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Posted Date: 8 October 2025

doi: 10.20944/preprints202510.0355.v1

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Reflections on Blended Learning Implementation in Zambia: Insights from an E-portfolio-Informed Autoethnographic and Reflexive Thematic Analysis

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Abstract

Blended learning refers to the purposeful integration of face-to-face and online learning experiences to create more flexible and effective educational environments. This reflective case study explored the implementation of a blended learning programme in a medical-related science discipline in Zambia. The study was grounded in analytic autoethnography and guided by Gibbs' Reflective Cycle to analyse reflective e-portfolio data. Eight themes emerged from the analysis. The blended model expanded access for working professionals through evening and weekend online sessions. Flipped learning strategies and the Community of Inquiry (CoI) framework enhanced teaching presence and learner engagement. Additionally, offline modules and Open Educational Resources (OERs) helped maintain learning continuity and support of student autonomy during internet disruptions. However, the study also uncovered challenges such as internet connectivity, financial constraints, limited digital literacy, and absence of structured onboarding to the online learning management system that undermined equitable participation. Additionally, the demands of balancing work, study, and care-giving responsibilities placed a heavy burden on learners, particularly women. The findings suggest that when blended learning is structured around the Community of Inquiry (CoI) framework, it holds transformative potential for educational delivery. However, its success depends on responsive learning designs that incorporate student's contexts.

Keywords: blended learning; community of inquiry; e-portfolio; autoethnography; Gibbs' reflective cycle; reflexive thematic analysis

1. Introduction

The outbreak of the COVID-19 pandemic prompted a rapid and unprecedented shift in higher education, with many universities transitioning from traditional face-to-face instruction to fully online learning [1]. In this shift, materials originally designed for in-person delivery were hastily repurposed for online platforms. This was often done without adequate consideration for students' local contexts or individual learning environments [2]. Consequently, many learning designs remained unchanged despite the radically different learning contexts students now faced [3]. As the educational landscape continues to evolve, blended learning, where online learning instruction is integrated with face-face learning, has emerged as a dominant model [4]. This approach has been described using various terms, including technology-enhanced learning, computer-assisted instruction, and hybrid learning [5]. For the purposes of this article, the term blended learning is used to refer to a deliberate, pedagogically sound combination of in-person and digital learning

 doi:10.20944/preprints202510.0355.v1

experiences. Unlike traditional distance education, which often relies on modular self-study with limited contact hours [6–8], blended learning fosters regular structured interaction and engagement between students and educators through offline modules, online learning, and face-face interaction for theoretical or practical learning [9,10]. A central tenet of blended learning is student engagement without which the educational experience risks becoming lonely and ineffective. The high dropout rates observed in many Massive Open Online Courses (MOOCs) are a testament to how poor engagement and the absence of a learning community can severely hinder academic progression [11–13].

To counteract this, effective blended learning often draws on the Community of Inquiry (CoI) framework, which emphasizes the interrelated elements of social, cognitive, and teaching presence [14–16]. CoI offers a robust model for creating meaningful and collaborative learning experiences, particularly in blended settings. Social presence allows students to present themselves as authentic individuals in the learning process. According to Salmon's model of online moderation, the educator or e-moderator is responsible for cultivate a safe, trusting environment where participants are free to interact, share resources, and form productive learning relationships [17,18]. Meanwhile, the cognitive presence within CoI focuses on enabling learners to reflect critically, solve problems, and make meaningful connections between new and existing knowledge [14,18]. This is often the product of well-structured formative assessments and interactive learning activities that promote knowledge construction over passive absorption echoing Vygotsky's social constructivist theory, which positions learning as a collaborative, socially mediated process [19,20]. In this context, students evolve from peripheral participants to active contributors in a Community (legitimate periphery participation model) [21]. The third component of the CoI framework, teaching presence, is often absent in traditional distance learning except for a limited time. In blended environments, however, it is essential. The educator is responsible for designing, organizing, and facilitating learning experiences through clear goals, structured activities, curated resources, and guided discussions[15,17]. An effective strategy that embodies teaching presence in CoI is flipped learning, wherein students engage with learning materials before class and use class time for discussion, application, and collaboration [22]. In this model, educators function as facilitators of dialogue and inquiry rather than mere transmitters of content [23,24].

Thus, when thoughtfully implemented, blended learning can expand educational opportunities, particularly for underserved or non-traditional learners, by offering greater flexibility, affordability, and access to Open Educational Resources (OERs) [10,25]. However, it also presents unique challenges, especially in resource-constrained settings. Informed by these challenges, theoretical foundations and pedagogical models, this article examines the real-world implementation of blended learning within a medical-related science programme in Zambia. Through a reflective case study approach using data from an e-portfolio, this article seeks to illuminate the good, challenges, opportunities, and adaptations involved in accessibility and sustaining engagement and fostering meaningful learning in blended environments.

2. Methodology

2.1. Context and Scope

The undergraduate degree programme on which these reflections are based used a blended learning approach, featuring online learning and offline modules for each course to support the CoI framework and flipped learning at a university in Zambia. The persona (semi-fictional research-based representation of different types of learners) in the programmes typically holds diploma-level qualifications, works full-time in hospitals and research facilities, and includes many individuals who are married and residing in both rural and urban areas across Zambia, Botswana, Namibia, Zimbabwe, and Malawi.

 doi:10.20944/preprints202510.0355.v1

2.2. Study Design

This study employed a reflective case study design grounded in the principles of analytic autoethnography and structured through Gibbs' reflective cycle [26,27]. Autoethnography is a qualitative research method and a branch of ethnography that allows the practitioner to serve simultaneously as both researcher and participant [28]. It involves deep engagement with the research context, stakeholders, and processes, alongside reflective analysis of that engagement. The study relied exclusively on the programme coordinator's reflective electronic portfolio (e-portfolio), developed over two academic years (2024–2025), including the period during which the curriculum was developed. The e-portfolio comprised a total of 150 entries, which included structured reflections, meeting notes, personal observations, and rephrased informal feedback from both students and staff. These entries documented the experiences of approximately 50 learners and three staff members, and were compiled from multiple communication channels such as WhatsApp messages, online classes, face-to-face conversations and meetings, SMS exchanges, and emails. The e-portfolio thus functioned both as a personal record of the coordinator's reflections and as a systematic repository of feedback drawn from the learning and teaching community. All entries related to blended course delivery and participant experiences were included in the study for analysis; no eligible reflections were omitted. A purposive sampling strategy was used - the researcher intentionally reviewed every relevant e-portfolio entry from the period.

Building on this strategy, the programme coordinator served as a complete member researcher[29], being fully immersed in the study, both as a participant and as an insider, the data were nevertheless approached with methodological rigor and analysed using established qualitative procedures. In autoethnographic research, this dual role entails not only observing but also actively experiencing and systematically reflecting on the cultural and social dynamics of the setting. The insider perspective, while deeply personal, becomes a critical analytic lens when applied reflexively and with scholarly discipline [28,29].

2.3. Data Analysis

To guide the interpretation of reflective data, the Gibbs' Reflective Cycle was applied[26,27], a well-established model for structured reflection that facilitates deep critical engagement with lived experience. Each entry in the e-portfolio was examined through six stages of the Gibbs' model: (1) description of the experience, (2) identification of thoughts and feelings, (3) evaluation of what worked or did not, (4) analysis of the situation in relation to pedagogical and blended learning theory, (5) conclusion on what could have been done differently, and (6) an action plan for future improvement of the implementation of the programme. Following the application of Gibbs' model, a reflexive thematic analysis (Table 1) was undertaken to identify recurrent patterns and deeper meanings within the reflections [30,31]. Codes and themes were developed inductively (emerging from the data) and deductively (informed by Gibbs reflective cycle).

Table 1. Reflexive thematic analysis procedure.

Phase	Description
1. Familiarisation with the Data	The ePortfolio entries were repeatedly read and insights documented over the period 2024–2025. Entries included structured reflections, meeting notes, conversations with students, SMS and WhatsApp messages, personal observations made during residential schools and online lectures, module launches, and coordination meetings.
2. Generating Initial Codes	NVivo was used to organise and code the ePortfolio data. Initial codes were developed both inductively and deductively
3. Searching for Themes	Codes were then grouped into broader categories based on patterns of meaning individually and collaboratively by the authors
4. Reviewing Themes	The emerging themes were reviewed against the full dataset to ensure they were coherent, internally consistent, and meaningful.

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5. Defining and Naming Themes	Final themes were named and refined to capture all aspects of blending learning based on available data.
6. Producing the Report	The final write-up combined personal reflections and narrative excerpts to provide a layered interpretive account of the findings. Quotations and paraphrased student feedback were integrated where appropriate to support the themes

2.4. Ethical Considerations

Ethical principles of confidentiality, anonymity, and respect for individuals were strictly observed. Permission to publish the reflections was provided by the department in which the programme is hosted. The name of the university has been withheld as part of the requirement to publish the reflections. No direct quotations or identifiable information from students or staff were used. Formal and informal feedback from social media platforms recorded in the e-portfolio was paraphrased and de-identified to protect contributors' privacy. Where possible, students were informed about the anonymised challenges being published for purposes of improving the programme and lobbying management for resources.

2.5. Coding and Data Analysis

Reflective entries were analysed in NVivo version 12.3 (Lumivero, Denver, Colorado, USA) using reflexive thematic analysis following Gibbs' Reflective Cycle [26,27]. Each e-portfolio entry was examined through Gibbs' six stages: (1) description of the experience, (2) identification of thoughts and feelings, (3) evaluation of what worked or did not, (4) analysis in relation to pedagogical and blended learning theory, (5) conclusion on what could have been done differently, and (6) an action plan for future improvement. This model provided a structured lens through which to interpret and critically engage with lived experiences documented in the e-portfolio. Following this structure, a reflexive thematic analysis was undertaken to identify recurrent patterns and deeper meanings [30,31]. Coding combined both deductive and inductive strategies. Deductive codes were derived from Gibbs' stages and relevant blended learning frameworks, while inductive codes emerged organically from the data. This dual approach ensured that pre-existing theory was considered while also allowing for the discovery of new, context-specific insights.

To enhance analytic rigor, two members of the research team (SMM and LS) independently validated and adjusted the preliminary codes, thereby reducing the risk of misinterpretation and bias. They met to compare coding decisions, reconcile discrepancies, and refine the codebook collaboratively. Once consensus was reached, the lead author (SMM) applied the refined framework to the remainder of the dataset, consulting the team where uncertainties arose. NVivo supported the process by enabling systematic organisation, comparison, and refinement of codes. Features such as coding stripes were used to track consistency across the dataset; text search and word frequency queries identified recurring concepts; and memos were created to document coding decisions, ensuring transparency through a clear audit trail. NVivo's visual tools (mind maps, charts) further helped identify relationships between codes and refine emerging themes. A summary of this analytic process is provided in Table 2.

Table 2. Reflexive thematic analysis procedure.

Phase	**Description**
1. Familiarisation with the Data	The ePortfolio entries were repeatedly read and insights documented over the period 2024–2025. Entries included structured reflections, meeting notes, conversations with students and lecturers, personal observations made during residential schools and online lectures, module reviews, and coordination meetings.
2. Generating Initial Codes	NVivo was used to organise and code the ePortfolio data. Initial codes were developed both inductively and deductively
3. Searching for Themes	Codes were then grouped into broader categories based on patterns of meaning individually and collaboratively by the authors

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4. Reviewing Themes	The emerging themes were reviewed against the full dataset to ensure they were coherent, internally consistent, and meaningful.
5. Defining and Naming Themes	Final themes were named and refined to capture all aspects of blending learning based on available data.
6. Producing the Report	The final write-up combined personal reflections and narrative excerpts to provide a layered interpretive account of the findings. Quotations and paraphrased student feedback were integrated where appropriate to support the themes

2.6. Ethical Considerations

The study adhered to strict ethical standards. Institutional permission was obtained for the publication of reflections, and the university's identity is anonymized. Informed consent was sought from all participants whose feedback appears in the data. Students were assured that their responses would be de-identified. No direct names or other identifiers appear in the write-up. Dual roles were explicitly managed: the coordinator-researcher maintained a clear boundary by relying only on published e-portfolio entries (rather than, for instance, soliciting new data for this study). Confidentiality, anonymity, and respect were prioritized throughout, ensuring an ethically sound design.

3. Results

A total of 100 e-portfolio entries were included in the study for analysis from the 150 overall, representing 66.7% of all entries. The reflexive analysis of the e-portfolio revealed eight key themes that brought to light both the opportunities and challenges associated with the blended learning mode of delivery (Table 3).

Table 3. Summary of the final themes and associated codes, along with the number of coded references and a representative quote for each theme. Frequencies refer to the count of coded references in NVivo.

Theme	Key Codes (examples)	References	Representative Quote
Access and Flexibility	Work–study balance, evening class, government leave	[17]	"I would never have returned to school if not for this flexibility." (student)
Digital Exclusion	Internet stability, power outage, and mobile access	[14]	"My internet cut out during a test and I couldn't finish the submission." (student)
Financial Constraints	Fee payment, LMS block, and instalment plan	[10]	"I have just found money for school, please help me register." (student)
Digital Literacy & Induction	LMS navigation, orientation, and password issues	[14]	"I couldn't submit via LMS, can I instead email you the assignment?" (student)
Competing Demands (Work/Study/Life)	Employment duties, family care, fatigue	[10]	"I had to skip a live session because I was needed at work." (student)
Flipped Learning & Offline Modules	Pre-reading, classroom discussion, module delivery	[14]	"Without the printed module, I would have lost track during the power outage." (student)
Community of Inquiry & Peer Engagement	Discussion forum, peer support, teaching presence	[14]	"By helping each other in the forum, we learned more than from lectures alone." (student)
Use of OERs (Open Resources)	Creative Commons, illustrations, low-cost materials	[7]	"The images from open textbooks made the lectures much clearer." (student)

 doi:10.20944/preprints202510.0355.v1

3.1. Access and Flexibility

Many students noted that the blended format *enabled* continued studies while working. Flexible scheduling (evening and weekend classes) was repeatedly praised. For example, one learner said, *"I would never have returned to school if not for this flexibility."* The programme's design, alternating face-to-face and live online sessions as well as use of modules, let students fit learning around jobs and family. Yet care duties also introduced interruptions ("*I'm sorry, sir, my kids interrupted,*" one student apologized during an online lecture session). Overall, flexible timetabling facilitated participation for professionals, though the quality of home study spaces (e.g. noisy environments) varied among students.

3.2. Digital Exclusion: Internet, Electricity, and Mobile Access

Unreliable connectivity to the internet was a major barrier. Students reported dropped connections. Many students reported missing submission of online tests due to internet losses. One student remarked, "*My internet cut out while I was submitting a timed online test, could I have a make-up*"). Nationwide power outages due to drought sometimes forced class cancellations or students missing the sessions unless they had power backup or charged their mobile phones and laptops in advance. On more than one occasion, the coordinator was kicked out of a session by internet losses and power cuts, leading to lost instruction. Re-joining the sessions was never easy for instructors and students. Meanwhile, Mobile access was uneven and sometimes resulted in reduced access to the learning platform: those using phones could join via voice, but lacked the full access to the LMS tools due to bandwidth issues. Thus, despite creative coping (e.g. using multiple service providers), chronic infrastructure gaps limited participation but the modules provided the necessary back-up.

3.3. Financial Constraints and LMS Access

Although the university allowed instalment payments, some learners struggled to keep up with fees. A few were even *locked out* of the LMS during key periods due to unpaid balances. Students expressed stress over delayed registrations and payment plans: one student pleaded, *"I have just found money for school, please help me register."* These financial barriers interrupted access to learning materials and live sessions, illustrating that even pedagogically flexible programmes can be undermined by economic exclusion.

3.4. Limited Digital Literacy and Insufficient Induction

Several participants had little prior experience with e-learning platforms. Many expressed confusion over basic tasks. Comments such as, *"I couldn't submit* via *LMS, can I instead submit* via *your email address?"* or "I couldn't locate the submission button" were common. The formal induction procedures (drawing on Salmon's model) were not as thorough as needed: some students never logged into the LMS until an assignment was due or they needed to see their results. Some went to the extent of opposing the use of the Moodle learning platform opting for other alternatives either for accessibility issues due to lack of school fees payments or digital illiteracy. The lack of clear onboarding tutorials initially hampered engagement. However, peer and instructor support were subsequently helpful.

3.5. Balancing Work, Study, and Life

The dual burden of full-time employment and study was a prominent strain. Students appreciated after-hours scheduling, but fatigue remained an issue. One student shared how work emergencies pulled them away even during residential school sessions due to denied leave, *"I had to skip a live session because I was needed at work,"* a learner admitted. The need to be at work was also a common phenomenon when time for residential school arrived. Meanwhile, ladies missed residential school due to recent delivery of babies or were near term. These competing demands (especially acute

 doi:10.20944/preprints202510.0355.v1

for women with caregiving roles) meant that even well-intentioned programme features could not fully alleviate stress.

3.6. Flipped Learning and Offline Modules

Instructors implemented a flipped-classroom approach by distributing interactive modules (PDFs with exercises) before live lectures. Most students found this beneficial: by pre-studying content, they were more engaged in discussion. One noted, *"Without the printed module, I would have lost track during the power outage."* Following one evening online lecture session, the programme coordinator sent congratulatory messages to the students, acknowledging the exceptionally high level of interaction and noting that such engagement was unprecedented in his prior teaching experience. Indeed, having material in advance proved crucial during internet or electricity failures. However, this depended on the timely provision of materials; a few students who received modules late could not prepare adequately. Notably, some faculty were initially uneasy with flipped pedagogy, but learner feedback was overwhelmingly positive.

3.7. Community of Inquiry and Peer Engagement

When the Community of Inquiry (CoI) framework was intentionally fostered, students reported richer interactions. Learners frequently helped each other in LMS discussion forums, with one commenting, *"By helping each other in the forum, we learned more than from lectures alone."* These peer-led interactions built social presence and cognitive presence: students valued asynchronous question and answer threads that let them clarify material collaboratively. The instructor also seeded discussions, prompting quieter students with targeted questions. According to participants, these practices made sessions *"more authentic and community-driven."* Taking students as co-creators of knowledge reduces the burden on instructors to teach everything and answer every question.

3.8. Use of Open Educational Resources (OERs)

Finally, the programme's emphasis on openly licensed materials enriched the learning experience. Instructors incorporated illustrations and cases from free resources into both modules and live sessions. Several students remarked that these open materials gave additional perspectives at no cost. For example, one said, *"The images from open textbooks made the lectures and modules much clearer."* This usage of OERs promoted learner autonomy (students could self-study different materials) and mitigated content gaps when internet connectivity failed.

4. Discussion

This case study demonstrates how using Gibbs' Reflective Cycle within an analytic autoethnographic framework illuminates both affordances and barriers of blended learning in a low-resource context. The themes aligned roughly with stages of Gibbs' cycle: early themes (e.g. Access, Exclusion) reflected descriptive and affective aspects of experience, while later themes (e.g. Flipped Learning, Community of Inquiry) corresponded to evaluative and action-oriented reflections. For instance, learners' gratitude for flexible scheduling proves that blended learning enables adult participation. The flexibility of the blended programme reflected findings in existing literature, showing how evening and weekend sessions support adult learners with demanding schedules such as caregivers [9]. However, our findings also suggest that flexibility alone cannot overcome home distractions or economic pressures. Both students and educators faced similar challenges while participating from home. Therefore, the importance of creating dedicated, comfortable learning spaces within the home, even if modest, such as a quiet room, a supportive chair, or educating family members to reduce distractions, is vital for accessibility. While full alignment with universal design for learning (UDL) may not be feasible, adapting home environments to individual needs can promote more inclusive, equitable, and effective learning [32,33]. Armed with the persona of the

 doi:10.20944/preprints202510.0355.v1

students, the educator must align their learning designs with the students' context, internet-wise and space-wise [34].

While the programme under study expanded access to previously excluded populations, particularly working professionals, it also exposed internet access limitations and disruptions that threaten the sustainability and equity of such initiatives. Poor internet connectivity, electricity power cuts, and device limitations disrupted participation in some cases. This scenario reveals a core paradox: while blended learning is designed to enhance access, it simultaneously risks deepening inequities if technological readiness is assumed rather than supported. These challenges appear to be common in low-income countries amidst an abundance of natural resources [35]. While some users in the programme adopted coping strategies such as subscribing to multiple data providers, these measures were never sustainable in the event of a power outage. However, the programme was robustly designed to counter such issues, with students provided with offline modules as part of learning materials. Additionally, students had access to recorded lectures within the learning management platform if they needed to listen to the lecture again. In this way, the students were empowered to navigate across the challenges, ensuring justice to the students and respect for their local contexts as required by the critical digital pedagogy framework and the values of open pedagogy [36,37].

Financial exclusion compounded learning challenges in some cases, though often due to delayed fee payments rather than systemic barriers. The programme's model required an initial 30% payment, after which students were allowed to pay in flexible instalments. Those who failed to meet this threshold or made no further payments often faced restricted LMS access or withheld results. While online education incorporates open elements such as OERs, it does not equate to entirely free education. OERs may be cost-free under Creative Commons licensing, but institutional services incur costs [38,39]. Thus, equitable access to education depends not only on flexible pedagogy but also on clear, supportive financial policies. something the programme aimed to achieve through its staggered payment model.

For some students, digital illiteracy quietly but significantly hindered meaningful participation, particularly in navigating the LMS and submitting assignments. This was more common in the earlier part of the programme. Instances of multiple submissions or requests to submit via email after failed attempts pointed to a lack of confidence and familiarity with the platform. This challenge was largely due to the absence of structured digital onboarding, emphasizing the importance of Stage 1 of Salmon's e-moderation model [17], access and motivation, where learners are supported to gain access and build essential technical skills. Without this foundation, some students struggled to interact with the platform initially, highlighting the need for intentional, scaffolded e-moderation to ensure all learners are adequately prepared for online learning environments.

On the positive side, the integration of flipped learning strategies had a positive impact when effectively implemented. Students who engaged with offline modules in advance arrived at live sessions prepared to participate in substantive discussions, contributed, and asked engaging questions. This pedagogical shift from passive reception to active engagement was meant to drive deeper understanding and peer interaction. It fits supports Paulo Freire's theory against the banking Model of Education, where teachers "deposit" information into passive students, who are expected to receive, memorize, and repeat it without question [40,41]. However, the adoption of flipped learning was uneven. Some instructors defaulted to conventional lecturing styles, missing the opportunity to exploit the full potential of the format. Therefore, there is a need for professional development and institutional encouragement to support the transition from teacher-centred content delivery to learner-centred facilitation, where students are taken as co-creators of knowledge. Flipped learning removes the burden of teaching as mere content delivery, allowing educators to focus on facilitating deeper discussions, clarifying complex concepts, and supporting active, student-centred learning during class time.

The programme also succeeded in cultivating a sense of community among learners in some courses. Peer responses in LMS forums and live discussions not only alleviated pressure on

 doi:10.20944/preprints202510.0355.v1

instructors as fountains of knowledge but also strengthened collaborative meaning-making. These practices reflected an emergent pedagogy of shared responsibility and collective inquiry, which is especially important in environments where educator bandwidth is limited. Nevertheless, such community-building efforts require intentional design and ongoing facilitation to enable teacher-learner networks and learner-learner networks, creating what is commonly called networked learning through sharing information. The online classes embodied the principles of the Community of Inquiry (CoI) framework, which we recommend as a model for structuring effective online learning environments. However, for classes to take the form of CoI, there must be a thorough implementation of the 5 stages of e-moderation, the presence of an educator who understands such pedagogical approaches, and the use of the flipped learning model and OERs [14,17,42]. The integration of OERs added further depth to the learning experience in both the modules and online sessions, particularly the sharing of links in the comment sections to help students understand the materials better or to support an answer to a question. The use of OERs reflected an important shift toward open pedagogy and the democratization of knowledge, particularly in resource-limited settings [38,42].

Finally, the long-term success of blended learning in such contexts in Zambia and other similar areas depends not only on technological platforms or pedagogical models but on institutional culture and leadership. Faculty adoption of innovative practices is shaped by professional incentives, peer mentorship, and administrative clarity. Without intentional investment in educator capacity and learner support, blended learning risks becoming an uneven and exclusionary experience. A holistic approach, encompassing infrastructure, pedagogy, policy, and cultural attitudes, is necessary to ensure that blended learning can deliver on its transformative promise.

5. Conclusions

The implementation of a blended learning programme demonstrated that a CoI approach, flexibility, and discussion-based flipped learning can improve accessibility to learning and meaningfully enhance learner participation. However, unreliable internet connectivity, limited digital literacy, and low use of Salmon's e-moderation model can hinder equitable access and sustained engagement. Going forward, intentional investment in internet services and training in CoI approached and flipped learning is essential for blended learning to thrive in low-income educational contexts.

Data Availability Statement: The reflective e-portfolio is not available for sharing.

Declaration of use of Generative AI: Generative AI (ChatGPT version 4-0, Open AI, USA) was used to edit and correct language and syntax where necessary. Data resulting from the use of AI was verified or corrected by the authors.

Conflicts of Interest: The authors declare no potential conflict of interest.

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