

Research Proposal

Design-Based Research: FayEDU Platform Effectiveness Study

Phase 2 of a Longitudinal Research Programme in Learning Engineering

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Research Phase	Phase 2 of a three-phase longitudinal DBR programme
Phase 2 Timeline	Q3 2026 to Q3 2027 (12 months)
Cohort	30 to 50 educators across East, West, and Southern Africa
Research Site	FayEDU platform (fayedu.com)
Target Publication	British Journal of Educational Technology (BJET, Q1)
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Published Foundation (2026a)	EdArXiv DOI: 10.35542/osf.io/p2qxc_v1 SSRN Abstract #6549138
Published Foundation (2026b)	EdArXiv DOI: 10.35542/osf.io/h5yde_v1

1. Background and Research Programme Context

This proposal describes Phase 2 of a longitudinal Design-Based Research (DBR) programme conducted by the Fay Institute of eLearning, investigating how AI-powered platform architecture can support diverse African educators to create, publish, and deliver standards-aligned online courses. The programme is grounded in the Fay Institute Learning Framework (FILF), a practitioner-developed instructional design framework validated through primary empirical research, and operationalised in FayEDU, a live AI-powered EdTech SaaS platform. Phase 2 is an active, funded research study that commences Q3 2026 and proceeds independently of any institutional partnership arrangements.

1.1 The Research Programme Arc

The programme spans three phases, each building directly on the evidence produced by the preceding one. Phase 1 is complete and published. Phase 2 is the current active research project. Phase 3, whose design will be informed by Phase 2 findings, is planned as a scaled validation study.

Phase	Period	Cohort	Focus
Phase 1 (Complete)	Jan to Jun 2025	9 educators, Nairobi, Kenya	Needs analysis DBR pilot. Produced FILF, five design principles, and two peer-moderated preprints.
Phase 2 (Active)	Q3 2026 to Q3 2027	30 to 50 educators, East, West and Southern Africa	Platform effectiveness study. Tests whether FILF embedded in FayEDU produces standards-compliant courses and measurable learner outcomes at scale.
Phase 3 (Planned)	2028 onwards	100+ educators, expanded geography	Scaled validation study. Cohort size, geographic scope, and research questions determined by Phase 2 findings.

Table 1. Research programme phase summary.

1.2 Phase 1: Published Foundation

Phase 1 was conducted between January and June 2025 with nine Kenyan educators from eight professional sectors. Using a DBR methodology, the study documented four core educator needs: accessible and low-friction authoring tools, differentiated scaffolding calibrated to prior digital literacy, modular and flexible pacing for time-poor professionals, and continuous feedback loops to sustain motivation. Only two of nine participants completed full courses, both with prior digital and instructional design expertise, confirming that framework knowledge alone is insufficient without accessible, purpose-built tooling.

Five design principles derived from Phase 1 directly informed the architecture of FayEDU. These findings are documented in two peer-moderated preprints: Mundia (2026a), a needs analysis empirical study (EdArXiv DOI: 10.35542/osf.io/p2qyg_v1; SSRN Abstract #6549138), and Mundia (2026b), a framework description paper presenting FILF as a standalone scholarly contribution to the Learning Engineering literature (EdArXiv DOI: 10.35542/osf.io/h5yde_v1). Together, these publications establish the theoretical and empirical foundation from which Phase 2 proceeds.

2. Phase 2 Research Questions

Phase 2 is guided by one overarching research question and four subordinate questions:

Can FayEDU support diverse African educators to create standards-compliant online courses that generate measurable learner outcomes, and what does the evidence reveal about the relationship between platform-embedded pedagogy, course quality, and learner achievement in resource-constrained African professional education contexts?

Subordinate Research Questions:

- RQ1: How effectively do African educators across diverse professional sectors and geographic contexts use FayEDU to design and publish standards-compliant online courses?

- RQ2: To what extent do courses created on FayEDU meet international quality standards as measured by the platform Quality Assurance Framework (Cambridge IGCSE, UNESCO ISCED, WCAG 2.1 AA, and AI safety standards)?
- RQ3: What learner outcomes are achieved by students enrolled in FayEDU-hosted courses, measured through assessment scores, course completion rates, and learning objective attainment?
- RQ4: Is there a statistically significant correlation between educator course quality scores and learner outcomes, and what does this correlation reveal about the effectiveness of platform-embedded pedagogy as a mechanism for closing the instructional design accessibility gap in African professional education?

3. Methodology

3.1 Research Design

Phase 2 employs Design-Based Research (DBR) as its methodological framework, consistent with Phase 1 and with the broader research programme's commitment to iterative, contextually grounded knowledge production (McKenney and Reeves, 2025; Barab and Squire, 2004). DBR is characterised by its dual commitment to generating practical solutions to real educational problems while simultaneously producing theoretical insights transferable to broader practice. Phase 2 extends the DBR cycle established in Phase 1 across three iterative sub-phases within the 12-month study period.

3.2 Participants and Recruitment

Phase 2 targets a cohort of 30 to 50 educators across East, West, and Southern Africa, representing a significant scale-up from the nine-participant Nairobi-based cohort of Phase 1. The expanded geographic scope reflects the research programme's commitment to testing FILF and FayEDU across diverse African contexts where resource availability, institutional support, language context, and professional culture vary considerably. Tier stratification across FayEDU's free, Basic, and Pro subscription plans will enable comparative analysis of how platform access level shapes educator outcomes.

Recruitment will be conducted through multiple channels: the FayEDU public platform launch in July 2026, LinkedIn and professional educator community networks, WhatsApp educator communities, Facebook teacher groups, and institutional research partnerships including collaboration with Qhala QLab, whose continental educator network provides direct access to AI-literate professional educators across the target regions.

3.3 Data Collection

A distinctive feature of Phase 2 is that primary data collection is automated through FayEDU's administrator dashboard, eliminating the need for separate data collection infrastructure and reducing the burden on participants. The platform collects quantitative data continuously across four dimensions: educator course creation metrics (time to publish, QA scores, framework adherence, module completion); learner engagement metrics (enrolment, session duration,

assessment scores, completion rates); platform interaction data (feature usage, AI scaffolding engagement, support requests); and course quality scores generated by the platform's Quality Assurance Framework.

Qualitative data will be collected through structured educator reflection surveys at three key milestones: post-onboarding, mid-study, and post-publication. All platform users provide informed consent through FayEDU's Terms of Service, Privacy Policy, and Data Policy. The study aligns with BERA (2018) ethical guidelines throughout.

3.4 Analysis

Analysis will proceed in two stages. Quantitative analysis will employ descriptive statistics and correlation analysis to address RQ3 and RQ4, testing the relationship between educator QA scores and learner outcomes. Qualitative analysis will follow the thematic coding approach established in Phase 1 (Braun and Clarke, 2006), applied to educator reflection survey data to address RQ1 and to contextualise the quantitative findings. Cross-phase analysis will compare Phase 2 findings against Phase 1 design principles to assess which principles held at scale, which required revision, and what new principles emerged.

3.5 Timeline

Period	Phase	Key Activities
May to Jun 2026	Pre-launch	Finalise Terms of Service and Data Policy; finalise research partnership agreements; prepare recruitment materials; ethics review
Jul 2026	Launch and Recruitment	FayEDU public launch; educator recruitment via LinkedIn, Facebook, WhatsApp, and partner networks; baseline profiling
Aug to Nov 2026	Active Implementation	Educators build and publish courses; learners enrol; FayEDU admin dashboard collects all metrics automatically; mid-study reflection surveys
Dec 2026 to Feb 2027	Continued Implementation	Continued course publication and learner enrolment; ongoing platform data collection; targeted support for stalled educators
Mar to Jun 2027	Analysis	Closed-loop correlation analysis; thematic coding of qualitative reflection data; cross-phase comparison with Phase 1
Jul to Sep 2027	Dissemination	BJET submission; EdArXiv Phase 2 preprint; conference presentation; Phase 2 design principles derived and documented
Q4 2027	Evidence Mapping	Cross-phase data synthesis; design principle refinement; Phase 3 cohort, geography, and instrument planning

Table 2. Phase 2 study timeline.

4. Theoretical Contribution

The two published preprints that constitute the foundation of this research programme have established open questions that Phase 2 is specifically positioned to answer. Mundia (2026a) explicitly calls for scaled multi-country replication and quantitative outcome validation as the necessary next step beyond the single-iteration, Nairobi-based pilot. Mundia (2026b) identifies that FILF's effectiveness has been demonstrated in terms of educator experience and course architecture but not yet in terms of learner outcomes. Phase 2 directly addresses both of these documented gaps.

Phase 2 will make four specific theoretical contributions:

4.1 The Closed-Loop Effectiveness Model

Phase 1 demonstrated that FILF, when embedded in a purpose-built platform, produces better course architecture than generic tool-based approaches. Phase 2 tests the next logical question: does better course architecture, produced through a platform-embedded pedagogical framework, generate better learner outcomes? If RQ4 yields a statistically significant correlation between educator QA scores and learner achievement, Phase 2 will have established the first empirically validated closed-loop model linking a practitioner-developed pedagogical framework to measurable learner outcomes in an African EdTech context.

4.2 Platform-Embedded Pedagogy at Scale

Phase 1 tested FILF with nine educators using generic Microsoft 365 tools. Phase 2 tests FILF embedded natively in an AI-powered platform with 30 to 50 educators across multiple African markets. The theoretical contribution is empirical evidence of whether platform-embedded pedagogy resolves the accessibility barriers that framework-only approaches cannot, and whether this resolution holds across diverse geographic and professional contexts rather than in a single city under controlled conditions.

4.3 Quality Assurance Framework Validation

FayEDU's Quality Assurance Framework, aligned with Cambridge IGCSE, UNESCO ISCED, WCAG 2.1 AA, and AI safety standards, is tested at scale for the first time in Phase 2. RQ2 addresses whether courses created by non-specialist educators using an AI-powered, framework-embedded platform can meet international quality standards without specialist instructional design support.

4.4 Learning Engineering in LMIC Contexts

Phase 2 extends the Learning Engineering tradition's evidence base into Sub-Saharan African professional education across multiple countries and sectors, a context the field has rarely addressed at scale. The cross-phase comparison with Phase 1 findings will contribute to the methodological literature on DBR in LMIC contexts, specifically on how design principles derived from small-cohort needs analysis pilots scale when tested in diverse, multi-country implementation environments.

5. Positionality and Ethical Considerations

The principal researcher is the founder of the Fay Institute of eLearning and the designer of both FILF and FayEDU. This positionality is consistent with DBR's practitioner-as-researcher tradition and was explicitly acknowledged and managed in Phase 1 through data triangulation, transparent reporting of negative findings, and alignment with BERA (2018) ethical guidelines. Phase 2 maintains these practices and extends them to the larger and more geographically dispersed cohort.

The potential for confirmation bias is mitigated in Phase 2 by three structural features. First, data collection is automated through the platform dashboard, reducing researcher influence over what is recorded. Second, the correlation analysis in RQ4 is pre-specified and quantitative, limiting interpretive discretion. Third, the study will report null findings and negative outcomes with the same rigour as positive results, consistent with the approach taken in Phase 1.

6. Partnership and Collaboration Opportunities

The Fay Institute of eLearning actively seeks research partners and consortium collaborators for Phase 2 and beyond. FayEDU as a live research site offers European and international research organisations access to:

- A live AI-powered EdTech platform generating continuous interaction data across African educator cohorts
- A diverse, multi-country African educator dataset not available in most European research contexts
- Two published peer-moderated preprints as the theoretical and empirical foundation
- Co-authorship on the Phase 2 BJET publication for qualifying research partners
- A non-EU partner organisation for MSCA Staff Exchanges 2027 and Horizon Europe consortia

We are particularly interested in connecting with European universities and research institutions forming MSCA Doctoral Networks or Staff Exchange consortia in AI in Education, Learning Technology, HCI, or Global South education research. Contact: faith.mundia@fayinstitute.co.ke

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