OER Africa and Siyavula.

Use Social Media: Social media platforms such as WhatsApp, Facebook, and Twitter can communicate with students, share resources, and facilitate discussions. These platforms are free and accessible to many South African students.

***Use Low-Tech Engagement Strategies*:** Lecturers can use low-tech strategies such as brainstorming, role-playing, and debates to engage students and promote active learning. These strategies require minimal resources and can be effective in stimulating student participation.

***Use Interactive Tools*:** Interactive tools such as Google Forms, Mentimeter, and Socrative can create quizzes, polls, and surveys that promote student engagement and provide real-time feedback. These tools are free and can be accessed through a web browser.

***Use Collaborative Tools*:** Collaborative tools such as Google Docs, Microsoft OneDrive, and Dropbox can facilitate group work and student collaboration. These tools are free and can be accessed through a web browser. *Seek Funding Opportunities*: South African lecturers can seek funding opportunities to support using student engagement tools in their teaching. For example, they can apply for grants or seek sponsorship from private companies or government agencies.

Educators can improve student success and retention by implementing blended learning and new teaching approaches. By developing a comprehensive plan, tailoring instruction to student needs, fostering a supportive learning environment, and incorporating feedback and assessment, educators can help students achieve their academic goals and succeed in today's rapidly changing world. South African lecturers with limited resources can still use student engagement tools by leveraging open educational resources, social media, low-tech engagement strategies, interactive and collaborative tools, and seeking funding opportunities. By being creative and resourceful, lecturers can promote student learning and engagement despite limited resources.

CONCLUSION

This study introduced the challenges encountered by HEIs in South Africa post-COVID-19 pandemic and how this necessitated the need for new blended-learning pedagogies. Literature was reviewed to gather insights on how past authors conceptualise the study gap, and general literature themes were identified for study conceptualisation. A qualitative research approach was used to gather study data. A systematic review research design was used as an analytical tool to identify literature themes that applied to the study. This study found that in a 21st-century classroom, virtual and blended learning should encompass active engaging teaching pedagogies. Recommendations on strategies and tools that lecturers can adopt in the 21st-century classroom were covered and provided tools that under-resourced institutions/staff can adopt to optimise learning and student engagement. Recommendations were made for improved active engagement in the 21st-century classroom. Educators can improve student success and retention by implementing blended learning and new teaching approaches. By developing a comprehensive plan, tailoring instruction to student needs, fostering a

supportive learning environment, and incorporating feedback and assessment, educators can help students achieve their academic goals and succeed in today's rapidly changing world. South African lecturers with limited resources can still use student engagement tools by leveraging open educational resources, social media, low-tech engagement strategies, interactive and collaborative tools, and seeking funding opportunities. By being creative and resourceful, lecturers can promote student learning and engagement despite limited resources.

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