Centre For Diversity in Higher Education Research CUT

JoHETI

Journal of Humanities Educational Technology and innovation

Teaching in a transforming educational environment: A call for flexible methodological paradigms in Zimbabwean teachers' colleges

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DOI: 10.38140-joheti-2025v1i1a1

Received: 05 March 2025
Accepted: 30 March 2025
Published: 3April 2025

Abstract

Considering the current curriculum transformation in Zimbabwean higher education institutions, the purpose of this theoretical article is to argue for the use of transformational and flexible methodological teaching approaches in Zimbabwean teachers' colleges. The use of information communication technology (ICT)-mediated strategies in teacher education offers a plethora of both opportunities and challenges. There is a need for flexible methodological paradigms in Zimbabwean teachers' colleges to effectively manage the semesterised modular approach to learning necessitated by the current curriculum transformation in education. The rise of digital technologies has transformed the way students and lecturers interact both within and outside the classroom. This article argues that current teaching practices in Zimbabwean teachers' colleges are heavily mired in administrative and pedagogical inconsistencies, which call for the adoption of reflective ICT-mediated methodologies to effectively support student learning. There is an urgent need to thoroughly (re)consider and (re)design or adapt teaching and learning pedagogical practices to address the demands fostered by the newly transformed educational environment in Zimbabwe. We therefore illuminate some strategies that can be adopted and applied by Zimbabwean teachers' colleges to offer 21st-century compliant educational pedagogies to mitigate the current challenges they face.

Keywords: *Information communication, technology-mediated strategies, methodological paradigms teaching practices, technology, transforming educational environment*

1 Introduction

To adapt to pedagogical innovations, technological advancements, and societal changes, education has undergone substantial transformation over time. This progression has been characterised by shifts in educational paradigms, instructional methodologies, curriculum innovations and transformations, and the integration of new technologies into classroom settings (Janthapass et al., 2024). Higher education institutions today face opportunities and challenges that were unimaginable in the past (Burbules & Callister, 2024). Digital learning systems have completely changed how we study and communicate (Chasokela et al., 2025). Teachers and students can now interact with colleagues and partners worldwide, thanks to social media platforms, virtual classrooms, and online learning management systems (LMS) (Pilli, 2014; Otchie & Pedaste, 2019). The emergence of digital platforms has invariably forced learning institutions worldwide to adopt new teaching approaches. Zimbabwe has embraced curriculum transformation based on the Heritage-Based Education 5.0 philosophy, whose aim is to shape future technology through innovation and industrialisation. In the context of higher education in Zimbabwe, this approach involves incorporating digital tools and platforms into the teaching and learning process, such as online LMS, virtual classrooms, and digital repositories of cultural heritage materials (GoZ, 2018).The transition towards digital forms of teaching

and learning thus requires the acquisition of fundamental 21st-century skills. Rahim and Sandaran (2020) point out that such skills, which are critical for knowledge generation, include critical thinking and analysis, complex problem-solving, creativity, and innovation. These skills require both lecturers and students to be technologically savvy.

In this article, we contend that Gresham's paradox characterises Zimbabwean teachers' colleges, which are caught between traditional and new digital pedagogies. Furthermore, the transition to the new semester approach may present administrative challenges that could inhibit the adoption of new digital pedagogies. Aliyu et al. (2019) add that despite the evident efforts made by higher education institutions to encourage students to embrace new digital technologies for blended and virtual learning, there is evidence that students have contradictory thoughts about whether to embrace or reject the use of this new technology. The Alharthi (2020) study, which examined students' attitudes towards the use of technology in online courses, demonstrated that students were unhappy with online learning technologies and would not recommend online courses with the technology as it currently exists. The foregoing attitudes can be said to hold true for lecturers, leading to their resistance to applying these technologies in their teaching. If these and other attitudinal issues are not resolved with academic integrity and bravery, teachers' colleges may end up celebrating an outdated, obfuscated sense of grandeur. The urgency of this article is characterised by the need for a paradigm shift, suggesting approaches that can be used by lecturers to help teacher education students adjust to the transforming new learning environment in Zimbabwe's teachers' colleges. The aim of this article is therefore to illuminate how lecturers can effectively support student teachers by using new methodologies to enhance their educational experiences in a landscape that has changed and leans towards more ICT-mediated platforms.

2. Virtual Academic Student Mobility

One of the primary areas where technology has had a significant impact is in promoting student mobility (Tran, 2016), which Shkoler et al. (2020) explain as the physical transition or movement of students or lecturers to another country. However, in the context of this article, we prefer to define student mobility as an interactive interpersonal process of accessing activities that traditionally required physical mobility, but which can now be undertaken without recourse to physical travel by utilising technology-based mediums such as the internet, computers, and mobile phones (Teichler, 2017). This is because, in today's interconnected world, technology has fundamentally altered how students obtain education, making it easier and more accessible than before. Due to digital virtual platforms, students can now easily access course materials, participate in global projects, and communicate with peers from different cultural backgrounds (Chasokela et al., 2025). As a result, the advent of technology has fundamentally changed our understanding of education, especially with regard to student mobility. Changes in learner preferences and technological improvements have led to a paradigm shift in education, with traditional classrooms giving way to flexible online learning platforms (Janthapass et al.,2024). This change acknowledges that traditional educational paradigms are unable to meet the diverse requirements of students, and therefore institutions are turning to digital tools to increase accessibility, flexibility, and efficacy (Allen& Seaman,2017). Since this phenomenon of using digital tools encompasses more virtual and connected experiences than the conventional ideas of actual physical movement, the term 'student mobility' is being redefined. Virtual learning platforms help students develop critical skills like communication, flexibility, problem-solving (Al-Balushi & Al-Mekhlafi, 2022; Santamaria & Alfonso, 2025), and cross-cultural awareness (Bhuasiri & Xaymoungkhoun, 2023). By using these platforms, students can participate in online discussions, exchange experiences, and learn from each other's perspectives.

Education has also transcended national boundaries. Building a global community of learners who can collaborate, exchange knowledge, and gain from each other's diverse points of view is the aim of this borderless education (Sidhu et al., 2021). One of the major effects of this shift is the

democratization of education. Owing to technology, students from underprivileged backgrounds can now access opportunities and top-notch educational resources that were previously out of their reach. The evolving character of institutional identity is another essential component of borderless education. As institutions become more global and digital, they must adapt to new teaching and learning models that prioritise connectivity and teamwork over traditional hierarchies (Chasokela et al., 2025). By adapting to modern learning and teaching strategies, institutions like teachers' colleges will enhance their relevance in developing manpower with the relevant 21st-century skills and abilities.This calls for a fundamental shift in institutional culture, moving the focus from physical locations and structures to virtual networks and global partnerships. In order to adapt to these changes in the future, educational institutions should prioritise inclusivity, teamwork, and connectedness in their teaching and learning strategies (Chasokela et al., 2025). This can be achieved by embracing and developing collaborations with other national and international institutions.

3. Technology and Staff Professional Growth

It is our considered view that a technologically and academically stagnant staff is a major issue that poses a serious threat to transformation. It is indisputable that the only constant educationists should recognise in the ever-changing educational landscape is change. The Ministry of Higher and Tertiary Education's quest to strengthen the foundations of Heritage-Based Education 5.0 is commendable. Consequently, Zimbabwean teachers' college lecturers must not ignore important concepts like industrialisation, innovation, and research, which are crucial for achieving National Development Strategy 1. Thus, it is impossible to overstate the connection between the vital pillars of research and instruction. Some scholars aptly argue that to stay up-to-date with the latest technologies and pedagogies, academics must engage in ongoing research and professional development (Boud & Soler, 2022), with a focus on teamwork that promotes diversity and inclusivity (Kember, 2022), as this allows them to manage their workload effectively (McKenzie & Bossu, 2023). In light of this, teachers' college lecturers can ill afford to ruminate on ongoing professional development, which necessitates continual research and teamwork both inside and outside the institution.

It must be acknowledged that the current national curriculum transformation in both Zimbabwe's education ministries necessitates a great deal of re-learning and re-skilling. The knowledge that lecturers currently possess is insufficient in an environment where artificial intelligence has taken over. When Dzinoreva et al. (2023) claim that teacher education in Zimbabwe is characterised by a context in which students are digitally aware and expectant, but lecturers are perceived to be neither, they may not be far from reality. Furthermore, lecturers in teachers' colleges must unavoidably dismantle academic silos and begin embracing and residing in a fluid academic environment characterised by cooperative teaching and research. The island mentality is no longer fashionable, as it relegates us to 20th-century dinosaurs who believe that the teacher is the sole source of knowledge and the student a vessel to be filled with that knowledge. This is contrary to Heritage-Based Education 5.0, which is based on the idea that the teacher serves as a facilitator, directing the course of lessons, while the student is at the centre of the interactive learning process. To engage with students, lecturers must adopt ICT-mediated technologies.

Peuler and McCallister (2019) point out that staff collaboration facilitated by technology includes virtual seminars and webinars as crucial elements. As virtual academic forums and events have grown, staff members can now participate in international conferences and workshops without having to travel. Consequently, accessibility has improved for those who lack the financial means to attend national and international events in person (Chasokela et al., 2025). Engaging in virtual conferences allows staff members to connect with a global audience, share their research, and build relationships with colleagues from diverse backgrounds. This approach can expand the knowledge base of lecturers, leading to improvements in the pedagogical methods used in teacher colleges.

In light of the above, incorporating technology into the curriculum for pre-service teachers will inevitably result in a model that these educators can apply in their classrooms once they graduate (Dzinoreva et al., 2023). Exposure to technology provides a starting point for teachers to develop additional skills that complement technology-based learning (Khanetal.,2021). Thus, teachers who have technological deficiencies may not be able to offer effective instruction. In this context, Kivunja (2013) issues an apt caveat by highlighting that the mismatch between teachers entrenched in the traditional pedagogies of the previous century and students who are technologically aware in the 21st century will persist if 21st-century technology-driven learning and teaching approaches are not adopted.

4. Understanding Teacher Education Students' Needs

The focus on flexibility and accessibility in contemporary ICT-mediated pedagogies reflects a trend towards learner-centred approaches, which prioritise individual needs, preferences, and learning styles. A more inclusive and individualised educational experience is the hallmark of this strategy (Janthapassetal.,2024). Therefore, managing the new learning environment requires an understanding that students encounter academic challenges of which lecturers must be aware in order to assist them efficiently. In light of this, lecturers must consider that students need to manage their coursework due to the diversity of their personalities and learning styles. Accordingly, the key question is whether teachers' colleges have a purposeful and effectively managed consolidated course profile. Essentially, the following:

i. Do module leaders plan when assignments are submitted?
ii. Do module leaders and the academic boards monitor both the frequency and nature of these assignments?
iii. Do module leaders and academic boards evaluate whether the students are comfortable with the assignment schedules?
iv. How effectively are module leaders dealing with emotional and social challenges that affect their students?
v. Are module leaders able to build trust and confidence in their students?

Given the aforementioned questions, it is crucial that teachers' colleges understand the need for well-planned and systematic assignment programmes that minimise student workload while maximising interactive involvement in self-directed learning activities to achieve successful academic results.

5. Strategies for Supporting Teacher Education Students

It is indeed crucial that lecturers adapt and create mentorship programmes as they work in the new learning environment. We believe that teacher colleges should implement a system that matches students with identified peers or seasoned lecturers for support and guidance. To self-monitor module coverage, they must also encourage students to participate in reflective practice, which entails reviewing their modules, establishing objectives, and creating action plans. To track the extent to which students independently engage with the various modules, colleges also require college-wide programmes that can be managed by module leaders. Establishing a new learning culture based on cooperative engagement is essential. Therefore, to promote shared knowledge and expertise, teacher colleges must encourage peer-to-peer learning, group projects, and discussions. In essence, lecturers must become skilled facilitators and move away from the antiquated practice of traditional teaching. Additionally, they must abandon the emphasis on summative evaluation and introduce tasks that rely more on formative assessment. These assignments do not have to be lengthy, but they should be challenging enough to encourage students to engage with the module. Lastly, there is a pressing need to make significant investments in technology integration. To improve teaching, learning, and professional development, teacher colleges need to make substantial use of digital tools and resources.

In all honesty, teaching programmes will continue to suffer if it is not acknowledged that staff members require access to a variety of technological devices and Wi-Fi connectivity. Garcez et al. (2022) underscore the importance of digital transformation in higher education by emphasising the need for lecturers to have access to various technological devices and reliable Wi-Fi connectivity. Rof et al. (2022) point out that such access is critical to support innovative learning strategies. Teacher colleges must therefore accept that it is their responsibility to support lecturers in order to create an enabling teaching environment.

6. Creating a Supportive Learning Environment

Teachers' colleges cannot keep sending conflicting messages about what it means to teach in a changing educational environment. In essence, they must acknowledge that flexible and adaptive instruction is necessary in the Education 5.0 era. In addition to fostering student agency and autonomy (Lee et al., 2023), flexible and adaptive instruction offers students personalised learning (Hwang et al., 2023) while providing real-time feedback from lecturers (Kim et al., 2023). The positive effect of flexible and adaptive instruction resides on the premise that students take ownership of their learning, developing essential skills for the 21st century, such as self-directed learning and problem-solving (Lee et al., 2023). Furthermore, because students have unique learning styles, abilities, and preferences, this kind of instruction enables lecturers to tailor their teaching to cater to these individual differences and needs (Hwang et al., 2023). Additionally, technology-enhanced instruction has the advantage of enabling lecturers to offer real-time feedback and assessment, which assists them in adjusting their instruction to address knowledge gaps and misconceptions (Kim et al., 2023). To address a range of learning needs and encourage participation, lecturers must be adept at utilising a variety of teaching strategies, resources, and evaluation techniques. Teachers' colleges need to accept that technology is changing how education is delivered, with electronic literacy becoming essential (Zalli, 2024). The lecture method, moulded on a one-size-fits-all philosophy, is thus no longer effective and should be consigned to the dustbin of history. In addition, lecturers must support students' independence in the learning process by limiting the amount of lecturer-centred teaching methodologies. To encourage self-directed learning, in which students take charge of their own education, they must delegate responsibility to the students. This is a worldwide practice that is impossible to ignore, as student ownership of their education promotes learning transfer, which, in turn, cultivates a culture of lifelong learning and global academic citizenship.

7. Supporting Teaching Staff

Although the student is at the centre of every activity, it is imperative that staff members have opportunities for professional development. Teachers' colleges should make significant investments in providing lecturers with continual training and development so they can improve their own teaching methods. Konyana and Motalenyane (2022) support this by indicating the need for teachers' colleges to adapt to the new normal of remote teaching and learning, emphasising the importance of continuous staff development in ICT-mediated teaching strategies. Re-learning and re-skilling have become the buzzwords globally. Lecturers must re-learn in order to comply with the constantly evolving curriculum as well as new technologies (Koh & Lee, 2020). Teachers' colleges must establish collaborations with communities and schools as part of Education 5.0 because such collaborations enable them to provide contextualised learning experiences that are relevant to the local context (Mkhwananzi, 2022). By cultivating cooperative relationships with schools, communities, and other stakeholders, teachers' colleges will be able to offer students invaluable, real-world learning experiences that will help them emerge as graduates prepared for their futures. There is a strong incentive for higher education institutions to review their curricula to involve students in the community. Teachers' colleges must acknowledge that real-world experiences offer superior

apprenticeship-modelled learning opportunities and stop restricting their instruction to the four walls of a building (or under trees).

8. Limitations of Traditional Lecture Methodologies

Before we examine some ICT-mediated facilitation methodologies, it is important to characterise traditional lecture methodologies and their inherent challenges. The lecture method (teapot and teacups syndrome) offers one-way communication, as the lecturer delivers information to students through lectures, with minimal student participation. It is a one-size-fits-all approach that caters to a single, uniform learning style, thereby overlooking students with different learning preferences (Kember, 2022). Sahito et al. (2024) confirm that the lower level of engagement can be attributed to, or at least associated with, the more inactive nature of traditional lectures, where students are often required to listen to the lecturer (Freeman et al., 2021). This results in lower retention rates and less long-term understanding among students.

The lecture method is lecturer-centred, with the lecturer as the primary authority and students as passive recipients of information, hindering active learning and engagement (Hativa, 2022). From an inclusive perspective, the lecture method may fail to support students with various learning disabilities, in addition to creating language barriers and cultural differences (Iniesto et al., 2022). It largely focuses on content transmission, where the lecturer transmits knowledge to the students. Consequently, there is limited student engagement, which often leads to a lack of personalised feedback. Boud and Molloy (2021) argue that students will not access specific and actionable feedback to improve their learning under this method.

The lecture method is founded on assessment-based evaluation, in which student learning is often evaluated through essays and examinations. Wiggins and McTighe (2021) argue that the lecture method is outdated, as it lacks hands-on experience, with lecturers mainly focusing on theoretical knowledge. This leaves students without practical experience or hands-on skills. Boud and Molloy (2021) also point out that it constricts opportunities for reflection and engagement in self-assessment and metacognitive development. For teacher training colleges, these skills are essential if student teachers are to graduate as effective educators. Because the approach relies heavily on the knowledge and teaching abilities of lecturers, it also restricts the development of critical thinking and problem-solving skills. Several studies (Barnett & Hixon, 2022; Freeman et al., 2021; Hativa, 2022) have found that active learning approaches, which involve more critical thinking and problem-solving, are associated with better student outcomes than traditional lecture-based instruction. It can be concluded that teacher training colleges should encourage lecturers to limit the use of the lecture method, as it is increasingly becoming redundant in a world dominated by digital technologies.

9. ICT-Mediated Facilitation Methodologies

The benefits of using ICT-mediated teaching methodologies, such as the flipped classroom, virtual learning environments, and podcasts, are numerous. Radovan and Radovan (2024) highlight the importance of harmonising pedagogy and technology to foster sustainable motivation and efficiency in blended learning environments through teaching approaches that integrate technology and enhance collaboration and communication. Conversely, Aljehani (2024) asserts that to increase access to educational resources, educators must adopt effective pedagogical approaches that promote learner engagement to ensure successful technological integration. In Zimbabwean teachers' colleges, fostering digital literacy and technological pedagogical content knowledge assumes prime importance. Wangdi et al. (2023) indicate that technological pedagogical content knowledge and facilitating conditions, such as access to technology and technical support, play a crucial role in shaping educators' intentions to use technology and promote digital literacy.

9.1 Flipped Classroom

A pedagogical approach known as the "flipped classroom" has emerged as a challenge to the traditional teaching model. Divjak et al. (2022) posit that the flipped classroom is a contemporary educational technology innovation that has gained popularity, particularly in higher education. It involves reallocating time in and out of the classroom and transferring decision-making authority over learning from the teacher to the student (McLaughlin et al., 2024). Subramaniam and Muniandy (2016) aptly point to two misconceptions that educators often have about the flipped classroom. First, some educators erroneously believe that the flipped classroom approach is synonymous with online courses or videos that replace the teacher and typically involve students working alone while staring at a computer screen. Second, the idea that the teacher must stand or sit in front of a camera and film their lectures is yet another myth. On the contrary, by allowing students to take control of their own education, the rationale behind the flipped classroom is that it enhances student-lecturer interaction and communication (Bergmann & Sams, 2014), where the lecturer becomes the chaperon on the side rather than the adviser on the stage (Baker, 2000), and all students are actively involved in their education (Subramaniam & Muniandy, 2016), which evidences that education is changing (Persky & McLaughlin, 2017). When students take control of their learning, they develop independence from the lecturer, which enhances knowledge creation on their part and the transfer of learning because knowledge gained independently has more permanency. Therefore, it is imperative that lecturers comprehend the importance of both in-class and pre-class activities in this approach.

In a typical flipped classroom, students use recorded lectures, readings, and online modules to learn fundamental concepts while remaining comfortable in their homes or college residences (Frontiers in Education, 2024). They then attend in-class sessions that focus on discussions, applications, and interactive, hands-on learning activities. Lecturers take on the role of coaches or facilitators during in-class activities, helping students through tasks and offering support. By encouraging students to take charge of their education and interact with the material in a more meaningful way, flipped classrooms raise student engagement through active learning. Class time is better utilised because lecturers can concentrate on helping students learn, giving them feedback, and encouraging discussions instead of just delivering lectures.

9.2 Benefits of the Flipped Classroom

The flipped classroom has many advantages. First, it improves student outcomes by increasing satisfaction, achievement, and retention. Additionally, there is more flexibility, as online modules and pre-recorded lectures allow students to learn at their own time and pace, rather than being forced to follow their lecturer's pace, which they might not find appealing (Bouchrika, 2025). In-class activities foster teamwork, communication, and problem-solving skills, thereby enhancing collaboration. By focusing on encouraging student learning, providing feedback, and fostering discussions rather than lecturing, lecturers make better use of class time by prioritising interactive and collaborative active learning strategies, as well as offering personalised support to students. This approachresults in higher-order thinking skills (Abdelaziz & El-Sherbini, 2022; Hamdan et al., 2023; Kim Lee, 2024; O'Flaherty & Philips, 2025). Figure 1 illustrates the seven pillars of the flipped classroom as detailed by Chen et al. (2014).

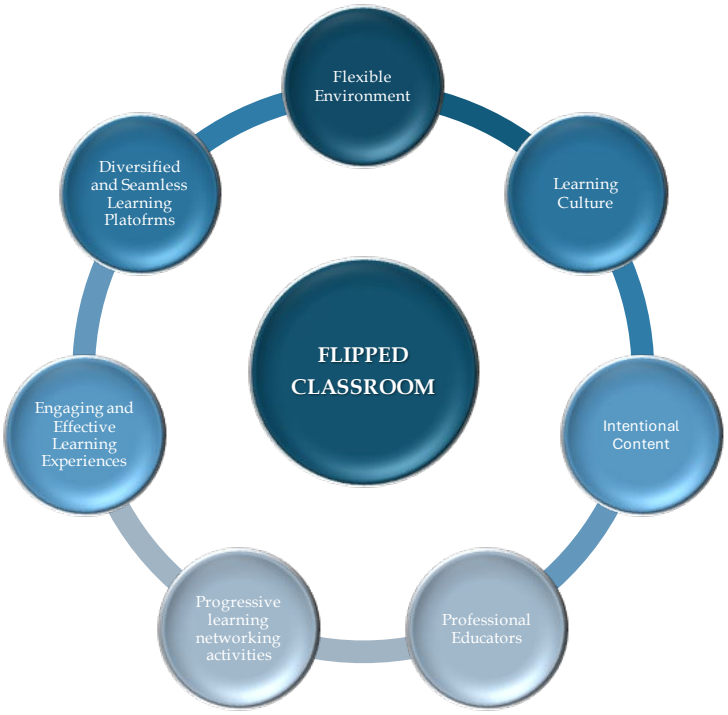

Figure 1: Pillars of a flipped classroom
(Adapted from Chen, et al., 2014, cited in Nguyen, 2021, pp. 87-90)

First, the flipped classroom offers a flexible learning environment, providing fluid timelines for student work and comprehension. Second, it redefines learning culture by fostering a rich environment that allows students to delve deeper into topics, offering opportunities for self-reflection and hands-on activities. Third, it is characterised by intentional content, whereby the lecturer decides in advance what direct instruction to pair with in-class activities. Fourth, it accords the lecturer the status of a professional educator who monitors students and offers feedback to ensure that no gaps in student knowledge are created. Fifth, this type of classroom aims to create progressive learning networking activities, where the lecture exploits a blend of in-class, out-of-class, and online activities to connect with students or to connect students amongst themselves through social group forums and interactive platforms. Sixth, the lecturer strives to develop engaging and effective learning experiences, but more importantly, to track and profile the students' self-study and self-assessment activities. Ideally, Chen et al. (2014) state that student discussions, portfolios, and self-assessment forms are the best ways to gather these profiles. Students' self-evaluation needs to be incorporated into the evolving instructional strategies in Zimbabwean teachers' colleges. It should be mentioned at this point that student feedback evaluations of lecturers are still uncommon, and it is high time these were introduced to enhance the quality of teaching in colleges. Last but not least, the flipped classroom should be distinguished by diversified and seamless learning platforms with a range of features to support individualisation and differentiation, which are imperative for maximising self-regulated learning by students.

9.3 Challenges of the Flipped Classroom

While the flipped classroom equips students with the 21st-century skills needed to address global challenges (Zhao, He & Su, 2021), it comes with its own set of difficulties. One ongoing issue facing teacher training colleges is access to technology, including internet connectivity, learning management systems (LMS), and video recording software. This is compounded by a lack of support and training for lecturers. Although there is a strong call for lecturers to embrace new approaches to adapt to the changing learning environment, there appears to be little desire to provide the necessary resources to assist them. The need for training and support for lecturers to create and implement successful flipped classroom models cannot be overstated. Access and equity present another challenge, as not all students may have equal access to technology and internet connectivity. Any attempts to establish a supportive and technologically mediated learning environment will always be thwarted if

policymakers in teacher training colleges lack the means to provide laptops as essential tools for student learning.

9.4 Virtual Learning Environments

Virtual learning is one of the most significant tools for enhancing pedagogical and instructional practices, as it adapts to the evolving nature of education and teaching methodologies. A virtual learning environment (VLE) refers to software that facilitates online collaboration, student assessment and feedback, academic content uploading, and course structuring (Alenezi et al., 2023). VLEs simplify administrative duties for teachers while simultaneously fostering a collaborative, dynamic, and engaging learning environment for students. With the help of VLEs, students can interact with peers and teachers, utilise learning resources, and participate in activities at any time and from any location (UNESCO, 2020). This is particularly beneficial in Zimbabwe's teacher colleges, which have recently introduced a semester approach, as it allows students to engage with lecture content in their own time.

Key features of VLEs

Baines, Boucas and Otermans (2023) identify six distinguishable characteristics of VLEs that are essential in supporting learning. VLEs serve as a course management tool as they give lecturers the ability to design and oversee assignments, tests, and course materials. Because they offer a centralised platform for sharing course materials like documents, videos, and multimedia resources, VLEs facilitate content sharing in addition to providing a range of communication tools, such as chat, email, video conferencing, and discussion forums. VLEs can be used for grading and assessment since they let teachers create and administer tests, monitor student development, and give feedback. VLEs serve as tools for group projects, peer review, and collaboration. Because VLEs can efficiently offer insights into student engagement, progress, and performance, they can be used for analytics and reporting, assisting teachers in pinpointing areas that require improvement.

Benefits of VLEs

Some expected benefits of VLEs include good communication, interactive components, integration of cooperative pedagogical methods, increased asynchronous communication, and knowledge advancement through ongoing interaction (Alenzi et al., 2023). VLEs provide greater flexibility, allowing students to access course materials and engage in learning activities from anywhere at any time. Additionally, because VLEs offer immersive and interactive learning environments that boost student motivation and engagement, there is an overall improvement in engagement. In light of Education 5.0, virtual learning environments (VLEs) have the potential to enhance collaboration among peers, instructors, and students. VLEs also streamline administration by automating tasks such as feedback and grading, freeing up instructors' time for more important work. Lastly, they facilitate personalised learning by allowing instructors to modify lessons to fit the needs, skills, and learning preferences of each student. Well-known examples of VLEs include Moodle, Blackboard, Canvas, and Google Classroom (a free VLE integrated with Google Drive and Docs). Although VLEs are effective, it should be noted that they also have drawbacks and limitations.

WhatsApp Features for Virtual Learning

The majority of student teachers currently have access to WhatsApp, which offers a convenient tool for online education. To promote communication and teamwork, instructors can use WhatsApp to set up group chats for projects, discussions, or classes. They can easily share documents, photos, videos, and audio files to support learning activities and materials through file sharing. With the help of WhatsApp's user-friendly voice and video call platform, instructors can hold online lectures, group discussions, or one-on-one meetings from any location. Additionally, instructors can create surveys to gather feedback, assess students' comprehension, or encourage participation. WhatsApp-based virtual learning activities will include:

i. Discussion forums, where students can engage in peer-to-peer learning, exchange resources, and discuss topics in group chats created by the lecturer;
ii. Virtual guest lectures, where universities can invite professionals to share their expertise via voice or video calls or group chats;
iii. Using WhatsApp groups to promote collaboration, exchange resources, and provide project feedback, instructors can involve students in project-based learning (PBL) in accordance with Education 5.0; and
iv. Students can share their work, receive feedback, and participate in peer review through WhatsApp groups that lecturers can establish.

The aforementioned activities offer a rich learning environment in which students can collaboratively navigate course material, interact with diverse scholars and specialists in various subject areas, and receive feedback from their lecturers.

Challenges of VLEs

Notwithstanding the benefits of VLEs, there are drawbacks that should not be disregarded. Flipped classrooms face challenges in encouraging students to engage in pre-class learning activities, which could decrease their efficacy due to insufficient preparation (Ng & Lo, 2022). Digital literacy, which encompasses a fundamental understanding of computers to function properly in an online environment, as well as the ability to use technology to find information, assess sources, create content, and communicate, is essential (Suleiman & Danmuchikwali, 2020). The use of VLEs can pose a major obstacle, as there is no data on the level of digital literacy among both lecturers and students in Zimbabwean teachers' colleges. Technical problems, such as server crashes, connectivity issues, and compatibility challenges, can arise with VLEs. Additionally, the lack of access to devices, internet connectivity, or adequate digital literacy skills among some students can lead to a digital divide, exacerbating existing inequalities. Moreover, if not well managed, VLEs can create information overload, overwhelming students with excessive information and making it difficult to navigate and prioritise learning materials. The successful implementation of VLEs on WhatsApp can also be hindered by data and internet connectivity issues.

9.5 Podcasting and Audio Lectures

Podcasts are user-generated audio productions that are posted to hosting websites and distributed via a variety of programmes to listeners' laptops, smartphones, and other devices (Turner, 2021). The open availability, ease of production, staggered delivery, and portability of podcasts set them apart from traditional media formats (Drew, 2017), which has increased their popularity in classrooms (Yiemkuntitavorn & Rattanapan, 2021). In today's educational practices, audio lectures and podcasts serve as effective resources. The process of producing and disseminating audio content via digital platforms, such as talks, interviews, or lectures, is known as podcasting. According to Faramarzi et al (2021), this facilitates flexibility and autonomy in the learning process by enabling students to access learning materials whenever it is most convenient for them. To help spread knowledge about the course material, video podcasts, or "vodcasts," can be used in addition to audio podcasts. A vodcast, sometimes referred to as a vidcast, is a digital audio and video file or clip that is sent to a personal device via the internet in a digital format (Myers, 2022; Rica & Javier, 2021). This digital platform can be useful for lecturers to post course content on college websites, which students can conveniently access at any time. Furthermore, students are able to identify and replay sections of content that they find difficult to comprehend initially.

Conversely, students can listen to recorded lectures online or offline through audio lectures. These lectures are often presented with audio synchronised with images from PowerPoint presentations or other visual aids, and they can be delivered in a variety of formats, including podcasting. Digital audio files that include lectures, discussions, or interviews are known as podcasts

and audio lectures. Students can download or stream them online at their convenience, providing them with access to learning materials at any time.

Uses of Podcasts in Various Settings

Podcasts have found a variety of applications in the academic and educational domains during the Web 2.0 era. They have been investigated as a means of informal and progressive learning (Shamburg, 2020) and as a tool for the formal teacher-centred delivery of course content (Middleton, 2016). Other academics have explored podcasts as a student-centred project-based learning method (Killean & Summerville, 2020). They have also been used as a creative approach to research generation (Kinkaid et al., 2020) and as a means of connecting and disseminating research to the general public (Williams, 2020). Furthermore, podcast activities provide a common platform for learning and growth among producers, users, and guests in a cooperative and entertaining way (Turner et al., 2021). Mollett et al. (2017) assert that podcasts are convenient for academic researchers because they enhance public engagement with previously less-known subjects and raise awareness of scholarly work. In light of the above, the use of podcasts can enhance content sharing in teachers' colleges, as they allow lecturers to invite specialists from the community to present on topics that they may find difficult to teach effectively without such specialist assistance.

Benefits of Podcasting and Audio Lectures

The advantages of podcasts and audio lectures are numerous. The ability to listen to podcasts and audio lectures at any time and from any location allows for learning flexibility, which is perfect for students who are busy or have mobility challenges. Because students with visual impairments or those who prefer auditory learning can access audio content, podcasts and audio lectures improve accessibility. They are also reasonably priced. Making and disseminating audio lectures and podcasts can be less expensive than using conventional teaching techniques. Additionally, they improve personalisation by giving students the ability to regulate the speed of their education by fast-forwarding or rewinding as necessary. They are a type of extra education.

Audio lectures and podcasts can be used in addition to conventional teaching techniques to give students more resources and support. Kennedy et al. (2015) aver that a primary benefit of audio lectures and podcasts resides in their flexibility and application in training programmes. On the other hand, Lee et al. (2008) argue that these platforms provide a medium for collaborative knowledge generation among students. Given that teachers' colleges are transforming, podcasts are therefore an effective tool which assists students in accessing 'live lecture content' prepared by lecturers and resource persons. Finally, due to the limited in-person interaction that comes with digital learning platforms, lecturers can better understand transactional distance through the use of podcasts and audio lectures. When lecturers and students are geographically separated, distance learning scenarios can "lead to [communicative] gaps, a psychological space of potential misunderstandings between the instructors' and learners' behaviours" (Moore & Kearsley, 1996, p. 200). The communicative gaps are aptly explained by Moore's (1993) theory of 'transactional distance', which is widely accepted as a gold standard in online learning. Transactional distance imports are shown in Figure 1.

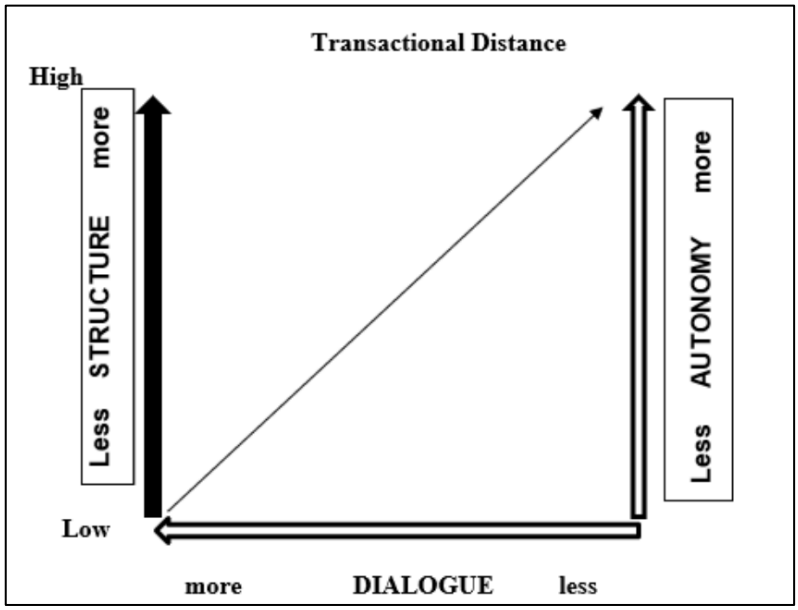

Figure 2: Moore's theory of transactional distance
Source: Sevnarayan, K., & Mohale, N. E. (2022, p. 118).

Moore (1993) posits that stakeholders in digital platforms must consider three elements that affect transactional distance: autonomy, structure, and dialogue (Moore, 1993; Swart & Macleod, 2021). Dialogue describes how lecturers and students communicate, while structure refers to how lecturers organise their LMS tools and design. Autonomy pertains to the degree and nature of student responsibility and self-management. In Figure 1 below, we illustrate that transactional distance increases with the amount of structure and decreases with the amount of dialogue. On a scale from high to low, a module with low transactional distance is characterised by a greater teaching presence, as well as "interpersonal closeness, sharedness, and perceived learning among students" (Huang et al., 2016, p. 738).

Types of Podcasts and Audio Lectures

Audio lectures and podcasts come in a variety of forms. Lecture podcasts are recordings of conventional lectures that often include slideshows or other visual aids. Interview format podcasts feature discussions with guests or experts who offer their opinions and insights on particular subjects. Audio recordings of roundtable discussions, debates, or panel discussions are known as panel discussions. Step-by-step audio instructions for completing assignments or projects are referred to as audio tutorials. Lastly, audio summaries are condensed audio overviews of complex subjects or ideas. Research shows that students who listened to condensed audio summaries of lectures performed better on quizzes and exams compared to those who did not (Bui et al., 2022). Additionally, these summaries increased student engagement and motivation, particularly for students who are auditory learners (Garcia & Lowyck, 2023). Furthermore, and particularly applicable in the Zimbabwean teachers' college context, condensed audio summarieswere especially useful for students in large lecture classes, where it can be difficult to take notes and follow the lecture (Hodges & Dai, 2022). They were also effective in enhancing student learning, especially when used alongside other teaching strategies (Lowe & Kay, 2022).

10.Conclusion and recommendations

Due to changing learner needs, pedagogical paradigms, and technological breakthroughs, the educational landscape is undergoing a significant transformation. According to this article, teachers' colleges should adapt to these changes by embracing flexible methodological paradigms that incorporate ICT-mediated approaches and strategies. Research on flipped classrooms, virtual learning environments (VLEs), podcasts, and audio lectures has demonstrated how these strategies can improve learning outcomes, motivation, and student engagement. The development of flexible, adaptive, and

tech-savvy lecturers must be a top priority for teacher colleges to prepare them for the opportunities and challenges of teaching in a changing educational environment. This requires cooperation with communities and schools, innovative curriculum design, and a commitment to continuous professional development. Ultimately, the ability of lecturers to successfully navigate the complexities of a rapidly changing world—utilising technology and creative approaches to establish inclusive, stimulating, and productive learning environments—will determine the future of teacher education. By adopting flexible methodological paradigms and ICT-mediated strategies, teacher colleges can significantly influence the formation of the next generation of lecturers and equip them to succeed in a dynamic educational landscape.

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