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From Techno-Centric to Ecosystem-Centric: An Integrated Framework for Decolonial, Need-Supportive EdTech Integration

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Abstract. Educational Technology (EdTech) projects in underfunded schools can create an aspiration-alienation dichotomy since they can create opportunity and perpetuate inequality. This study investigated how technology integration can move beyond this paradox to support sustainable learner motivation. The study suggests and empirically demonstrates an integrated framework for decolonial need-supportive EdTech integration based on the Self-Determination Theory (SDT) and decolonial philosophy. The study's results were derived from three public secondary schools in the Eastern Cape's Oliver Reginald (OR) Tambo Inland District (n = 16: learners; 33 teachers) and the research used a qualitative-dominant convergent parallel mixed-methods design. Descriptive statistics and reliability testing were used to examine quantitative survey data, while reflexive thematic analysis was used to analyse qualitative interviews and classroom observations. The integrated results show that teacher mediation, which is conceptualised as decolonial needs-supportive facilitation is how learner motivation arises rather than technology itself. The psychological demands for autonomy, competence, and relatedness highlighted in SDT were supported by the teachers who intentionally translated digital content into local linguistic and cultural contexts. Contextually appropriate tools, such as offline video resources and mobile messaging platforms made this facilitative practice possible by enabling pedagogical customisation and localisation despite significant infrastructure limitations. According to the report, equitable EdTech integration necessitates a paradigm change from techno-centric delivery to ecosystem-centric design, giving teacher capacity, tool contextual fit, and culturally grounded teaching top priority. In marginalised educational situations, the suggested paradigm offers a theoretically sound and empirically supported strategy to turn instructional technology from a potential cause of alienation into a driver for learner empowerment.

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1. Introduction

Educational Technology (EdTech) is widely positioned as a lever for equity, promising to democratise access and prepare students for a digital future (Haleem et al., 2022). However, there are techno-optimist narrative fractures in the under-resourced rural schools of the Global South. Despite substantial EdTech investments, systemic learning improvements in Sub-Saharan Africa remain elusive, with investments often prioritising system management over instructional transformation and leaving marginalised groups underserved while learning poverty affects 89% of the children in the region (World Bank, United Nations Educational, Scientific and Cultural Organization (UNESCO), United Nations International Children's Emergency Fund (UNICEF), Foreign, Commonwealth & Development Office (FCDO), United States Agency for International Development (USAID) & Bill & Melinda Gates Foundation, 2022).

The failure is compounded by a lack of accountability as an analysis of the World Bank education projects with Information and Communication Technology (ICT) components implemented between 2011 and 2022 found that the evaluation of technological effectiveness was rare, leaving critical gaps in understanding what works. Between 2022 and 2024, South Africa procured 545,938 learner devices nationally, yet these failed to technologically educate learners due to device obsolescence, inadequate teacher training (only 6.7% trained in digitalisation), and due to the internet being confined to administration blocks, as exemplified by the Vezukhono Secondary School where smartboards remained unused for lack of classroom connectivity.

At another school, 50 devices sat idle because the passwords were unknown (Parliamentary Monitoring Group, 2025). The pattern of unfulfilled potential gives rise to what the study terms the "aspiration-alienation paradox": a phenomenon where learners express strong excitement about technology as a symbol of modernity and future possibility, yet these positive impulses are routinely undermined by tool failures and culturally foreign content, leading to frustration and reinforced exclusion (Bubou & Job, 2021; Moloi & Mhlanga, 2021).

The paradox is distinct from adjacent constructs. Unlike the digital divide, it operates at the psychological level, capturing what happens when access is partial or alienating. Unlike the approach-avoidance conflict, it is historically specific, arising from post-colonial aspiration intersecting with systemic failure. And while it shares features with symbolic violence (Leggett, 2025), it foregrounds the learners' active aspiration toward the culture that subsequently excludes them. Concrete indicators include but are not limited to initial excitement followed by disengagement upon tool failure, verbal expressions of technology as an escape from poverty coupled with resignation that "these things are not for us," and sustained effort only when content is culturally mediated (Leggett, 2025).

Dominant frameworks offer essential but incomplete answers. The SDT robustly establishes that motivation flourishes when environments support autonomy, competence, and relatedness (Ryan & Deci, 2022). Yet SDT-based research often assumes relative stability, leaving unexamined how these needs are systematically thwarted by infrastructural fragility and cultural alienation in post-colonial contexts (Ahmadi et al., 2023). Conversely, decolonial scholarship powerfully critiques how Western-centric technologies enact epistemic violence, reinforcing colonial knowledge hierarchies (van Stam, 2021). This critique builds on the foundational work by Fanon (1963), who analysed the colonised subject's aspiration toward the oppressor's world, and Ndlovu-Gatsheni (2013), who theorises "coloniality" as the enduring patterns of power that survive formal colonialism and continue to shape knowledge and culture.

However, the critique has less frequently articulated a clear, psychologically grounded pathway for how educators can practically resist these forces to foster students. The critical gap, therefore, is while numerous studies apply SDT to technology-mediated learning (Chiu, 2021; Haleem et al., 2022) and others employ decolonial critiques (van Stam, 2021), no prior study has operationalised the stages of a decolonial mindset as the explicit mechanism for achieving SDT need satisfaction. The integration attempts remain theoretical rather than empirically tested. People lack a tested model specifying how decolonial awareness translates into classroom practices that support autonomy, competence, and relatedness.

To address the gap, a qualitative-dominant convergent parallel mixed-methods study (n=168 learners, 33 teachers) across three secondary schools was conducted. The paper's primary contribution is to propose and empirically illustrate an integrated framework for decolonial and need-supportive EdTech integration. Drawing on the decolonial mindset stack (Li et al., 2025), the researchers advance three theoretical propositions empirically tested in the study. Proposition 1 (recognition → relatedness) posits that cultural mismatch teacher recognition enables pedagogical actions fostering the learners' sense of belonging by validating local knowledge.

Proposition 2 (reflection → autonomy) suggests that teacher reflection on the positionality and reliance on foreign digital resources creates space for learner agency in localising content. Proposition 3 (reclamation → competence) proposes that teacher reclamation of the local languages and epistemologies builds learners' confidence by removing linguistic and cultural barriers. These propositions reconceptualise teacher facilitation as "decolonial need-support", a practice that consciously applies a decolonial mindset to deliver SDT's need satisfaction, enabled by contextually fit tools that are reliable, adaptable, and low-cost.

The study addressed the overarching research question: How can educational technology be integrated in under-resourced, post-colonial school contexts to transform it from a potential source of alienation into a sustainable catalyst for learner motivation? By weaving together SDT's motivational mechanics with decolonial praxis, the researchers offer a novel, actionable model for moving from techno-centric delivery to ecosystem-centric empowerment.

2. Literature Review

2.1 The Aspiration-Alienation Paradox in EdTech Research

The aspiration-alienation paradox emerges from the literature examining technology adoption in marginalised contexts. Bubou and Job (2021) documented how e-learning in Nigerian institutions generated initial excitement that dissipated when confronted with infrastructural failures and culturally irrelevant content. Similarly, Moloi and Mhlanga (2021) observed South African learners experiencing technology simultaneously as a future opportunity and an exclusion reminder. This paradox differs from the digital divide (Chisango & Marongwe, 2021), which addresses access and distribution by operating psychologically; capturing what happens when access is partial or alienating. It differs from the approach-avoidance conflict through historical specificity, arising from post-colonial aspiration intersecting with systemic failure. While sharing features with symbolic violence (Leggett, 2025), it foregrounds the learners' active aspiration toward the culture that subsequently excludes them.

2.2 Self-Determination Theory in Educational Technology Research

SDT has been extensively applied to technology-mediated learning. Chiu (2021) demonstrates how the digital tools designed to support autonomy, competence, and relatedness predict student engagement. Haleem et al. (2022) conclude that technology's motivational impact depends significantly on implementation and mediation. However, most SDT-EdTech research originates in well-resourced contexts where infrastructural stability and cultural congruence are assumed. Ahmadi et al. (2023) acknowledge that their SDT-based classification of teacher behaviours did not systematically address how structural inequalities thwart need satisfaction. Studies in sub-Saharan Africa demonstrate SDT's relevance under resource scarcity but have not examined how technology specifically mediates these dynamics.

2.3 Decolonial Critiques of Educational Technology

Decolonial scholarship critiques how technology perpetuates colonial patterns. Van Stam (2021) argues that the digital technologies that are not aligned with local knowledge reproduce epistemic hierarchies. This builds on Ndlovu-Gatsheni's (2013) theorisation of coloniality about enduring power patterns surviving formal colonialism. Tobias (2022) extended this critique to the learning management systems embedding Western pedagogical assumptions. Oki, Uleanya and Mbanga (2023) documented how technology in rural South Africa often reinforces rather than reduces marginalisation. However, decolonial critiques have less frequently articulated clear, psychologically grounded pathways for classroom practice. As Tobias (2022) notes, the field produces sophisticated diagnoses but fewer actionable prescriptions.

2.4 The Theoretical-Practical Divide

SDT provides a robust understanding of what learners need (autonomy, competence, relatedness) but lacks a critical lens of how systemic inequities thwart these needs. The decolonial theory provides powerful cultural critique but its translation into concrete pedagogical practices remains underdeveloped. This creates a divide as studies describe aspiration-alienation dynamics but stop short of modelling resolution through daily practice.

2.5 The Need for Integration

While numerous studies apply SDT to technology-mediated learning (Chiu, 2021; Haleem et al., 2022) and others employ decolonial critiques (van Stam, 2021), no prior study has operationalised decolonial mindset stages as the explicit mechanism for achieving SDT need satisfaction in under-resourced, post-colonial classrooms. The integration attempts remain theoretical rather than empirically tested. This study addressed that gap.

3. Theoretical Framework

3.1 Overview: Integrating Psychological Needs and Decolonial Action

This framework synthesises two traditionally separate domains: universalist motivation psychology and critical decolonial praxis. The integration provides a novel explanatory model for transforming educational technology from alienation to empowerment.

3.2 Self-Determination Theory: The Engine of Motivation

SDT posits that high-quality engagement arises from satisfying three innate needs: autonomy (volitional action), competence (effectiveness in interactions), and relatedness (connection to others) (Ryan & Deci, 2022). Foundational principles (Deci & Ryan, 1985; Ryan & Deci, 2000) have been validated across the Global South educational settings and the Sub-Saharan African contexts. SDT's application to technology-enhanced learning is well-established (Chiu, 2021). However, most research originates in contexts of infrastructural stability and cultural congruence. In under-resourced post-colonial settings, an unreliable device does not support competence, it systematically thwarts it. Content ignoring local language damages relatedness. SDT identifies the "what" of motivation but requires a companion framework to address the "how" within the structures of inequalit.

3.3 Decolonial Theory: The Critical Lens

The decolonial theory argues coloniality, enduring patterns of power, knowledge, and being established by colonialism, and it continues shaping educational technology (van Stam, 2021). Building on Fanon (1963), who analysed the colonial world as "compartmentalised", and Ndlovu-Gatsheni (2013) who theorise coloniality, this perspective holds that technology is never neutral but is embedded with the creators' cultural logic. The Decolonial Mindset Stack (DMS) provides an actionable pathway (Li et al., 2025). Applied here in pioneering capacity, three foundational shifts were distilled: Recognition (seeing colonial patterns), reflection (interrogating positionality), and reclamation (centering indigenous knowledge).

3.4 Philosophical Integration: Contextual Universalism

SDT's organismic naturalism (universal needs) and decolonial anti-universalism present productive tension. This study proposes "contextual universalism" that needs may be universal, but the pathways to satisfaction are necessarily particular, shaped by local histories, languages, and material conditions. The teacher providing isiXhosa voice-overs does not reject universal competence need but recognises that competence is achieved through culturally specific means.

3.5 Synthesis: The Integrated Framework of Decolonial Need-Support

Decolonial action becomes the means to achieve psychological need satisfaction. "Decolonial need-supportive facilitation" is teacher practice consciously employing a decolonial mindset to design learning environments, thwart alienation and foster autonomy, competence, as well as relatedness. From recognition to relatedness: When a teacher recognises that a science video only shows Western laboratories, by pausing to ask, "How would we investigate this here?", they connect global content to local reality, embodying Fanon's (1963) insight. From reflection to autonomy: When a teacher reflects on reliance on foreign content and co-creates local history documentation projects, the learners gain authentic agency, aligning with Ndlovu-Gatsheni's (2013) call for decolonisation as reflective work.

From reclamation to competence: When the teachers create isiXhosa digital content about local ecology, they remove linguistic and cultural barriers, building competence from strength (Ndlovu-Gatsheni, 2024; van Stam, 2021). Hence Figure 1 illustrates this theoretical synthesis, mapping the universal psychological needs from Self-Determination Theory onto the corresponding layers of decolonial praxis, Recognition, Reflection, and Reclamation, to form the integrated concept of decolonial need-supportive facilitation.

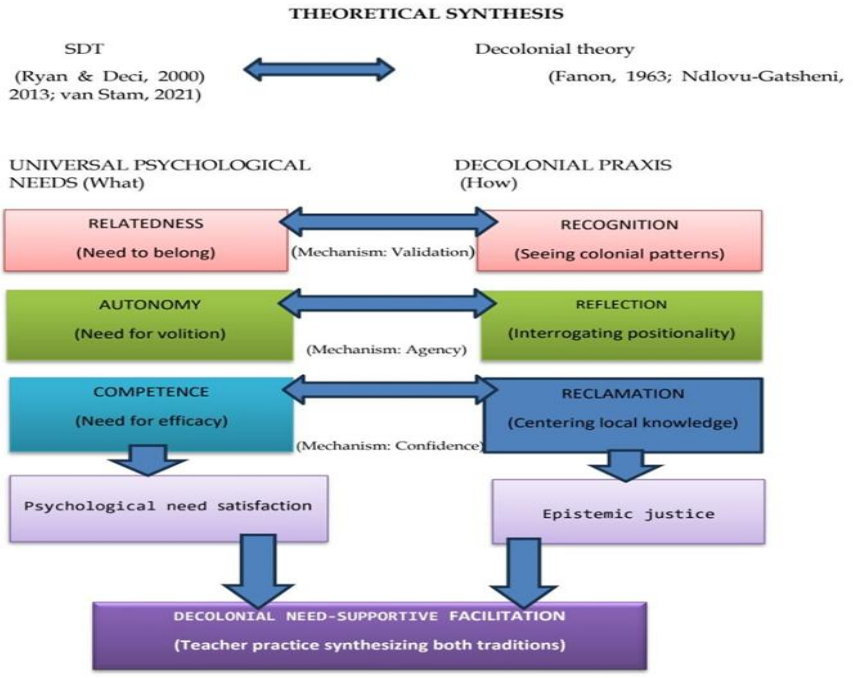

Figure 1: The mapping of universal psychological needs to decolonial praxis layers and their integration into decolonial need-supportive facilitation

3.6 Contextual Fitness: The Material Enabler of Mediation

This framework nests within contextual fitness as the alignment between tool design and infrastructural, cultural, as well as pedagogical conditions (Mapisa & Makena, 2024). Tools must be reliable (enabling focus on learning rather than

troubleshooting) and adaptable (permitting localisation). Complex, bandwidth-dependent LMS fails without internet, low-cost, offline-capable tools like WhatsApp that serve as canvases for decolonial practice.

The Conceptual model for ecosystem-centric EdTech integration framework posits that motivational outcomes are explained not merely by technology presence but by decolonial need-supportive facilitation enabled by contextually fit tools is illustrated in Figure 2.

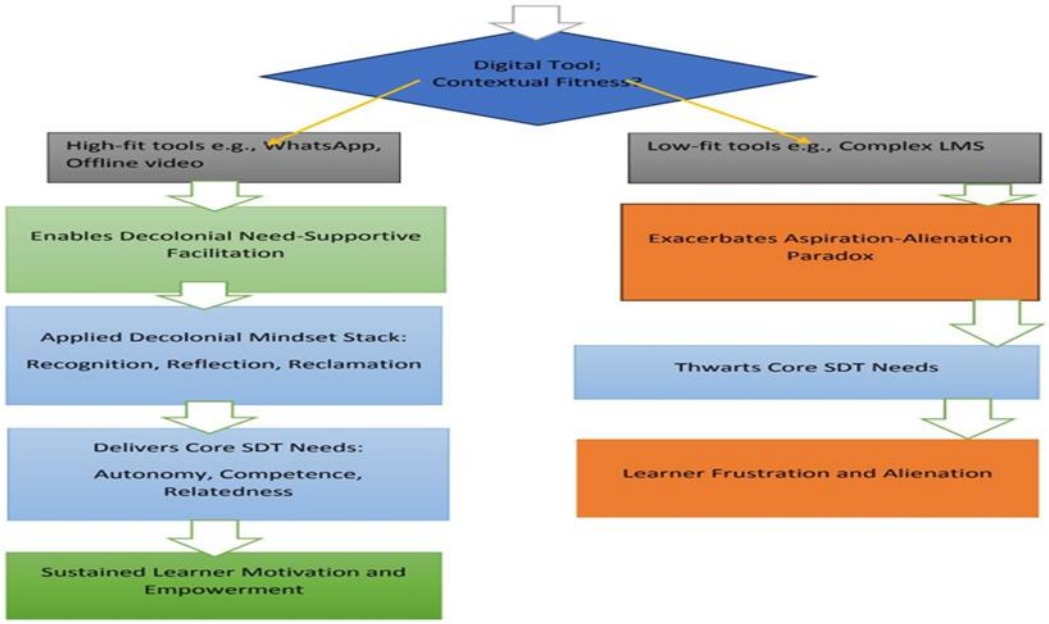

Figure 2: Conceptual model for ecosystem-centric EdTech integration

This proposed framework synthesises SDT (Ryan & Deci, 2000) with decolonial critique (van Stam, 2021; Ndlovu-Gatsheni, 2013) and DMS (Li, Smith & van Stam, 2025), and it guided the analysis of the study's empirical data. It posits that the observed variations in motivational outcomes can be explained not merely by the presence of technology, but by the presence or absence of the mediating process visualised above which is the practice of decolonial need-supportive facilitation, made possible by contextually fit tools.

4. Research Methods

The selection of a qualitative-dominant convergent parallel mixed-methods design (Creswell & Inoue, 2025) was guided by the study's overarching aim to explore the complex, contextually embedded phenomenon of the aspiration-alienation paradox in EdTech integration within under-resourced, post-colonial schools. This design which involves collecting and analysing qualitative and quantitative data concurrently before integrating findings, was chosen over sequential designs to ensure both datasets reflected the same unstable contextual conditions characteristic of OR Tambo inland schools (Turin, Raihan & Chowdhury, 2024). The qualitative-dominant emphasis was justified by the need

to prioritise depth, context, and the meaning-making processes central to understanding the paradox, while the quantitative elements provided necessary breadth and triangulation (Shannon-Baker, 2022).

4.1 Data Collection Instruments and Procedures

Data was collected over three months (September–November 2025) using three complementary instruments. Firstly, a learner questionnaire with Likert-scale and open-ended questions was employed to map broad patterns in emotional responses and symbolic perception across a larger sample. The questionnaire was adapted through forward-backward translation by bilingual experts. A pilot study with 45 learners from a comparable school (not in the main sample) was conducted to assess item clarity. Problematic double-barrelled items were identified and split, expanding the original 20 items to 24. Reliability analysis in the main study yielded a Cronbach's alpha of 0.84 for the aspiration subscale and 0.79 for the alienation subscale.

Secondly, semi-structured interviews with learners and teachers formed the core qualitative dataset, exploring the lived experiences and the meaning-making processes behind the aspiration-alienation paradox. The followed interview protocols established the guidelines for educational research, allowing for both consistency across participants and flexibility to explore emergent themes.

Thirdly, the naturalistic observations of 12 classroom sessions provided direct evidence of facilitation and engagement in real-time. A total of four observations were conducted by School A, and two each at Schools B and C. All observers were familiar with the classroom context and were briefed on the observation protocols prior to data collection. Given their existing teaching experience, formal training was not required. Inter-rater reliability was calculated using Cohen's kappa, with the four observers achieving strong agreement across behavioural categories (mean $\kappa = 0.82$).

4.2 Sampling Strategy and Context

The study employed quantitative strand stratified random sampling to select learners from three quintile 1–3 secondary schools (deep rural, peri-urban, and semi-urban fringe), with strata based on school type and grade level to ensure proportional representation of diverse infrastructural contexts. A total of 168 learners completed the survey, providing a broad dataset for the statistical analysis of motivation patterns across the sample.

For the qualitative strand, purposive sampling was used to select the participants based on their experience with educational technology, ensuring rich narratives about emotional and symbolic dimensions of motivation (Shannon-Baker, 2022). All 168 survey respondents were invited to indicate interest in follow-up interviews. From these, a strategic sub-sample of 48 learners was selected for in-depth interviews based on three criteria: (a) Survey responses indicating high aspiration and high alienation scores (paradox exemplars), (b) Teacher nomination for active engagement with technology integration (defined as regular use of digital tools in classroom activities), and (c) Grade-level representation across Grades 10–11.

4.3 Data Analysis Procedures

Analysis followed a convergent parallel design with distinct procedures for each dataset. Quantitative data from the learner questionnaire was analysed using Microsoft Excel to compute descriptive statistics (means, standard deviations) for all Likert-scale items. Internal consistency was assessed using Cronbach's alpha, yielding 0.84 for the aspiration subscale and 0.79 for the alienation subscale. Independent sample t-tests compared aspiration (M=4.14, SD=0.62) and alienation (M=3.28, SD=0.71) subscales, t (166) =8.24, p<.001, Cohen's d=1.28. One-way ANOVA revealed no significant effect for aspiration across schools, F (2,165) =1.24, p=.29, but a significant effect for alienation, F (2,165) =4.67, p=.01, with School C showing the highest alienation scores.

Gender analysis found no significant differences on any measure. The qualitative data from the interviews and observations underwent reflexive thematic analysis following Braun and Clarke's (2024) six-phase framework, using deductive sensitising concepts from SDT and the decolonial theory alongside inductive coding. Negative case analysis identified three disconfirming cases, and coding reliability was maintained through the team coding of 20% of the transcripts (mean Cohen's κ = 0.82). Integration was achieved through joint displays juxtaposing quantitative and qualitative evidence to examine convergence, complementarity, and discordance (Shannon-Baker, 2022). The discordance between datasets prompted theoretical refinement, thus leading to the distinction between technical facilitation and decolonial need-supportive facilitation.

4.4 Ethical Considerations

Ethical approval was granted by the University's Research Ethics Committee and the Eastern Cape Department of Education. All procedures followed the institutional and national guidelines for the research involving minors, including parental consent, learner assent, and the right to withdraw without consequence. Informed consent and assent were obtained through processes emphasising transparency and participant autonomy (Dahalan, Alias & Shaharom, 2023). Information sheets were provided in English and explained in isiXhosa. Participants were assured of confidentiality; and pseudonyms were used throughout. Attention was paid to power dynamics following decolonial principles.

The lead researcher is a Xhosa-speaking academic from the Eastern Cape (insider) with university affiliation (outsider). This dual positionality was managed through: (a) Community entry protocols; (b) Interviews in the participants' language of choice; (c) Reflexive journaling; (d) Member checking; and (e) Collaborative analysis with two teacher co-researchers. A reflexive journal documented researcher positionality and decision-making to enhance confirmability and trustworthiness (Nowell et al., 2017). Power dynamics were named during consent, positioning the participants as knowledge-holders rather than subjects.

4.5 Methodological Coherence and Justification

The qualitative-dominant convergent parallel design represented a deliberate philosophical alignment with the study's theoretical goals. It enabled the tracing

of processes (how teacher practices influenced learner motivation), the capturing of symbolic meanings, and the documentation of improvisational strategies within severe material constraints. The methodology was justified by its capacity to provide the empirical substrate necessary to animate and validate the integrated theoretical framework proposed in this paper, while maintaining the methodological rigour appropriate for the complex, context-dependent nature of the research problem.

5. Findings

The integrated analysis of quantitative and qualitative data revealed a powerful central tension: the aspiration-alienation paradox. This paradox was not a theoretical abstraction but the lived reality of learners, characterised by a simultaneous, powerful pull toward technology as a symbol of a desired future and a push away from it as a reminder of present marginalisation. Critically, the data illuminated that the path through this paradox, toward sustained motivation or frustration, was decisively shaped by the presence or absence of decolonial need-supportive teacher facilitation.

5.1 Table of Participant Pseudonyms

To protect participant identities while maintaining the authenticity and traceability of qualitative data, the following pseudonyms are used throughout this chapter. All the names of the learners, teachers, and schools have been replaced with pseudonyms selected from common isiXhosa names to preserve cultural authenticity while ensuring anonymity. Table 1 provides a guide to the used pseudonyms and the corresponding school locations.

Table 1: Participant pseudonyms

PSEUDONYM	ROLE	SCHOOL	GRADE LEVEL
Liyema	Learner	School A (deep rural)	11
Thembeka	Learner	School B (peri-urban)	10
Sipho	Learner	School C (semi-urban fringe)	11
Noma	Learner	School B (peri-urban)	10
Ayanda	Learner	School A (deep rural)	11
Vuyo	Learner	School C (semi-urban fringe)	10
Thabo	Learner	School A (deep rural)	10
Mr. Mbane	Teacher	School C (semi-urban fringe)	N/A
Ms. Dlulisa	Teacher	School B (peri-urban)	N/A
Mr. Nkosi	Teacher	School A (deep rural)	N/A

5.2 The Aspiration-Alienation Paradox: A Duel of Meanings and Emotions

The aspiration-alienation paradox emerged as the central tension. Quantitatively, the learners felt part of the "modern world" (M=4.22, SD=0.68) and connected globally (M=4.05, SD=0.71), yet perceived technology was "only for rich schools" (reverse-coded M=3.45, SD=0.82) and was culturally irrelevant (M=3.12, SD=0.91). "Content feels made for other countries" scored M=3.78 (SD=0.79). Reliability was strong (aspiration α=0.84, alienation α=0.79). Aspiration (M=4.14, SD=0.62) significantly exceeded alienation (M=3.28, SD=0.71), t (166) =8.24, p<.001, d=1.28. School C showed the highest aspiration (M=4.31) and alienation, a discordant finding discussed below.

Qualitatively, aspiration manifested: "*The tablet is like a window showing me another life is possible*" (Liyema, School A). Alienation emerged: "*The apps don't speak Xhosa. Even examples are about things we don't have*" (Ayanda, School A). "*Like wearing someone else's clothes*" (Vuyo, School C). Observation captured rapid disengagement: eight minutes from engagement to frustration when connectivity failed at School B.

Distinguishing the paradox: Unlike learner-centred pedagogy, this paradox is structurally embedded in post-colonial aspiration intersecting with systemic failure. It captures psychological duality (simultaneous hope and exclusion) and material-epistemic entanglement (tool failure intersecting with cultural alienation).

5.3 Teacher Facilitation as Decolonial Need-Support

Recognition → relatedness: Mr. Mbane (School C) explained: "*We don't just teach technology; we Xhosa it into existence*". Pausing videos to draw parallels to Xhosa history fostered belonging. Learner: "*It's not just their history anymore*" (Sipho). Coding: "teacher connects to local history" → "cultural bridging" → relatedness through recognition.

Reflection → autonomy: Ms. Dlulisa (School B) reflected: "*I used to just show videos. Then I realised I'm importing someone else's classroom*". WhatsApp groups enabled learner-led problem-solving. Learner: "*She lets us figure it out. It feels like we own it*" (Noma). Coding: "*delegating authority*" → "shared problem-solving" → autonomy through reflection.

Reclamation → competence: School A teachers created isiXhosa voice-overs for science videos. Learner: "*When I hear it in isiXhosa, I understand immediately. I feel like I can actually do this*" (Ayanda). Coding: "*isiXhosa voiceovers*" → "immediate comprehension" → competence through reclamation. Where facilitation was absent, alienation prevailed. School C: "*They bring these things, then we can't use them. It's better not to see them at all*" (Sipho).

5.4 Contextual Fitness

Complex platforms failed: "*When load-shedding hits, it's just a blank screen*" (Mr. Nkosi, School A). WhatsApp and offline videos enabled mediation: "*I can make WhatsApp work. I cannot make the LMS work at all*" (Mr. Mbane, School B).

Observation: 80% instructional time with adaptable tools versus 20% with complex platforms.

5.5 Integrated Analysis

Table 2: Joint display of evidence

Construct	Quantitative	Qualitative	Inference
Aspiration	M=4.22 modern world	"Window showing another life" (Liyema)	Convergence
Alienation	M=3.78 other countries	"Apps don't speak Xhosa" (Ayanda)	Convergence
Recognition→relatedness	Teacher support items	"It's not just their history" (Sipho)	Complementarity
Reclamation→competence	Confidence items	"Understand immediately" (Ayanda)	Convergence
Contextual fitness	80% vs 20% observation	"I can make WhatsApp work" (Liyema)	Convergence

5.6 Discordant Findings

School C had the highest aspiration (M=4.31) but had the sharpest alienation: "*The more I use the tablet, the more I realise how much of the world is not in isiXhosa*" (Vuyo). Greater exposure without cultural localisation heightened awareness of exclusion. The relationship between exposure and alienation was moderated by decolonial mediation.

5.6.1 Testing Theoretical Propositions

Proposition 1 (recognition→relatedness): Supported. Mr. Mbane's cultural bridging fostered belonging.

Proposition 2 (reflection→autonomy): Supported. Ms. Dlulisa's reflective practice enabled learner agency.

Proposition 3 (reclamation→competence): Supported. IsiXhosa voice-overs-built confidence.

Implied Proposition 4 (contextual fitness moderates): Supported. Where tools were unreliable, even skilled teachers could not enact facilitation.

5.7 Negative Cases

Three disconfirming cases revealed boundary conditions: learners with prior out-of-school technology access reported more critical perspectives; inconsistent decolonial practice caused confusion rather than motivation and sustained, coherent practice matters.

6. Discussion

The findings illuminate a fundamental truth about educational technology in under-resourced, post-colonial contexts: the device itself is inert. Its power to motivate or demotivate is activated entirely by the human and cultural ecosystem

that surrounds it. The aspiration-alienation paradox is not a symptom of malfunctioning technology but of the mismatch between global design and local reality. Resolving this paradox requires moving beyond critiques of access toward integrated praxis where decolonial action becomes the method for achieving psychological need satisfaction.

6.1 Extending Self-Determination Theory

SDT identifies autonomy, competence, and relatedness as being foundational for motivation (Ryan & Deci, 2000; 2022). The study's findings confirm their relevance but specify how these needs are thwarted and satisfied under material and epistemic constraint. In well-resourced settings, competence support might involve adaptive software (Chiu, 2021); here, it was most effectively achieved through linguistic translation such as isiXhosa voice-overs.

As learners reported, "When I hear it in isiXhosa, I understand immediately". This reduced cognitive load rooted in foreignness, confirmed van Stam's (2021) observation that the technologies unaligned with local knowing perpetuate colonial patterns. Relatedness was not just peer collaboration but epistemic belonging. When Mr. Mbane paused a video to draw parallels to Xhosa history, the learners responded, "It's not just their history anymore". This illustrates Fanon's (1963) assertion that the colonised subject must discover that their world differs from the coloniser's imposed universal.

Need-supportive teaching in marginalised contexts must be culturally supportive. The behaviours identified by SDT research (Ahmadi et al., 2023) are insufficient if enacted within frameworks that devalue local knowledge. The teacher's act of "Xhosa-ing" a lesson is simultaneously decolonisation and competence support, bridging SDT's individual psychology with socio-political realities. The tension between SDT universalism and decolonial anti-universalism finds resolution in "contextual universalism": needs may be universal, but the pathways to satisfaction are shaped by local histories and material conditions.

6.2 Operationalising Decolonial Theory

The decolonial theory critiques Western EdTech imposition (Fanon, 1963; Ndlovu-Gatsheni, 2013; van Stam, 2021), yet critique alone leaves practitioners without a roadmap (Tobias, 2022). This study offers an observable model of decolonial need-supportive facilitation. The teachers moved through recognition, reflection, and reclamation, translating broad critique into daily micro-practices: pausing videos, choosing local analogies, and repurposing WhatsApp. This demonstrates that decolonisation can be enacted in mediation, not only in curriculum overhaul. Tethering these practices to SDT's psychological needs provides rationale for why decolonial work is essential for engagement and learning, addressing Ndlovu-Gatsheni's (2024) challenge of moving from critique to reconstruction and positioning teachers as agents of epistemic justice.

6.3 Reconceptualising Teacher Facilitation and Tool Design

Teacher professional development must evolve beyond digital literacy to socio-technical mediation: diagnosing aspiration-alienation tension and intervening through a decolonial lens. This aligns with research advocating for teacher

capacity beyond technical skills (Gcabashe & Ndlovu, 2022). Successful teachers understood technology as cultural negotiation and possessed confidence to adapt global tools for local purposes. They were not passive transmitters but active mediators shaping technology's meaning. Teacher agency has the capacity to transform technological and cultural resources into locally meaningful learning, exercised even under material constraint.

Contextual fitness must guide EdTech procurement. The superior performance of WhatsApp and offline videos was not about pedagogical sophistication but pedagogical enablement. As Mapisa and Makena (2024) argue, alignment between tool design and local conditions is essential. Observation confirmed; with adaptable tools, the teachers spent 80% of technology time on instructional mediation; with complex platforms, these proportions reversed. The question shifts from "What features?" to "How well does this tool enable recognition, reflection, and reclamation?" Tools should be judged on mediational affordances: localisability, offline functionality, and simplicity. As van Stam (2021) argues, tools malleable enough to be shaped by communities can become instruments of epistemic justice.

6.4 Integrated Discussion of Mixed Methods Findings

The convergent design revealed three integration patterns. Convergence was evident in technology simultaneously generating aspiration and alienation: quantitative means showing high scores on both aspiration (M=4.22) and alienation (M=3.78) directly reflected qualitative accounts of simultaneous hope and exclusion, such as metaphors of being "visitors" to a world they could not own. Complementarity emerged between quantitative teacher support ratings and qualitative accounts of specific practices: quantitative established prevalence; qualitative revealed mechanisms of pausing videos, voice-overs, and WhatsApp groups. Discordance emerged at School C, where the highest aspiration (M=4.31) coexisted with the sharpest alienation ("The more I use the tablet, the more I realise how much of the world is not in isiXhosa"). This revealed that an exposure-alienation relationship is moderated by decolonial mediation. Where teachers engaged actively in reclamation, the learners reported less alienation despite lower aspiration scores, suggesting decolonial facilitation transforms technology's meaning.

6.5 Testing the Theoretical Propositions

The findings support the three theoretical propositions. Proposition 1, that recognition enables relatedness, was evidenced when teachers like Mr. Mbane bridged global content to local experience, with learners reporting "the lesson includes us". Proposition 2, that reflection enables autonomy, was evidenced when teachers like Ms. Dlulisa created spaces for learner-led problem-solving through WhatsApp groups. Proposition 3, that reclamation builds competence, was evidenced through the isiXhosa voice-overs enabling immediate comprehension and confidence. These propositions held only under contextual fitness, confirming that tool reliability and adaptability moderate teacher practice and learner outcomes.

6.6 Theoretical Contributions

This study makes three interconnected contributions. Firstly, it introduces the aspiration-alienation paradox as a conceptual tool capturing the psychological configuration produced by post-colonial aspiration intersecting with systemic exclusion, bridging psychological and critical traditions. Secondly, it develops decolonial need-supportive facilitation, synthesising SDT's needs with DMS praxis and offering an actionable model translating decolonial critique into daily pedagogy. Thirdly, it advances an ecosystem-centric paradigm, arguing sustainable motivation requires alignment of contextually fit tools, decolonial facilitation, and supportive conditions, reframing EdTech from the distribution challenge to the mediation challenge and from access to belonging.

6.7 Limitations

Several limitations qualify for these contributions. Conducted in three schools within one South African district, the findings may not transfer to other post-colonial contexts. Quantitative analysis was descriptive only, so causal claims cannot be statistically verified. Social desirability may have inflated aspiration self-reports, though observation data mitigates this. DMS is recently published, so its application is pioneering rather than confirmatory. The data collection captured a single time point, missing variations across the academic year. Future research could examine the framework across diverse post-colonial settings, employ experimental designs to test causal claims, and use longitudinal methods to capture motivational dynamics over time.

7. Conclusion

This study investigated how educational technology can foster learner motivation in under-resourced post-colonial schools, motivated by the troubling pattern of substantial EdTech investments failing to deliver learning improvements across Sub-Saharan Africa. Through a qualitative-dominant mixed-methods study in three South African secondary schools, the research illuminated the psychological and cultural dynamics shaping technology-mediated learning and proposed an empirically grounded framework for transforming alienation into sustainable motivation.

7.1 Summary of Key Findings

The study's central contribution is the identification and empirical elaboration of the aspiration-alienation paradox: learners simultaneously experience technology as hope and exclusion. The quantitative data revealed high aspiration (feeling part of the modern world, M=4.22) alongside high alienation (content made for other countries, M=3.78). Qualitative accounts described technology as a "window showing me another life" yet feeling "like wearing someone else's clothes" or being "just a visitor" to a world they cannot own.

This paradox is not resolved by technology itself but by human mediation. The teachers who engaged in decolonial need-supportive facilitation transformed technology's meaning through three interrelated practices: recognition of cultural mismatch fostering relatedness by connecting global content to local experience; reflection on positionality creating space for learner autonomy; and reclamation

of local languages building competence by removing linguistic and cultural barriers. The teacher who paused videos to draw parallels to Xhosa history, the teacher who created WhatsApp groups for learner-led problem-solving, and the teachers who produced isiXhosa voice-overs exemplified how decolonial praxis operationalises need-supportive pedagogy.

This mediation was only possible under conditions of contextual fitness. Tools that were reliable, adaptable, and offline-capable enabled teachers to focus on pedagogical facilitation rather than technical troubleshooting. Observation confirmed: with adaptable tools, teachers spent 80% of technology time on instructional mediation; with complex platforms, these proportions reversed. The material properties of technology thus interact with human mediation to shape motivational outcomes, challenging techno-centric approaches and supporting an ecosystem-centric alternative.

7.2 Contributions to Theory

The study makes three interconnected theoretical contributions. Firstly, the aspiration-alienation paradox provides a conceptual tool bridging psychological and critical traditions, capturing how post-colonial aspiration intersects with systemic exclusion to produce simultaneous orientation toward and away from technology. This extends both SDT's account of need-thwarting environments and decolonial theory's critique of epistemic violence. Secondly, decolonial need-supportive facilitation synthesises SDT's three psychological needs with DMS's praxis layers.

The mapping of recognition to relatedness, reflection to autonomy, and the reclamation to competence offer an actionable model translating decolonial critique into daily pedagogical practice, responding to the identified gap in literature. Thirdly, the ecosystem-centric paradigm argues sustainable motivation requires alignment of contextually fit tools, decolonial teacher facilitation, and supportive conditions. This reframes equitable EdTech from a distribution challenge to a mediation challenge and from access to belonging.

8. Recommendations

For teacher professional development, programmes must cultivate decolonial pedagogical reasoning: Structured opportunities to recognise cultural mismatch, guided reflection on positionality, practical skill-building in reclamation, and sustained peer learning communities rather than one-off workshops. For school leaders, procurement decisions should be guided by contextual fitness: Reliability under local conditions, adaptability for localisation, and alignment with teacher practices. Teachers must be involved in evaluation, and simplicity must be prioritised over sophistication. For teachers, the framework offers language for articulating work and a structure for reflection: Am I recognising cultural mismatch? Creating space for autonomy? Reclaiming local knowledge? Collaboration with colleagues on localised content and advocacy for supportive conditions are essential.

For technology designers, tools should be designed for appropriation rather than prescription: Affordances for localisation, participatory design processes with teachers and learners, and prioritisation of reliability and simplicity over feature accumulation. For policymakers and donors, investment must balance four domains: Contextually fitting hardware, sustained teacher development, locally created adaptable content, and community engagement. The South African experience of procuring over half a million devices without parallel investment illustrates the consequences of techno-centric approaches.

For evaluation, metrics must extend beyond device counts and test scores to include epistemic belonging, teacher agency, contextual fitness, and qualitative dimensions capturing the meaning of technology for learners and teachers. For future research, comparative studies across post-colonial contexts, longitudinal tracking, intervention designs testing causal claims, and further validation of the DMS framework are needed.

8.1 Final Reflection

The aspiration-alienation paradox is not inevitable. Teachers in this study demonstrated that when technology is mediated by recognition, reflection, and reclamation, embedded in relationships of care and cultural affirmation, chosen for fitness rather than prestige, it can become a tool for belonging. The framework supports the teachers already doing this work, providing language, structure, and principles for designing technologies that enable rather than disable. The shift from techno-centric to ecosystem-centric acknowledges that devices do not educate, people do, supported by tools that fit contexts, professional learning that respects agency, and policies that recognize complexity. The work of building such ecosystems belongs not to researchers alone but to the teachers, learners, and communities who live the paradox every day and who, in their daily practice, are already charting the path beyond it.

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Every piece of material was independently verified, and sources were appropriately examined and cited in compliance with academic norms. Transparency, academic integrity, and accountability served as guiding principles for the application of AI, ensuring that it served solely as an auxiliary tool and did not replace scholarly work. Secondly, we would like to express our gratitude to all the teachers and learners at the schools for volunteering their time to answer the survey and interview questions as best they could. We also thank Prof. A. Sprock, the editor of IJLTER, and his colleagues, especially the reviewers of this manuscript, for their excellent advice.

10. References

Ahmadi, A., Noetel, M., Parker, P., Ryan, R. M., Ntoumanis, N., Reeve, J., Beauchamp, M., Dicke, T., Yeung, A., Ahmadi, M., Bartholomew, K., Chiu, T. K. F., Curran, T., Erturan, G., Flunger, B., Frederick, C., Froiland, J. M., González-Cutre, D., Haerens, L., ... Lonsdale, C. (2023). A classification system for teachers' motivational behaviors recommended in self-determination theory interventions. *Journal of Educational Psychology, 115*(8), 1158–1176. https://doi.org/10.1037/edu0000783

Braun, V., & Clarke, V. (2024). Supporting best practice in reflexive thematic analysis reporting in Palliative Medicine: A review of published research and introduction to the Reflexive Thematic Analysis Reporting Guidelines (RTARG). *Palliative Medicine, 38*(6), 608–616. https://doi.org/10.1177/02692163241234800

Bubou, G. M., & Job, G. C. (2021). Benefits, challenges and prospects of integrating e-learning into Nigerian tertiary institutions: A mini review. *International Journal of Education and Development using Information and Communication Technology, 17*(3), 6–18. https://ijedict.dec.uwi.edu/viewarticle.php?id=3033

Chisango, G., & Marongwe, N. (2021). The digital divide at three disadvantaged secondary schools in Gauteng, South Africa. *Journal of Education*, (82), 1–17. https://doi.org/10.17159/2520-9868/i82a09

Chiu, T. K. F. (2021). Digital support for student engagement in blended learning based on self-determination theory. *Computers in Human Behavior, 124*, Article 106909. https://doi.org/10.1016/j.chb.2021.106909

Creswell, J. W., & Inoue, M. (2025). A process for conducting mixed methods data analysis. *Journal of General and Family Medicine, 26*(1), 4–11. https://doi.org/10.1002/jgf2.736

Dahalan, F., Alias, N., & Shaharom, M. S. N. (2023). Gamification and game-based learning for vocational education and training: A systematic literature review. *Education and Information Technologies, 28*, 3731–3753. https://doi.org/10.1007/s10639-022-11548-w

Fanon, F. (1963). *The wretched of the earth* (R. Philcox, Trans.). Grove Press. (Original work published 1961)

Gcabashe, N. B., & Ndlovu, N. S. (2022). Exploring Business Studies Teachers' technology self-efficacy on their technology integration to create learner-centred teaching environment. *International Journal of Learning, Teaching and Educational Research, 21*(12), 238–258. https://doi.org/10.26803/ijlter.21.12.13

Haleem, A., Javaid, M., Qadri, M. A., & Suman, R. (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers, 3*, 275–285. https://doi.org/10.1016/j.susoc.2022.05.004

Islam, M. R., Khan, N. A., & Baikady, R. (Eds.). (2022). *Principles of social research methodology*. Springer. https://doi.org/10.1007/978-981-19-5441-2

Leggett, K. M. (2025). *Interrogating power and inequality in developmental education: A critical Bourdieuian perspective* [Doctoral dissertation, University of Wisconsin Oshkosh]. Minds@UW. https://minds.wisconsin.edu/bitstream/handle/1793/95833/Leggett,%20Karla%20Spring%2025%20Dissertation.pdf?sequence=1

Li, J., Smith, T., & van Stam, G. (2025). The Decolonial Mindset Stack: A framework for critical EdTech integration in post-colonial contexts. *Journal of Decolonial Education, 4*(2), 45–67. https://doi.org/10.48550/arXiv.2509.18509

Mapisa, B. Z., & Makena, B. (2024). The impact of ICT adoption in enhancing teaching and learning in primary schools of Amathole East District, Eastern Cape. *Research in Social Sciences and Technology, 9*(1), 213–231. https://doi.org/10.46303/ressat.2024.12

Maree, J. G. (2021). Managing the Covid-19 pandemic in South African Schools: Turning challenge into opportunity. *South African Journal of Psychology, 52*(2), 249–260. https://doi.org/10.1177/00812463211058398

Mhlanga, D., Denhere, V., & Moloi, T. (2022). COVID-19 and the key digital transformation lessons for higher education institutions in South Africa. *Education Sciences, 12*(7), Article 464. https://doi.org/10.3390/educsci12070464

Moloi, T., & Mhlanga, D. (2021). Key features of the fourth industrial revolution in South Africa's basic education system. *Journal of Management Information and Decision Sciences, 24*(5), 1–20.

Ndlovu-Gatsheni, S. J. (2013). The entrapment of Africa within the global colonial matrices of power: Eurocentrism, coloniality, and deimperialization in the twenty-first century. *Journal of Developing Societies, 29*(4), 331–353. https://doi.org/10.1177/0169796X13503198

Ndlovu-Gatsheni, S. J. (2024). Ten challenges in reconfiguring African studies. *Review of African Political Economy, 51*(179), 117–134.

Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods, 16*, 1–13. https://doi.org/10.1177/1609406917733847

Oki, O. A., Uleanya, C., & Mbanga, S. (2023). Echoing the effect of information and communications technology on rural education development. *Technology Audit and Production Reserves, 1*(2), 6–14. https://doi.org/10.15587/2706-5448.2023.269698

Parliamentary Monitoring Group. (2025). *Report on the procurement and deployment of learner devices in South African schools: 2022–2024*. https://pmg.org.za

Ryan, R. M., & Deci, E. L. (2022). Self-Determination Theory. In F. Maggino (Ed.), *Encyclopedia of quality of life and well-being research* (2nd ed.). Springer. https://doi.org/10.1007/978-3-319-69909-7_2630-2

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. The Guilford Press.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68–78. https://doi.org/10.1037/0003-066X.55.1.68

Ryan, R. M., & Deci, E. L. (1985). *Intrinsic motivation and self-determination in human behavior*. Plenum Press.

Shannon-Baker, P. (2022). Creating paradigm shifts: A framework for the innovative utilization of qualitative research. *International Journal of Qualitative Methods, 21*, 1–11. https://doi.org/10.1177/16094069221125555

Shepherd, D., & Mohohlwane, N. (2021). *The impact of COVID-19 in education - more than a year of disruption (National Income Dynamics Study - Coronavirus Rapid Mobile Survey [NIDS-CRAM], Wave 5 Policy Paper)*. https://cramsurvey.org/reports/

Smith, J. (2023). Implications of the Fourth Industrial Revolution on Higher Education. In M. Makua, M. Akinlolu, M. Sithole, P. Ndlovu, & T. Chibisa (Eds.), *Proceedings of the 10th Focus Conference (TFC 2023)* (Vol. 788, pp. 123–135). Advances in Social Science, Education and Humanities Research. https://doi.org/10.2991/978-2-38476-134-0_23

Turin, T. C., Raihan, M. M. H., & Chowdhury, N. I. (2024). Paradigm and their application in education. *Journal of Research in Innovative Teaching & Learning*. Advance online publication. https://doi.org/10.1108/JRIT-12-2023-0197

van Stam, G. (2021). Appropriation, coloniality, and digital technologies: Observations from within an African place. In *Proceedings of the 1st Virtual Conference on*

Implications of Information and Digital Technologies for Development (pp. 709–721). https://doi.org/10.48550/arXiv.2108.10087

World Bank, UNESCO, UNICEF, FCDO, USAID, & Bill & Melinda Gates Foundation. (2022). *The state of global learning poverty: 2022 update*. UNICEF. https://www.unicef.org/media/122921/file/StateofLearningPoverty2022.pdf

Appendices

Appendix 1 : Learner questionnaire (quantitative)

Please tick (✓) the appropriate answer for each question.
Research Question (RQ)
Age: _____
Gender: Male Female Other
Grade: _____
Do you have access to digital devices at home? Yes No
Section A (RQ1): Emotional and Cognitive Responses
I feel more confident when I use digital tools.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Technology makes learning more enjoyable for me.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

I feel like I can do well in school when I use technology.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

I feel connected to the lesson when technology is used.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

I feel curious when I use digital tools in class.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Using technology makes me want to search and learn more on my own.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

I feel I can make my own learning decisions when using digital tools.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Technology allows me to explore topics I am curious about.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

I feel in control of my learning when working with a device.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

I enjoy lessons that include digital tools.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

I feel excited to learn when using a device or app.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

I want to learn more about how to use technology.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Technology helps me to stay focused in class.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Section B(RQ2): Symbolic and Motivational Meanings

Using technology helps me to connect with classmates.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

I feel proud when I create something using technology.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Technology in class makes me feel part of the modern world.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

I feel included when I use technology that reflects my language or culture.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

When I use digital tools, I feel like a student from a better school.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

I see people like me using technology successfully.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

I feel that technology is only for learners in rich or urban schools. (Reverse-coded)

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Technology helps me feel connected to the world outside my school.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

The digital tools we use help me to learn about my own culture and history.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

I believe I can use technology to solve the problems in my community.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

The content on the digital tools feels like it was made for people in other countries, not for me.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Appendix 2: Semi-structured interview guide – learners

1. How do you feel when using digital tools in class?

_____
_____
_____

2. Do digital tools excite you or make you nervous? Or both?

_____
_____
_____

3. Do you feel the apps and videos you see are made for someone like you, or for learners in another country? Why?

_____
_____
_____

4. When a digital tool does not work (like an app crashing), how do you feel? What do you do?

_____
_____
_____

5. Do you ever get to learn about Xhosa history, local heroes, or important places in the Eastern Cape using these digital tools? If yes, how? If no, would you want to?

_____
_____
_____

6. When you use technology, do you feel you are learning to become part of a global world, or are you learning to improve your own community? Or both?

_____
_____
_____

7. Have you ever felt like you are learning the same way as the students from better schools?

_____
_____
_____

8. Do you feel curious when using digital tools? Can you share an example?

_____
_____
_____

9. Do your teachers make it easier to understand and use the technology? How?

_____
_____
_____

10. Does technology make you want to learn more even outside the classroom?

_____
_____
_____
_____
_____
_____
_____

Appendix 3: Interview Schedule Guide – Teachers

Section A (RQ1): Emotional and Cognitive Responses of Learners

1. In your experience, how do learners emotionally respond when digital tools are introduced in the classroom?
2. Have you noticed any changes in learners' interest or motivation when technology is used?
3. How would you describe learners' confidence or anxiety levels when using technology in your lessons?
4. Section B (RQ2): Symbolic Meanings and Motivational Value of Technology
5. How do you think learners perceive the presence of digital technology in your classroom?
6. Do you believe learners associate digital tools with identity, status, or belonging? Please explain.
7. Have learners expressed any symbolic or cultural meanings they attach to technology use in your lessons?
8. Do you think the digital tools and content available to your learners reflect their local culture, language, and realities? Can you give an example?
9. In your view, does using this technology help to challenge the idea that 'proper' education or modern knowledge only comes from outside, or does it reinforce it? Please explain.
10. Have they expressed if they see these tools as 'South African' or 'for them', or as something foreign?

Section C (RQ3): Teacher's Role and Facilitation

1. What strategies do you use to help learners feel confident and motivated when using technology?
2. What challenges do you face when facilitating lessons that include digital tools?
3. How do you support learners who struggle with digital tools during class activities?

Section D: Types of Tools and Their Influence

1. What types of digital tools or platforms are most used in your school?
2. From your observation, which tools seem to be most effective in motivating learners?
3. Are there any specific tools or apps that learners prefer or engage with more eagerly?
4. If you had the power to choose or design digital learning tools specifically for learners in the OR Tambo Inland district, what local knowledge, languages, or examples would you want to see included?

Appendix 4: Observation Checklist

Learner Reactions to Educational Technology (RQ1)
Observer Name: _____
Date: _____
School: _____
Learner ID (anonymous): _____
Digital Tool Used: _____
Time Observed: From _____ To _____

Please tick observed behaviours and provide brief notes where relevant:

1. Shows excitement (e.g., smiling, rapid engagement).

_____
_____
_____
_____
_____
_____

2. Displays curiosity (e.g., exploring features, asking questions).

_____
_____
_____
_____
_____
_____

3. Appears confused or hesitant.

_____
_____
_____
_____
_____
_____

4. Seeks help from peers or teacher.

_____
_____
_____
_____
_____
_____

5. Expresses frustration (e.g., frowns, sighs, gives up).

_____
_____
_____
_____
_____

6. Works independently and confidently.

_____
_____
_____
_____
_____
_____

7. Interacts with peers during task.

_____
_____
_____
_____
_____
_____

8. Expresses pride (e.g., shows others, smiles at achievement).

_____
_____
_____
_____
_____
_____

9. Note instances where the digital content features local languages (isiXhosa), places, or examples.

_____
_____
_____
_____
_____
_____

10. Observe if learners are passive consumers of pre-set content or are using tools to create, express, or investigate topics related to their own lives and environment. (This links decolonisation to agency and autonomy).

_____
_____
_____
_____
_____
_____

11. Listen for learner comments that indicate they see the technology as "foreign" or "not for us" versus "ours" or "relevant to us."

_____
_____
_____
_____
_____

Additional Notes:

_____

_____