



# Implementation of Blended Learning in Southern African Marginalised Higher Education Eclectic Contexts

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## ABSTRACT

Unequivocally, even though blended learning is lauded for being useful in enhancing online and face-to-face learning in institutions of higher learning, little attention has been paid to interrogating its implementation in marginalised higher education contexts. Marginalised contexts include slums, rural areas, remote locations, and zones characterised by resource limitations. If contextual realities are not well considered in such settings, the implementation of blended learning may result in more marginalisation and digital exclusion. This paper therefore explored the implementation of blended learning in Southern African marginalized eclectic contexts. The study adopted the digital inclusion framework by Helsper using constructs of access, proficiency, and opportunity. The study employed a literature review method using 20 relevant studies extracted from major databases. Data were analysed using thematic analysis. The study found that blended learning can be implemented successfully when: policies are blended-learning friendly, resources are robustly usable and accessible, capacity building to facilitate functional blended learning proficiencies and curriculum design are instituted, and delivery facilitates digital inclusion. The study will be of benefit to academics, administrators, and policymakers who are looking for ways to increase blended learning delivery in their spaces.

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## INTRODUCTION

Ostensibly, blended learning especially in the epoch of coronavirus can be a panacea to higher education institutions facing marginalisation and pockets of exclusion. This is because teaching is a thoughtful integration of both traditional face-to-face and online instructional media, teaching approaches, and modalities to optimally achieve educational goals.<sup>1</sup> This makes it diverse and digital inclusion-friendly because it accommodates learning needs spanning diverse cognitive learning levels,

<sup>1</sup> Jitendra Singh, Keely Steele, and Lovely Singh, "Combining the Best of Online and Face-to-Face Learning: Hybrid and Blended Learning Approach for COVID-19, Post Vaccine, & Post-Pandemic World," *Journal of Educational Technology Systems* 50, no. 2 (December 20, 2021): 140–71, <https://doi.org/10.1177/00472395211047865>.

socio-economic conditions, age, disabilities, gender, and cultural diversities.<sup>2</sup> It is thus regarded as a teaching modality of the new normal post-COVID-19.<sup>3</sup> This is because it has the potential to motivate, engage, and elevate learning. Further, blended learning facilitates seamless communication between students and instructors as well as among students. This expedites learning as well as facilitates varied 21st-century learning competencies such as collaboration, problem-solving, creativity, adaptability, flexibility, and lifelong and independent learning.<sup>4</sup> This heralds that blended learning has the potential to address learning for marginalised contexts. Marginalised contexts include slums, rural areas, remote locations, and zones characterised by resource limitations.<sup>5</sup> This is important in the Southern African contexts, where most learning takes place in pockets of rural and many underprivileged communities.<sup>6</sup>

Traditionally, such contexts suffer high levels of deprivation and exclusion.<sup>7</sup> They therefore need to be emancipated to allow adequate levels of digital inclusion. Digital inclusion is founded on the principles of access, proficiency, and participation. Further, digital inclusion is the practice of ensuring access to the internet, associated infrastructure, and software technologies to provide skills that enable individuals to develop requisite literacies and proficiencies that strengthen their capacity to achieve their personal, social, political, educational, or economic benefit.<sup>8</sup> Educationally, digital inclusion further implies access to physical ICT technologies and associated knowledge that enables the seamless realisation of learning outcomes.<sup>9</sup>

Observably, however, when the COVID-19 pandemic hit the whole world like a bushfire in the 2019-2021 timespan, the World Health Organisation restricted movements to reduce the spread of the pandemic and this, in turn, forced governments to recommend institutions of learning to adopt any alternative teaching and learning modality that could enable learning continuity to mitigate learning gaps and massive student dropouts.<sup>10</sup> Although blended learning was the best choice, it did not take off immediately because institutions of higher learning in both developing and developed countries were at different adoption levels.<sup>11</sup> These different adoption levels also suggest varied inequalities and pockets of exclusion. Institutions with well-developed policies, plans, and resources seamlessly navigated the COVID-19 crisis as opposed to those that faced various kinds of constraints, with access to infrastructural gadgets amid other developmental limitations confounding the academic project.<sup>12</sup> Inopportunately, some higher education institutions that were confounded had to completely shut down for a certain period forcing them to delay the completion of the academic years in the 2019-2021 period.<sup>13</sup> UNESCO reported that such a scenario affected staff and students in 165 countries. Surely, such a scenario increased the digital divide and marginalisation of those communities served by such institutions. In Sub-Saharan Africa, reports suggest that 86 percent of the education-going students

<sup>2</sup> Teklu Abate Bekele, Ibrahim M Karkouti, and Samuel Amponsah, "Core Conceptual Features of Successful Blended Learning in Higher Education: Policy Implications" *Education Policy Analysis Archives* 30 (2022), <https://doi.org/10.14507/epaa.30.7444>.

<sup>3</sup> Bekele, Karkouti, and Amponsah, "Core Conceptual Features of Successful Blended Learning in Higher Education: Policy Implications."

<sup>4</sup> Lucia Makwasha, Sam Jnr Takavarasha, and Hazel Mubango, "Blended Learning in the Wake of ICT Infrastructure Deficiencies: The Case of a Zimbabwean University," 2023.

<sup>5</sup> Anna Mayr and Stefan Oppl, "Higher Education at the Margins—Success Criteria for Blended Learning Systems for Marginalized Communities," *Education and Information Technologies* 28, no. 3 (2023): 2579–2617.

<sup>6</sup> Michael Agyemang Adarkwah, "'I'm Not against Online Teaching, but What about Us?': ICT in Ghana Post Covid-19," *Education and Information Technologies* 26, no. 2 (March 16, 2021): 1665–85, <https://doi.org/10.1007/s10639-020-10331-z>.

<sup>7</sup> Mayr and Oppl, "Higher Education at the Margins—Success Criteria for Blended Learning Systems for Marginalized Communities."

<sup>8</sup> Baylie Hart Clarida et al., "Strategies for Digital Inclusion: Towards a Pedagogy for Embracing and Sustaining Student Diversity and Engagement with Online Learning.," *IAFOR Journal of Education*, 2016.

<sup>9</sup> Ellen Helsper, *The Digital Disconnect: The Social Causes and Consequences of Digital Inequalities* (1 Oliver's Yard, 55 City Road London EC1Y 1SP : SAGE Publications Ltd, 2021), <https://doi.org/10.4135/9781526492982>.

<sup>10</sup> Bekele, Karkouti, and Amponsah, "Core Conceptual Features of Successful Blended Learning in Higher Education: Policy Implications."

<sup>11</sup> Carina Joane Villareal Barroso, Zenas B Paloma, and Mariz Rochelle Sedon, "Blended Learning, Challenges, and Its Effects to Heis during Covid Pandemic: A Systematic Review," *Res Militaris* 13, no. 2 (2023).

<sup>12</sup> Makulu A. Makumane, "Students' Perceptions on the Use of LMS at a Lesotho University amidst the COVID-19 Pandemic," *African Identities* 21, no. 2 (April 3, 2023): 209–26, <https://doi.org/10.1080/14725843.2021.1898930>.

<sup>13</sup> Reuben Dlamini and Fikile Nkambule, "Information and Communication Technologies' Pedagogical Affordances in Education," in *Encyclopedia of Education and Information Technologies* (Cham: Springer International Publishing, 2020), 1–14, [https://doi.org/10.1007/978-3-319-60013-0\\_216-1](https://doi.org/10.1007/978-3-319-60013-0_216-1).

were negatively affected by the advent of COVID-19 and its concomitant aftermaths.<sup>14</sup> It is in this vein that the current study seeks to establish an environment of blended learning at the institutional level that offsets the marginalisation and exclusion of such institutions.

While blended learning is appraised as a modality that employs both face-to-face and online learning modalities to improve learning processes and outcomes, paradoxically, digital exclusion and marginalisation continue to manifest.<sup>15</sup> These researchers contend that the high dropouts and attrition in institutions of higher learning result in digital exclusion and marginalisation. These researchers contend that this digital exclusion and marginalisation emanate from inter alia, quality of curriculum design, inappropriate policy milieu, ICT leadership gaps, infrastructural deficiencies, and inadequate or inappropriate human resources.<sup>16</sup> The paper endeavours to explore these gaps with the hope of strengthening blended learning implementation. Specifically, the study seeks to discuss the implementation of blended learning in Southern African marginalised higher education institutions in eclectic contexts.

## THEORETICAL FRAMEWORK

This paper was guided by the digital inclusion framework by Helsper 2021. Conceptually, digital inclusion refers to activities or strategies designed to foster access to opportunities, skills, and benefits from digital technologies.<sup>17</sup> The digital inclusion framework is guided by constructs of access, literacy, proficiency, opportunity, and policy. These underpinnings are briefly discussed below.

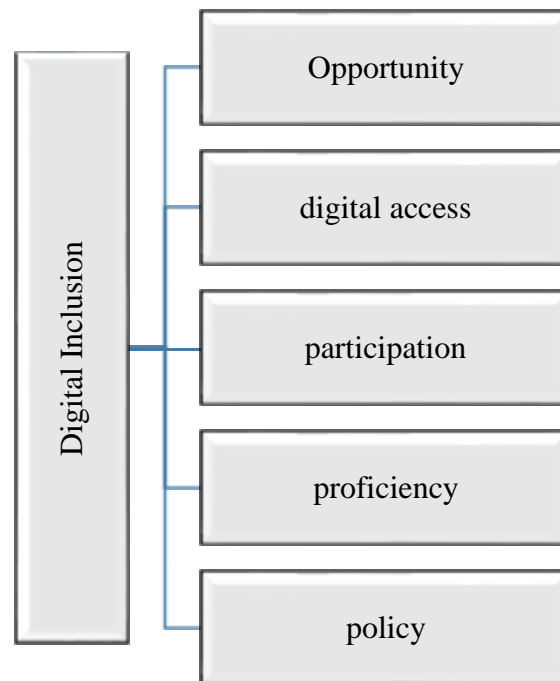


Figure 1: Digital Inclusion Framework<sup>18</sup>

<sup>14</sup> Joyceline Amoako and Ellen MacEachen, "Understanding the Blended Impacts of COVID-19 and Systemic Inequalities on Sub-Saharan African Immigrants in Canada," *Canadian Journal of Public Health* 112, no. 5 (October 11, 2021): 862–66, <https://doi.org/10.17269/s41997-021-00558-9>.

<sup>15</sup> Muhammad Azeem Ashraf et al., "A Systematic Review of Systematic Reviews on Blended Learning: Trends, Gaps and Future Directions," *Psychology Research and Behavior Management*, 2021, 1525–41.

<sup>16</sup> Mayr and Oppl, "Higher Education at the Margins—Success Criteria for Blended Learning Systems for Marginalized Communities."

<sup>17</sup> Clarida et al., "Strategies for Digital Inclusion: Towards a Pedagogy for Embracing and Sustaining Student Diversity and Engagement with Online Learning."

<sup>18</sup> Helsper, *The Digital Disconnect: The Social Causes and Consequences of Digital Inequalities*; Fitria Herliana et al., "Identification of Lecturer Difficulties in Implementing of Blended Learning in the Covid-19 Era," *Asian Journal of Science Education* 2, no. 2 (October 27, 2020): 106–13, <https://doi.org/10.24815/ajse.v2i2.18274>; Md Saifuddin Khalid and Mette Jun Lykkegaard Pedersen,

Digital access entails the availability of the infrastructure that will allow the participation of all the stakeholders, ensuring that no one is left out of the process. This heralds the need to have all the requisite infrastructure in place to ensure optimal implementation of blended learning. This is the correct path to diffuse pockets of marginalisation and any shred of the digital divide and digital exclusion. The construct of participation connotes the need to ensure as much inclusion as possible and shut down all the avenues of exclusion. More opportunities for participation encourage digital inclusion while limited opportunities for participation promote digital exclusion. Perhaps one of the cornerstone requisites of a thriving implementation of blended learning is having an apt blended learning policy. Ideally, a successful policy on blended learning requires rigorous research to ensure it is promulgated based on ICT-related best practices. This requires apt skills to borrow ideas from already working environments on how blended learning must be implemented in ways that enhance digital inclusion. This also requires that institutions employ ICT managers with administrative prowess to aptly craft a working policy to ensure that all the essential processes of implementing blended learning are achieved. Such managers must be able to refine, restructure, improve, and adapt content from other policies while respecting the norm of infringing patents. Adapting content from other policies requires patent and consent. In some cases, they need to overhaul the policy to make it productive in the sense that it strengthens the virtues of access, and opportunity to ensure that all the requisite infrastructural resources to successfully implement blended learning are in place. In many cases, policies need to be adopted or benchmarked by national and international organizations such as UNESCO, and SADC to make them both nationally and internationally competitive.

**METHODOLOGY**

This study employed a literature review method to extract relevant studies for consideration. Studies written in English were sourced by the two authors from 6 databases namely the Ebscohost research database, Web of Science, Scopus, SA e-publications, and Google Scholar. The search and inclusion criteria included the following studies written from 2010 to 2023 on the following concepts: “blended learning in higher education”, “attributes for blended learning”, “teacher competencies in blended learning”, “digital exclusion”, “marginalised communities”, “digital divide”, “ICT leadership”, “ICT policy implementation”, blended learning conceptualisation, “blended learning success factors” and “blended learning models”. The search resulted in 32 relevant articles which were screened thematically based on relevance to the main research objective. The search was supplemented by books, monographs, and newspaper cutting-edge stories, as well as from the researchers’ intuition and knowledge developed from authoring other blended learning-related articles. The table summarises the sources.

**Table 1: Literature Sources**

| Authors   | Title   | Year |
|---|---|------|
| Amoako, Joyceline, and Ellen MacEachen  | Understanding the blended impacts of COVID-19 and systemic inequalities on sub-Saharan African immigrants in Canada | 2021 |
| Ansari, Bansu. Irianso., Junaidi, Junaidi., Maulina, Suci. Herman, Herman., Kamaruddin, Ilham,Rahman, Addul., & Sapura, Nanda | Blended Learning Training   | 2023 |
| Ashraf, Muhammad Azeem, Meijia Yang, Yufeng Zhang, Mouna Denden, Ahmed Tlili, Jiayi Liu, Ronghuai Huang, and Daniel Burgos.   | A systematic review of systematic reviews on blended learning: Trends, gaps and future directions                   | 2021 |

“Digital Exclusion in Higher Education Contexts: A Systematic Literature Review,” *Procedia-Social and Behavioral Sciences* 228 (2016): 614–21.

|  |   |      |
|--|---|------|
| Barroso, Carina Joane V., Zenas B. Paloma, and Mariz Rochelle C. Sedon                           | Blended Learning, Challenges, and Its Effects to HEI during Covid Pandemic: A Systematic Review.  | 2023 |
| Batisai, K., Makhafola, K. P., & Maoba, P.   | Rethinking inclusion in higher education: lessons for the South African academic space  | 2022 |
| Bekele, TA., Karkouti, IM., and Amponsah S   | Core conceptual features of blended learning in higher education. Policy Implications   | 2022 |
| Clarida, Baylie Hart, Milena Bobeva, Maggie Hutchings, and Jacqui Taylor                         | Strategies for digital inclusion: Towards a pedagogy for embracing and sustaining student diversity and engagement with online learning.                      | 2016 |
| Cronje, Johan C  | . Towards a New Definition of Blended Learning  | 2020 |
| Dhlamini, Reuben and Fikile Nkabule  | A reflection on History Education in higher education in Eswatini during COVID-19   | 2020 |
| Elahi Farah  | Digital Inclusion: Bridging Divides   | 2020 |
| Groen, Jovan ., Ghani , Shehzad., Germain -Rutherford, Aline and Taylor, Maurice                 | Institutional Adoption of Blended Learning: Analysis of an initiative in Action   | 2020 |
| Herliana, Fitria, Abdul Halim, Ahmad Farhan, and Elisa Kasli.                                    | Identification of Lecturer Difficulties in Implementing of Blended Learning in the Covid-19 era   | 2020 |
| Helsper Ellen Johanna  | The digital disconnect. The social causes and consequences of digital inequalities  | 2021 |
| Khalid, Md Saifuddin, and Mette Jun Lykkegaard Pedersen.   | Digital exclusion in higher education contexts: A systematic literature review.   | 2016 |
| Kizilcec, René F., Maximillian Chen, Kaja K. Jasińska, Michael Madaio, and Amy Ogan.             | Mobile learning during school disruptions in sub-Saharan Africa   | 2021 |
| Falkowski-Gilski, Przemyslaw, and Michal Wozniak.  | Study on CPU and RAM Resource Consumption of Mobile Devices using Streaming Services  | 2021 |
| Leithwood, Kenneth, Alma Harris, and David Hopkins   | Seven strong claims about successful school leadership revisited  | 2020 |
| McKenna, Kelly, Kalpana Gupta, Leann Kaiser, Tobin Lopes, and Jill Zarestky                      | Blended learning: Balancing the best of both worlds for adult learners  | 2020 |
| Makumane, Makhulu, Tawanda W. Mataka, Walter Sengai, and S. Ngcobo.                              | Neutralising the digital divide: is blended learning a viable solution?   | 2021 |
| Magasu, Oliver, Jive Lubungu, Lucy Kamboni, Exsaviour Sakala, and Beatrice Kapanda               | Implementation of Blended Learning in Higher Learning Institutions in Zambia  | 2022 |
| Makwasha, Lucia, Sam Jnr Takavarasha, and Hazel Mubango.   | Blended learning in the wake of ICT infrastructure deficiencies: The case of a Zimbabwean University  | 2023 |
| Muianga, Xavier Justino, Sirkku Männikkö Barbutiu, Henrik Hansson, and Inocente Vasco Mutimucuo. | Teachers' Perspectives on Professional Development in the Use of SCL Approaches and ICT: A Quantitative Case Study of Eduardo Mondlane University, Mozambique | 2019 |
| Leithwood, K., Harris, A., & Hopkins, D  | Seven strong claims about successful school   | 2019 |
| Müller, Claude, Thoralf Mildnerberger, and Daniel Steingruber                                    | Learning effectiveness of a flexible learning study programme in a blended learning design: why are some courses more effective than others?                  | 2023 |
| Nagloaa, Megahed., & Ehab Ghoneim.   | Blended Learning: The new normal for Post Covid 19 Pedagogy   | 2022 |

|  |   |      |
|--|---|------|
| Ngoatle, Charity., Mothiba, Tebogo. M., Ngoepe, Modikana. A. | Navigating through COVID 19 pandemic in implementing quality Teaching and Learning Programmes in Higher Education: A document Analysis Study    | 2022 |
| Olowoselu, Abdulrasheed, and Fauzi Bin Hussin.               | "Situational Leadership in Online Learning Environment." <i>Overcoming Challenges in Online Learning: Perspectives from Asia and Africa</i>     | 2023 |
| Turugare, Mukai, and Norman Rudhumbu                         | Integrating technology in teaching and learning in universities in Lesotho: opportunities and challenges  | 2020 |
| Saifuddin, Md., & Mette, Juan, Lykkesgaard.                  | Digital exclusion in higher education contexts: a systematic literature review  | 2016 |
| Singh, Jitendra., Steele, Keely., & Singh, Lovely.           | Combining the best of online and face-to-face learning: Hybrid and blended learning approach for COVID-19, post vaccine, & post-pandemic world. | 2021 |
| Makwasha, Lucia, Sam Jnr Takavarasha, and Hazel Mubango.     | Blended learning in the wake of ICT infrastructure deficiencies: The case of a Zimbabwean University  | 2023 |
| Yildiz, Baran Barış  | Education Administrators as Technology Leaders in Blended Learning.   | 2022 |

## DISCUSSION

### Strong Institutional Leadership

Leadership refers to the capacity to inspire others to achieve a common goal.<sup>19</sup> Such leaders may include assigned leaders who hold formal roles in an organization, or emergent leaders, who do not necessarily hold formal roles.<sup>20</sup> Leadership in the context of blended learning necessitates possessing the capacity to create conditions that foster quality learning using an array of leadership approaches.<sup>21</sup> Such capacity is evidenced by attributes such as adaptability, flexibility, benevolence, honesty, openness, reliability, and competence to minimize the levels of anxiety of stakeholders, establishing strategies, and policies, and planning suitable physical and pedagogical resources that facilitate accreditation, adoption, and actualisation of blended learning.<sup>22</sup> It is this environment of leadership that would motivate the success of blended learning in ubiquitous contexts of institutions of higher learning. Importantly, blended learning leadership entails mentorship and guidance to students on blended learning matters.

Evidently, despite its position as a panacea during the COVID-19 epoch, blended learning is likely to be resisted because it requires a new set of thinking about teaching and learning and constitutes new ways of acquiring knowledge.<sup>23</sup> Perhaps this follows the commonsense disposition holding that anything new is likely to attract anxiety, resistance, and lack of self-confidence. On the converse and compared to face-to-face teaching modalities, blended learning requires sophisticated ICT leadership

<sup>19</sup> Kenneth Leithwood, Alma Harris, and David Hopkins, "Seven Strong Claims about Successful School Leadership Revisited," *School Leadership & Management* 40, no. 1 (January 1, 2020): 5–22, <https://doi.org/10.1080/13632434.2019.1596077>.

<sup>20</sup> Baran Barış Yıldiz, "Education Administrators As Technology Leaders in Blended Learning," *International Journal of Education Technology and Scientific Researches* 7, no. 17 (January 1, 2022): 976–85, <https://doi.org/10.35826/ijetsar.387>.

<sup>21</sup> A. Olowoselu and F. B. Hussin, "Situational Leadership in Online Learning Environment," in *Routledge Research in Digital Education and Educational Technologies: Overcoming Challenges in Online Learning: Perspectives from Asia and Africa*, ed. Abdularasheed Olowoselu and Arrej Elsyary (New York: Routledge, 2023).

<sup>22</sup> Bekele, Karkouti, and Amponsah, "Core Conceptual Features of Successful Blended Learning in Higher Education: Policy Implications."

<sup>23</sup> Oliver Magasu et al., "Implementation of Blended Learning in Higher Learning Institutions in Zambia: A Case of Kwame Nkrumah University," *European Journal of Education and Pedagogy* 3, no. 3 (2022): 214–18.

that requires a modest investment in ICT gadgets.<sup>24</sup> These researchers think that it is this kind of environment of ICT leadership that most institutions are bereft of.<sup>25</sup>

Further, curriculum leaders comprising instructional designers play a critical role in advising on the model that aligns with resources based on user characteristics like an inclination towards technology, and provision of training on pedagogical strategies to ensure quality online courses. Studies indicate that if instructional designers do not clarify the roles, time commitments, and workload implications of shifting from traditional face-to-face to blended learning concerning workload, this can result in staff burnout and demotivation. This is because, in practice, blended learning requires increased time commitment, and increased workload for staff, particularly instructors.

### **Instituting An Astute Policy Milieu to facilitate blended learning**

As provided for in the theory above, a policy is the driver of any operative process, blended learning development notwithstanding. This means that institutions need to develop policies and plans that are blended learning friendly.<sup>26</sup> While astute leadership to draw such policies is critical, these researchers believe that gaps prompting marginalisation herald a lack of proper blended learning policy or poor modus operandi. Imperatively, ICT leadership must be driven by apt managers capable of drafting blended learning-friendly policies. This requires situational ICT leadership to turn around the challenges driving marginalisation associated with implementing blended learning, formulating viable aims and objectives of implementing blended learning, advocacy, as well as soliciting funding required when adopting blended learning.<sup>27</sup> These leaders should have the capacity to refine, restructure, adapt, and effectuate an astute blended learning policy. The process of proper policy promulgation entails resourcing or borrowing material from reputable international organizations and other institutions that are successful in implementing blended learning.<sup>28</sup>

### **Mending a Well-Structured Blended Learning Curriculum**

Blended learning, when well implemented within a curriculum, can accommodate diversity to achieve diverse institutional goals.<sup>29</sup> While a curriculum broadly refers to experiences that students get when engaging in formal and informal activities in an institution, a well-structured curriculum enables engaging learning experiences broadly. Scholars argue that a blended learning curriculum that incorporates digital inclusion principles of universal learning design (UDL) appeals to student diversity. Universal design is a teaching framework that focuses on the design of learning learner variability by removing barriers to learning in the design and delivery of the content. The goal of UDL design is to facilitate 21st-century competencies while accommodating diverse learner dimensions of economic levels, age, and gender learning preferences.<sup>30</sup> A score of researchers indicates the importance of a viable structure in the design of a blended learning curriculum and emphasises the importance of such a structure involving a clear delineation of content, and activities that are face-to-face versus those that are online.<sup>31</sup> Structures such as size, format, and sequence, constitute poor blended learning curriculum implementation and advise that proper sequencing of learning activities increases familiarity and clarity as well as motivates students' engagement.<sup>32</sup> Such is important as

<sup>24</sup> Ashraf et al., "A Systematic Review of Systematic Reviews on Blended Learning: Trends, Gaps and Future Directions."

<sup>25</sup> Ashraf et al., "A Systematic Review of Systematic Reviews on Blended Learning: Trends, Gaps and Future Directions."

<sup>26</sup> Jovan Groen et al., "Institutional Adoption of Blended Learning: Analysis of an Initiative in Action," *The Canadian Journal for the Scholarship of Teaching and Learning* 11, no. 3 (December 31, 2020), <https://doi.org/10.5206/cjsotl-rcacea.2020.3.8288>.

<sup>27</sup> Olowoselu and Hussin, "Situational Leadership in Online Learning Environment."

<sup>28</sup> Johannes Cronje, "Towards a New Definition of Blended Learning," *Electronic Journal of E-Learning* 18, no. 2 (February 1, 2020), <https://doi.org/10.34190/EJEL.20.18.2.001>.

<sup>29</sup> Kezia Batisai, K P Makhafola, and P Maoba, "Rethinking Inclusion in Higher Education: Lessons for the South African Academic Space," *South African Journal of Higher Education* 36, no. 6 (2022): 210–30.

<sup>30</sup> Sherrilyn Coffman and Christine Draper, "Universal Design for Learning in Higher Education: A Concept Analysis," *Teaching and Learning in Nursing* 17, no. 1 (January 2022): 36–41, <https://doi.org/10.1016/j.teln.2021.07.009>.

<sup>31</sup> Linda Mesh, "A Curriculum-Based Approach to Blended Learning," *Journal of E-Learning and Knowledge Society* 12, no. 3 (2016).

<sup>32</sup> Kelly McKenna et al., "Blended Learning: Balancing the Best of Both Worlds for Adult Learners," *Adult Learning* 31, no. 4 (2020): 139–49.

sometimes students may experience materials such as videos and printed materials that can be overwhelming, demotivating, and confusing, if too long and complex. Studies recommend that videos should not be more than 15 minutes and should include captions and embedded quizzes to increase comprehension.

Apart from learning materials or content quality, there is an important role that different forms of interaction play in learning in a blended learning environment, that is student content interaction, teacher-student interaction, and peer interaction. Blended learning facilitates both physical and virtual forms of interaction, and it appeals to diversity. Feedback, particularly from peers is an important design consideration to increase retention, motivation, and engagement. Further, a blended learning curriculum accommodates synchronous features that can allow instant feedback to clarify and improve learning. Such a curriculum ensures that learning materials or content is presented in multiple formats such as printed materials, physical materials, virtual, and multimodal. Therefore, mending a viably structured blended learning curriculum is the most viable path to ensure its implementation and therefore lessening exclusion and marginalisation apparent in many institutions of learning.

### **Investing in requisite human resources**

As alluded to by many researchers, the delivery of blended learning requires that both teacher and students possess certain skills and attributes. For example, Koehler and Mishra emphasise mastery of the use of various technological tools, subject matter or content knowledge, and pedagogical content knowledge that facilitates the art of facilitating content to diverse students.<sup>33</sup> Importantly, facilitating learning in blended learning environments requires knowledge of assessment, feedback, and student engagement among others.<sup>34</sup> This means that institutions of learning need to invest heavily in training their staff to accumulate these blended learning requisite skills.<sup>35</sup>

Studies have emphasized the need for a clear mastery of the technological tools needed to foster learning.<sup>36</sup> In addition to posing pedagogical content knowledge that is appropriate to teaching subject matter in a specific discipline in ways that ensure the realisation of the requisite outcomes, content knowledge implies a grasp of the key concepts, procedures, and processes needed in a specific field. Opportunely, staff can effectively implement a blended learning curriculum if there is a clear strategy on how to do so.<sup>37</sup>

### **Availability of Infrastructural gadgets**

Axiomatically, the availability of the requisite infrastructural gadgets, most of which are expensive, plays a significant role in ensuring the implementation of blended learning.<sup>38</sup> This implementation may move at a snail's pace in resource-constrained institutions.<sup>39</sup> Apparently, in some institutions, the resources were not of optimum quantity and quality. For instance, computers with low random-access memory (RAM) were found to derail the implementation of blended learning. It became particularly difficult to stream videorised learning resources requiring faster machines with a bigger random-access memory (RAM).<sup>40</sup> In the same study described above, the provision of materials is uneven. This led students and staff to heavily rely on personal hand-held mobile devices such as phones, iPads, and tablets to institute learning since these were readily available, portable, and affordable.<sup>41</sup> The use of

<sup>33</sup> Matthew J. Koehler, Punya Mishra, and William Cain, "What Is Technological Pedagogical Content Knowledge (TPACK)?," *Journal of Education* 193, no. 3 (October 4, 2013): 13–19, <https://doi.org/10.1177/002205741319300303>.

<sup>34</sup> Bansu Irianto Ansari et al., "Blended-Learning Training and Evaluation: A Qualitative Study," *Journal of Intercultural Communication*, December 10, 2023, 155–64, <https://doi.org/10.36923/jicc.v23i4.201>.

<sup>35</sup> Hyojeong Hong and Jaykyung Lee, "Identifying Teaching Competencies Blended Learning in University," *Journal of Educational Technology* 32, no. 2 (June 30, 2016): 391–425, <https://doi.org/10.17232/KSET.32.2.391>.

<sup>36</sup> Cronje, "Towards a New Definition of Blended Learning."

<sup>37</sup> Leithwood, Harris, and Hopkins, "Seven Strong Claims about Successful School Leadership Revisited."

<sup>38</sup> Adarsh Kumar et al., "Blended Learning Tools and Practices: A Comprehensive Analysis," *Ieee Access* 9 (2021): 85151–97.

<sup>39</sup> Dlamini and Nkambule, "Information and Communication Technologies' Pedagogical Affordances in Education."

<sup>40</sup> Przemyslaw Falkowski-Gilski and Michal Wozniak, "Study on CPU and RAM Resource Consumption of Mobile Devices Using Streaming Services," in *Proceedings of the 17th International Conference on Web Information Systems and Technologies* (SCITEPRESS - Science and Technology Publications, 2021), 235–41, <https://doi.org/10.5220/0010624900003058>.

<sup>41</sup> Mayr and Oppl, "Higher Education at the Margins—Success Criteria for Blended Learning Systems for Marginalized Communities."

cell phones in blended learning provided some benefits of portability, familiarity, and affordability for many individuals to use multimedia content, situated learning, communication, and interaction. However, there were also limitations in that mobile phones tend to have many apps and functions that cause distractions and loss of focus.<sup>42</sup>

In some cases, mobile phones are not robust enough to support learning due to small screens, short battery life, incompatibility with some multimedia systems, and miniature storage capacity.<sup>43</sup> These functional limitations of mobile devices used for teaching and learning resulted in accessibility.<sup>44</sup> A related accessibility challenge related to the compatibility between central institutional systems, particularly learning management systems and personal mobile devices that students and staff own.<sup>45</sup> Notably, device-related exclusion or inequality occurred when learning management systems such as Sakai, Blackboard, Moodle, Zoom, and Zotero in some of the HEI for blended learning could only optimally work on a laptop or a computer, yet most of the people did not have one.<sup>46</sup> This constrained student engagement in learning, with low quality of the infrastructural gadgets resulting in both digital divide, exclusion, and marginalisation.<sup>47</sup> These researchers propose that learning designers and programmers should scale up the development of apps to allow learning management systems and other related technologies to be used on cell phones.

### Training staff in blended learning

Training is a support mechanism for the workers in an organization so that they can develop confidence, positive attitudes, and competencies.<sup>48</sup> The TPACK framework for professionally developing staff asserts knowledge of technological tools that facilitate learning, and pedagogical aspects, that is the art of using facilitation or teaching techniques and approaches that effectively support learning within a specific subject area. The framework also assumes that the teacher must have a deep mastery of the subject matter.<sup>49</sup> The previously documented study found that staff who participated in externally facilitated professional development developed positive attitudes towards the value of ICT in advancing students' learning, together with confidence and capacity to apply such in their teaching.<sup>50</sup>

This finding also supports needs-based professional development. Needs-based professional development becomes inclusive.<sup>51</sup> Blended learning training or professional development ought to support the diverse needs of its stakeholders to maximise inclusion.<sup>52</sup> Such professional training includes content or subject knowledge, and technical skills, involves external experts, is sustained over time, and is done as a group.<sup>53</sup> For blended learning, there is a need to acquire technical ICT skills as well as functional use of digital and educational content (competencies) using active learning techniques. Academics seem to feel prepared when activities are hands-on or active learning and offer

<sup>42</sup> Shahnawaz Saikat et al., "A Systematic Review of the Benefits and Challenges of Mobile Learning during the COVID-19 Pandemic," *Education Sciences* 11, no. 9 (August 24, 2021): 459, <https://doi.org/10.3390/educsci11090459>.

<sup>43</sup> René F. Kizilcec et al., "Mobile Learning During School Disruptions in Sub-Saharan Africa," *AERA Open* 7 (January 19, 2021), <https://doi.org/10.1177/23328584211014860>.

<sup>44</sup> Kizilcec et al., "Mobile Learning During School Disruptions in Sub-Saharan Africa."

<sup>45</sup> Hellen Crompton and John Traxler, "Mobile Learning and Higher Education: Challenges in Context," in *Mobile Learning and Higher Education: Challenges in Context*, ed. J. Traxler and H., Crompton (New York: Deanta Publishing Services, 2018).

<sup>46</sup> Thomas K.F. Chiu, "Digital Support for Student Engagement in Blended Learning Based on Self-Determination Theory," *Computers in Human Behavior* 124 (November 2021): 106909, <https://doi.org/10.1016/j.chb.2021.106909>.

<sup>47</sup> Charity Ngoatle, Tebogo M. Mothiba, and Modikana A. Ngoepe, "Navigating through COVID-19 Pandemic Period in Implementing Quality Teaching and Learning for Higher Education Programmes: A Document Analysis Study," *International Journal of Environmental Research and Public Health* 19, no. 17 (September 5, 2022): 11146, <https://doi.org/10.3390/ijerph191711146>.

<sup>48</sup> Chang-Tik. Chan, "Lecturer E-Training to Support University Teaching," *Canadian Journal of Learning and Technology* 43, no. 2 (2017): 1–19.

<sup>49</sup> Koehler, Mishra, and Cain, "What Is Technological Pedagogical Content Knowledge (TPACK)?"

<sup>50</sup> Xavier Muianga et al., "Blended Learning Systems in Tertiary Education: A Comparative Analysis of Two Universities from Rwanda and Mozambique," in *E-Learn: World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education* (Association for the Advancement of Computing in Education (AACE), 2016), 1006–15.

<sup>51</sup> Ansari et al., "Blended-Learning Training and Evaluation: A Qualitative Study."

<sup>52</sup> Hong and Lee, "Identifying Teaching Competencies Blended Learning in University."

<sup>53</sup> Sam Sims et al., "What Are the Characteristics of Effective Teacher Professional Development? A Systematic Review and Meta-Analysis," *Education Endowment Foundation*, 2021.

opportunities to practice. Most importantly, it should be active and interactive and allow opportunities for observing, receiving feedback, making presentations, and analysis.<sup>54</sup> Conversely, other studies argue that owing to clashes in the timetable for training by external providers, and commitments such as research, teaching, and community, it is best to undertake in-house informal training sessions through holding lunchtime sessions, support groups, and individual consultations. Such can provide professional learning.<sup>55</sup>

Evidence abounds that different difficulties in implementing blended learning caused lecturers to experience difficulties in implementing blended learning during COVID-19.<sup>56</sup> To this end, training and professional development activities require a tailored approach that focuses on the knowledge needs of the instructors. For lecturers in institutions of higher learning in the Southern African context, such a needs-based approach was found to be critical for enhancing digital inclusion.<sup>57</sup> Institutions in Lesotho, for instance, sought to investigate opportunities and challenges in the integration of technology in teaching and learning and found that opportunities for individualised staff development, technical support, and a fair supply of infrastructures served as enablers for technology integration.<sup>58</sup> In a related study in Mozambique, Muianga et al. evaluated the use of the Technological Pedagogical Content Knowledge (TPACK) framework in training lecturers in the use of ICT using an external organization and found it to be less useful.<sup>59</sup> This implies that home-bred training in the institutions of learning should not be undermined in raising the training needs of the staff. This, in the context of blended learning, can provide a rich environment for implementing blended learning.

### Student Support in Blended Learning

If blended learning is to successfully take off in any institution, such an institution needs to invest time and resources to support students with their requisite gadgets and in the acquisition of skills so that they can navigate blended learning seamlessly. This is particularly important for those students who are less proficient in the online component as they tend to be hesitant, less motivated, and face immense difficulties associated with technological applications. Support is important because blended learning environments differ considerably from the traditional face-to-face teaching modality.<sup>60</sup> Chiu argues that the design of blended learning fosters autonomy (feeling of self-endorsed and self-governed), relatedness (feeling loved and connected), and competence (feeling effective and capable) to increase students' engagement in learning.<sup>61</sup> Relatedness is achieved by using personal and emotional designs and communication in the learning content. Then, competence is achieved by ensuring the class exercises graduate to the technological cognitive level. Such approaches are critical to reducing alienation.<sup>62</sup> Furthermore, lecturers ought to understand and ensure pedagogical fitness by structuring learning goals, content, activities, and assessments in a logical order that enables students to develop different knowledge levels.<sup>63</sup> Further, they should master the different approaches to prompting students to engage with learning materials in meaningful ways that foster the achievement of the desired learning outcomes. For instance, facilitating learning activities that enable self-study and

<sup>54</sup> Sims et al., "What Are the Characteristics of Effective Teacher Professional Development? A Systematic Review and Meta-Analysis."

<sup>55</sup> Groen et al., "Institutional Adoption of Blended Learning: Analysis of an Initiative in Action."

<sup>56</sup> Herlina Dhika Meigawati, "The Analysis of Students' Perceived Problems in Microteaching Class as Depicted in The Students' Teaching Journals" (Program Studi Pendidikan Bahasa Inggris FBS-UKSW, 2016).

<sup>57</sup> Morgan Chitiyo et al., "Exploring Teachers' Special and Inclusive Education Professional Development Needs in Malawi, Namibia, and Zimbabwe.," *International Journal of Whole Schooling* 15, no. 1 (2019): 28–49.

<sup>58</sup> Mukai Turugare and Norman Rudhumbu, "Integrating Technology in Teaching and Learning in Universities in Lesotho: Opportunities and Challenges," *Education and Information Technologies* 25, no. 5 (September 6, 2020): 3593–3612, <https://doi.org/10.1007/s10639-019-10093-3>.

<sup>59</sup> Muianga et al., "Blended Learning Systems in Tertiary Education: A Comparative Analysis of Two Universities from Rwanda and Mozambique."

<sup>60</sup> Chiu, "Digital Support for Student Engagement in Blended Learning Based on Self-Determination Theory."

<sup>61</sup> Chiu, "Digital Support for Student Engagement in Blended Learning Based on Self-Determination Theory."

<sup>62</sup> Hadiyanto Hadiyanto et al., "Students' Practices of 21st Century Skills between Conventional Learning and Blended Learning," *Journal of University Teaching and Learning Practice* 18, no. 3 (July 1, 2021), <https://doi.org/10.53761/1.18.3.7>.

<sup>63</sup> Kumar et al., "Blended Learning Tools and Practices: A Comprehensive Analysis."

collaborative activities is critical for deep exploration of concepts procedures, and processes, and this exploration is strengthened by guidance that encourages motivation that facilitates discussion and critical reflection. Ansari et al. advocate training lecturers on planning, implementing, and assessing blended learning to allow them to master it so that it impacts positively on student learning outcomes.<sup>64</sup>

### **Addressing ICT connectivity in squalor and rural settlements**

Unequivocally, blended learning success lies in the ability of students to fully participate both face-to-face and online. Such participation can be hindered by multiple factors such as a lack of access to requisite resources. For face-to-face sessions, students may struggle to find transport to travel to the venues where learning is taking place. Similarly, in the online component of blended learning, students and staff who are in zones of low network connectivity also suffer marginalisation and exclusion. Usually, it is remote areas that suffer poor connectivity due to the lack of internet connectivity signal. Evidence abounds that in ubiquitous contexts, students and staff get excluded from participating in their lessons due to network challenges. This can be offset by providing resources with low bandwidth.<sup>65</sup> Particularly, rural areas face unique geographical barriers and infrastructure that limit internet signal strength and availability.

This in turn constraints educational opportunities, health care delivery, and any other related business activities. The following strategies to enhance coverage are critical: Installing cell boosters or cell repeaters; instituting cell boosters to amplify weak signals for better coverage, and enhancing the signal strength, voice quality, and data speeds. The second strategy is to utilise fixed wireless access which is a cheaper option that does not require extensive infrastructure installation to facilitate reliable network speeds using technologies such as 4G, 5G, and WiMax. Another strategy would be to deploy satellite internet and thereby eliminate the need for physical infrastructure to provide connectivity to remote locations. Importantly, collaboration and synergy with internet service providers to address the areas' connectivity problems is critical. This is because the connectivity hurdles limit access to essential services. While traditionally poor internet service is associated with remote and rural areas, evidence abounds that shanty towns squalor settlements, or slums may experience similar challenges. The UN habitat indicates that these are illegal settlements characterised by substandard housing made up of plastic sheets, corrugated metal, or cardboard, and usually owned by impoverished people without tenure security. Such are on the rise in most African and Asian countries and tend to have poor amenities, including accessing reliable and stable networks and power supply owing to infrastructural challenges. This implies that students and staff residing in such squalor environments are marginalised. Such environments tend to experience poor connectivity and limited electrical power due to high incidences of theft and low maintenance of ICT infrastructural gadgets.<sup>66</sup> This calls to question why most governments proclaim the need to advance the use of technology to meet the needs of 4IR whereas there is slow effort to put in place mechanisms to improve both broadband connections that improve connectivity. Sadly, such a state of infrastructure continually marginalises people who live in squalor environments as they tend to receive teaching and learning resources late.

### **RECOMMENDATIONS**

In the current dispensation, blended learning can be viewed as a panacea to facilitate learning in the face of deterrents caused by natural disasters, pandemics, and wars. This is because it offsets the limitations of purely face-to-face and purely online learning modalities. It is therefore critical that all institutions of higher learning put in place effective blended learning models and strategies. Firstly, a clear fit-for-purpose well-researched blended learning policy is critical, so that relevant structures and support can be determined for institutions to get optimal results. Secondly, ICT leadership needs to be elevated because blended learning requires well-trained managers for different components to work in

<sup>64</sup> Ansari et al., "Blended-Learning Training and Evaluation: A Qualitative Study."

<sup>65</sup> Vincent Itai Tanyanyiwa and Tarisai Kanyepi, *Shanty Towns: A Solution to Housing Shortage Problems*, 2021, [https://doi.org/10.1007/978-3-319-95714-2\\_62](https://doi.org/10.1007/978-3-319-95714-2_62).

<sup>66</sup> Saikat et al., "A Systematic Review of the Benefits and Challenges of Mobile Learning during the COVID-19 Pandemic."

harmony. Such leaders can play a critical role in spearheading training to improve blended learning proficiency among staff and students. Thirdly, institutions of learning need to solicit funding from alumni and philanthropists to procure requisite ICT infrastructural gadgets to facilitate access to resources. Further, staff and students ought to have access to ICT infrastructural gadgets such as computers with stronger RAM, data, and the internet so that they can connect seamlessly. Fourthly, massive training to a different cadre of people on running the different aspects of blended learning is critical to increasing inclusivity in blended curriculum delivery and thereby reducing probabilities of exclusion and marginalisation. Since providing data and Wi-Fi and data could not solve connectivity challenges, these researchers recommend using blended learning models that increase learning opportunities. This is achieved through well-defined policies to offset exclusion and marginalisation.

## CONCLUSION

Although blended learning can be viewed as a panacea in the COVID-19 epoch, a score of marginalised contexts such as rural remote areas, slums, and resource-constrained communities paradoxically failed to benefit from the affordances that blended learning offers. However, during COVID-19, studies found that well-defined blended learning models saved the academic calendar and offset the spinoffs caused by COVID-19. Inopportunately, institutions that did not have ICT managers, requisite infrastructure, and well-defined blended learning policies suffered exclusion and marginalisation because they could not seamlessly take off when COVID-19 struck. They had to employ ad-hoc approaches to support the academic calendar. The study found that institutions with well trained and requisite managers ensured that the 2020-2021 academic project worked in harmony while the others that did not have requisite managers struggled to ensure that the different academic components worked in harmony. Finally, an appropriately researched and benchmarked ICT policy is critical to reduce the levels and marginalisation and exclusion in the implementation of blended learning.

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