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Project Immortal: Preserving Teaching Excellence through Flipped Classrooms

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Abstract

Orientation: Education systems in underdeveloped and developing countries have long been characterised by declining teaching quality, persistent teacher attrition and continued reliance on traditional pedagogical approaches. The COVID-19 pandemic accelerated the adoption of digital and student-centered learning practices, exposing both systemic vulnerabilities and opportunities for structural reform.

Research purpose: The study aimed to propose Project Immortal, a multi-level digital framework that integrates the flipped classroom approach with the preservation of exemplary teaching practices.

Motivation for the study: The study was motivated by the need to modernise pedagogy while simultaneously addressing human resource challenges related to teacher attrition, institutional knowledge loss and declining professional motivation in resource-constrained education systems.

Research approach/design and method: A qualitative, non-empirical desktop literature review was conducted

using peer-reviewed academic publications and institutional reports sourced through Google Scholar and Google Books. Purposive and snowball sampling techniques were applied to identify relevant literature.

Main findings: The findings indicated that the flipped classroom approach is particularly suited to developing contexts due to its flexibility and learner-centered orientation. In addition, the digital preservation of exemplary teaching practices was found to support instructional continuity, enhance teacher recognition and mitigate the disruptive effects of staff turnover.

Practical/managerial implications: Educational managers and policymakers may utilise tiered digital teacher libraries to standardise instructional quality, support professional development and strengthen institutional resilience.

Contribution/value-add: The study contributes a conceptual human resource development framework that integrates pedagogical innovation with knowledge management, offering a practical approach to sustaining teaching quality in under-resourced education systems.

Keywords: Human Resource Development, Flipped Classroom, Knowledge Management, Teacher Attrition, Digital Learning, Developing Contexts, Teaching Excellence

Introduction

Orientation

Education systems in developing and underdeveloped countries have traditionally relied on teacher-centred pedagogical models that prioritise rote learning and unidirectional knowledge transfer. While such approaches were aligned with earlier labour market conditions, they have become increasingly misaligned with contemporary demands for adaptability, critical thinking and continuous learning (La Fleur & Dlamini, 2022) ^[10]. From a human resource perspective, this pedagogical misalignment has been compounded by persistent challenges related to teacher motivation, skills development and attrition, collectively contributing to declining instructional quality.

The COVID-19 pandemic further exposed structural weaknesses within education systems, particularly the absence of

mechanisms to ensure learning continuity during workforce disruptions (Purcell & Lumberras, 2021) ^[18]. Although the pandemic prompted the rapid adoption of digital and student-centered pedagogies, many institutions reverted to pre-pandemic practices once restrictions eased. As a result, opportunities to address underlying pedagogical and human resource constraints in a systematic and sustainable manner were largely missed.

Research purpose and objectives

Against this backdrop, the purpose of this study was to propose Project Immortal, a conceptual framework that integrates flipped classroom pedagogy with strategic human resource development and knowledge management. The study sought to achieve the following objectives:

1. To examine the limitations associated with traditional pedagogical approaches in developing contexts.
2. To assess the relevance of the flipped classroom approach as a human resource development intervention.
3. To propose a scalable model for preserving exemplary teaching practices in order to mitigate the effects of teacher attrition and institutional knowledge loss.

Literature Review

The education sector, particularly in developing and underdeveloped countries, continues to experience persistent human resource challenges that undermine organisational performance and service delivery (Singun, 2025) ^[19]. Within Human Resource Management (HRM) literature, teachers are increasingly recognised as critical human capital assets whose knowledge, skills and pedagogical expertise directly influence institutional effectiveness and learner outcomes (Enock, 2024; Nwachukwu, 2024; Zerrad, & Schechter, 2025) ^[6, 16, 20]. However, declining motivation, inadequate reward systems and high attrition rates have contributed to the erosion of instructional quality, particularly in resource-constrained environments.

Traditional pedagogy and human capital constraints

Traditional teacher-centered pedagogy has historically dominated education systems and aligned with periods of relatively stable labour market demands (Mbaye, 2024) ^[13]. From an HRM perspective, this model positioned teachers as the primary repositories of organisational knowledge, resulting in high dependency on individual employees rather than institutionalised knowledge systems. While effective in earlier industrial contexts, this reliance has become problematic in contemporary environments characterised by rapid change, skills obsolescence and workforce mobility (Panda, 2022) ^[17].

The persistence of rote learning and passive instruction has also limited opportunities for employee development and learner capability building, contradicting modern HRD principles that emphasise continuous learning, adaptability and critical thinking (Dighliya, 2025) ^[5]. Furthermore, the COVID-19 pandemic exposed the vulnerability of education systems that lacked digital infrastructure and alternative knowledge-retention mechanisms, intensifying the impact of

staff absences, resignations and industrial action.

Flipped classrooms as a Human Resource Development (HRD) intervention

The flipped classroom approach represents a pedagogical shift aligned with adult learning theory and HRD principles, particularly experiential learning and self-directed learning. In this model, learners engage with instructional content independently, while classroom time is repurposed for collaborative problem-solving, feedback and application (Hwang & Chen, 2023) ^[8]. Empirical literature indicates that flipped classrooms enhance learner engagement, autonomy and higher-order thinking skills (Dighliya, 2025) ^[5].

From an HRM perspective, flipped classrooms reduce excessive dependence on synchronous instructor-led delivery, thereby mitigating operational risks associated with staff shortages and turnover. This flexibility is particularly valuable in developing contexts where teacher absenteeism, strikes and migration disrupt learning continuity (Hwang & Chen, 2023) ^[8].

Teacher attrition, motivation and knowledge loss

Teacher attrition remains one of the most pressing human resource (HR) challenges in education, especially in low-income countries where remuneration, working conditions and career progression opportunities are limited (Nguyen, & Springer, 2023) ^[15]. The departure of experienced and high-performing teachers results in significant organisational knowledge loss, negatively affecting learner performance and institutional memory.

Knowledge management literature emphasises the importance of capturing tacit knowledge before it exits the organisation (Aulia, & Haerani, 2022) ^[2]. However, education systems have largely failed to institutionalise mechanisms that preserve exemplary teaching practices (Lin, 2026) ^[11]. As a result, pedagogical excellence remains individual-bound rather than system-embedded.

Digital preservation of teaching excellence

Digital learning technologies provide an opportunity to integrate pedagogy with strategic HRM objectives (A'yun & Hasan, 2024) ^[3]. The preservation of exemplary teaching through digital repositories aligns with knowledge management and talent retention strategies by converting individual expertise into shared organisational assets. Such systems support continuity, professional development and standardisation of quality across institutions while simultaneously enhancing teacher recognition and motivation.

Despite growing interest in digital learning, limited scholarly attention has been given to models that explicitly integrate pedagogical innovation with HR sustainability. This gap provided the rationale for proposing Project Immortal as an integrative HRD framework.

Theoretical framework

This study was underpinned by three complementary theoretical perspectives: Human Capital Theory, Knowledge Management Theory, and Adult Learning Theory.

Human Capital Theory

Human Capital Theory posits that employees’ skills, knowledge and competencies constitute strategic assets that contribute to organisational productivity and long-term sustainability (Islam & Amin, 2022; Faugoo, 2024) [9, 7]. In the education sector, teachers represent high-value human capital whose expertise directly influences learning outcomes. High attrition rates therefore signify not only staffing challenges but also the loss of accumulated institutional value. Project Immortal aligns with this theory by recognising exemplary teachers as strategic assets whose expertise should be preserved and leveraged beyond individual tenure.

Knowledge Management Theory

Knowledge Management Theory emphasises the conversion of tacit knowledge into explicit, shareable forms to ensure organisational learning and continuity. Teaching expertise is predominantly tacit, embedded in instructional methods, classroom interactions and experiential insight (Diasse & Kawai, 2024) [4]. Through digitally capturing and archiving exemplary teaching practices, Project Immortal operationalises knowledge codification and retention, mitigating the negative effects of employee turnover and retirement.

Adult Learning Theory

Adult Learning Theory, particularly principles of self-directed and experiential learning, supports the flipped classroom approach. Learners actively engage with content at their own pace and apply knowledge through interactive classroom activities. This aligns with HRD objectives of developing critical thinking, problem-solving and lifelong learning capabilities essential for modern labour markets. Together, these theories provide a robust interdisciplinary foundation linking pedagogy, HR sustainability and organisational performance.

Conceptual Framework

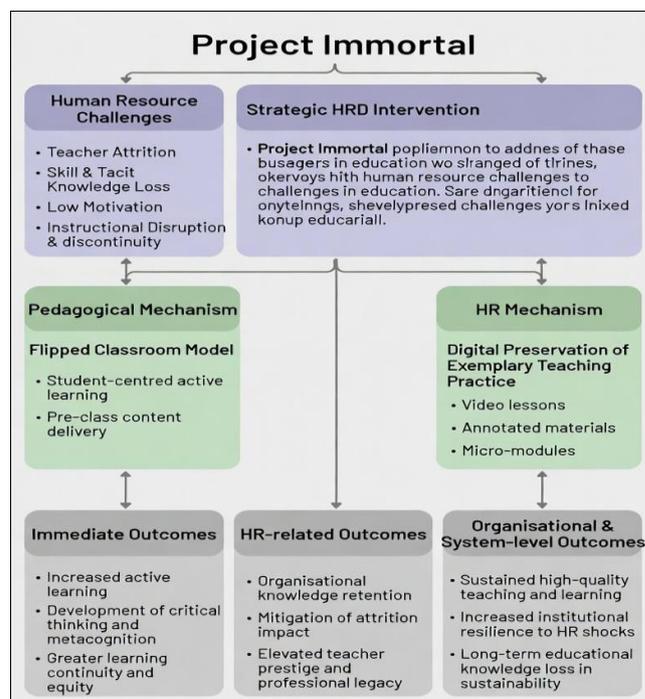
The conceptual framework of the study positions Project Immortal at the intersection of pedagogical innovation and human resource sustainability. Drawing on theories of creation of organisational knowledge and modern pedagogical design, the framework proposes that specific input factors namely teacher expertise, digital infrastructure, and institutional support serve as the foundation for the intervention (Zhao *et al.*, 2025; Matu *et al.*, 2026) [21, 12]. Project Immortal operates through two synergistic core mechanisms. The first is a pedagogical mechanism: the flipped classroom approach, which facilitates learner-centered engagement and reduces dependence on real-time instructor presence (Addam, 2025) [1]. The second is an HR mechanism: the digital preservation of exemplary teaching, a process that transforms individual tacit knowledge into enduring institutional knowledge assets (Mukherjee, 2025) [14].

The framework theorises that these mechanisms jointly generate a range of immediate outcomes, including improved instructional quality, enhanced teacher motivation, a reduced impact of attrition, and sustained learning continuity. In the long term, these outcomes are expected to contribute to improved learner outcomes, strengthened institutional resilience, and enhanced sustainability of the education system as a whole. Figure 1 shows the proposed

Project Immortal conceptual framework.

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Source: Authors’ own construction

Fig 1: Project Immortal conceptual framework

This framework illustrates how pedagogical strategies can be intentionally designed to address HRM challenges, moving education systems from reactive staffing solutions to proactive talent and knowledge management.

Research Design

Research approach

A qualitative research approach was adopted to enable an in-depth exploration and synthesis of existing scholarly perspectives on pedagogical innovation, teacher attrition and human resource sustainability in education systems. This approach was appropriate given the study’s objective of examining relationships, patterns and conceptual linkages rather than measuring variables or testing hypotheses. The

qualitative orientation supported a holistic understanding of how pedagogical practices and human resource challenges interact within developing and underdeveloped educational contexts.

Research strategy

The study employed a non-empirical desktop literature review as its primary research strategy. This strategy was suitable for consolidating dispersed theoretical and empirical insights across education, human resource management and human resource development literature. The desktop review enabled the identification of recurring themes related to flipped classrooms, knowledge loss, teacher motivation and institutional resilience, which informed the development of the Project Immortal framework.

Research Method

Research setting

The study was conceptual in nature and not confined to a physical research site. It focused broadly on education systems in developing and underdeveloped countries, where challenges related to teacher attrition, instructional disruption and limited resources are most pronounced. This contextual focus aligned with the study's intention to propose a scalable framework applicable across resource-constrained environments rather than a single institution.

Entrée and establishing researcher roles

The researchers assumed the role of an independent analyst, critically engaging with secondary data drawn from academic and institutional sources. No direct interaction with participants or organisations occurred. This role allowed for objective synthesis and interpretation of existing knowledge without influencing or being influenced by stakeholder dynamics.

Research participants and sampling methods

No human participants were involved in the study. Literature sources served as the unit of analysis. Purposive sampling was used to identify sources directly relevant to flipped classroom pedagogy, teacher attrition, digital learning, human capital and knowledge management. Snowball sampling was subsequently applied to identify additional key sources cited within seminal and high-impact publications, ensuring comprehensive coverage of the topic.

Data collection methods

Data were collected from peer-reviewed journal articles, policy reports and credible online publications accessed through databases such as Google Scholar and Google Books. Keywords included *flipped classroom*, *teacher attrition*, *human resource development*, *knowledge management*, *digital learning* and *educational quality*. This combination of sources enabled triangulation across disciplinary perspectives.

Data recording

Relevant data were systematically recorded through annotated summaries and thematic categorisation matrices. This process facilitated comparison across studies and ensured that insights related to pedagogy, human resource challenges and digital preservation were consistently documented and traceable.

Strategies employed to ensure data quality and integrity

Data quality and integrity were ensured through the selection of reputable, peer-reviewed and institutionally credible sources. Cross-referencing of findings across multiple studies was employed to enhance credibility, while transparency was maintained in documenting inclusion criteria and thematic interpretations. Sources lacking methodological rigour or scholarly credibility were excluded.

Data analysis

Thematic analysis was applied to identify recurring patterns and relationships across the literature. Themes were inductively derived and subsequently organised around pedagogical approaches, human resource challenges and digital innovation. This analytical process enabled the identification of the interdependence between pedagogical practices and human resource sustainability, which informed the development of the conceptual framework.

Reporting style

The findings were reported narratively, supported by conceptual synthesis and the proposed conceptual model. This reporting style was consistent with the qualitative and exploratory nature of the study and allowed for integration of pedagogical and HRM perspectives.

Results

The results were structured in alignment with the research objectives and revealed several interrelated insights. First, the literature consistently demonstrated that traditional teacher-centred pedagogical approaches increase institutional dependence on individual educators. This dependence was found to exacerbate the negative effects of teacher attrition, particularly in contexts characterised by high staff turnover, industrial action and limited replacement capacity.

Second, the flipped classroom approach emerged as a pedagogical model that enhances learner engagement, flexibility and critical thinking while reducing reliance on continuous instructor-led delivery. The findings indicated that this approach is particularly suitable for developing contexts due to its adaptability and capacity to support learning continuity during instructional disruptions.

Third, the analysis revealed a significant gap in structured mechanisms for preserving exemplary teaching practices. The absence of such mechanisms was found to contribute to instructional decline when experienced teachers exit the system. The integration of flipped classroom pedagogy with digital preservation, as proposed through Project Immortal, was identified as a means of mitigating knowledge loss, supporting instructional continuity and enhancing teacher recognition.

Collectively, the results demonstrated that pedagogical innovation and human resource sustainability are closely interconnected. Addressing these domains in isolation was found to be insufficient, reinforcing the need for integrative frameworks that align teaching practices with strategic human resource development and knowledge management objectives.

Discussion

Outline of the results

The results of the desktop literature review indicated that

persistent pedagogical and human resource challenges in developing education systems are closely interconnected. Traditional teacher-centered pedagogical approaches were found to exacerbate dependence on individual educators, thereby intensifying the negative effects of teacher attrition and knowledge loss. This finding aligns with prior research demonstrating that teacher-centred systems concentrate instructional expertise in individuals rather than institutions, increasing organisational vulnerability when educators leave (Mukherjee, 2025; Nwachukwu, 2024) [14, 16].

In contrast, the flipped classroom approach emerged as a pedagogical model that promotes learner engagement, flexibility and critical thinking while reducing reliance on continuous instructor-led delivery. This supports existing evidence that learner-centred and technology-enhanced pedagogies improve instructional resilience and student engagement, particularly in resource-constrained contexts (Addam, 2025; La Fleur & Dlamini, 2022; Zhao *et al.*, 2025) [1, 10, 21].

In addition, the findings highlighted that the absence of structured mechanisms to preserve exemplary teaching practices contributes to declining instructional quality when experienced educators exit the system. This observation is consistent with human capital theory, which emphasises the organisational risks associated with the loss of tacit knowledge embedded in skilled professionals (Zerrad & Schechter, 2025) [20].

The proposed Project Immortal framework addressed this gap by integrating flipped classroom pedagogy with digital knowledge preservation. This integration was found to support instructional continuity, enhance teacher recognition and mitigate the organisational risks associated with staff turnover. Similar knowledge management approaches have been shown to strengthen organisational sustainability and preserve critical expertise (Mukherjee, 2025) [14].

Collectively, the results suggest that pedagogical innovation and human resource sustainability should be addressed as interdependent rather than isolated domains, particularly in developing education systems where resource constraints and teacher attrition remain significant challenges (Enock, 2024; Matu *et al.*, 2026) [6, 12].

Practical implications

The findings have several practical implications for education managers, policymakers and human resource practitioners. First, the implementation of tiered digital teacher libraries at school, district, provincial and national levels can support the systematic preservation of pedagogical expertise, thereby reducing institutional vulnerability to teacher attrition and industrial action. Second, integrating flipped classroom pedagogy with preserved teaching resources can enhance learning continuity in resource-constrained contexts where staffing instability is common.

From a human resource management perspective, recognising and preserving exemplary teaching practices can contribute to enhanced professional prestige and motivation among educators. Such recognition may function as a non-financial retention mechanism, particularly in contexts where remuneration constraints limit traditional reward strategies. Furthermore, the framework supports ongoing professional development by enabling teachers to

access high-quality instructional resources and peer exemplars, thereby contributing to standardisation and continuous improvement in teaching quality.

Limitations and recommendations

This study was conceptual and non-empirical in nature, relying exclusively on secondary sources. As a result, the proposed framework was not empirically tested within a specific institutional or national context. Future research should therefore examine the feasibility and effectiveness of Project Immortal through pilot implementations, case studies or mixed-methods approaches involving educators, learners and policymakers.

In addition, contextual factors such as digital infrastructure, data governance and stakeholder readiness were not examined in depth. Future studies should explore these contextual variables, as well as potential ethical and intellectual property considerations associated with the digital preservation of teaching practices. Longitudinal research is also recommended to assess the long-term impact of such frameworks on teacher retention, instructional quality and learner outcomes.

Conclusion

The purpose of this study was to propose a framework that integrates pedagogical innovation with human resource sustainability in developing education systems. In relation to the first objective, the study demonstrated that traditional pedagogical approaches contribute to institutional dependence on individual educators and amplify the negative effects of teacher attrition. With regard to the second objective, the findings indicated that the flipped classroom approach is well suited to resource-constrained contexts due to its flexibility and learner-centered orientation.

In addressing the third objective, the study proposed Project Immortal as a scalable framework for preserving exemplary teaching practices through digital platforms. The analysis suggested that such preservation can mitigate knowledge loss, support instructional continuity and enhance teacher motivation. Overall, the study highlighted the value of aligning pedagogical reform with strategic human resource development and knowledge management objectives, offering a viable pathway for strengthening education system resilience in developing contexts.

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Data Availability

Data sharing is not applicable to this article as no new data were generated or analysed.

Disclaimer

The views expressed in this article are those of the authors and do not necessarily reflect the official position of any affiliated institution. The authors declare that artificial intelligence assisted tools (including ChatGPT and DeepSeek) were used exclusively for language editing, clarity and structural refinement. The use of AI was limited to ethically permissible support and did not replace the authors' original research, critical analysis or scholarly judgement. The authors remain fully responsible for the content, interpretation and academic integrity of this article.

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