

Beyond the Classroom: Integrating Teacher Transformation, Entrepreneurial Learning, and Local Ecosystems for Educational Change

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Abstract

This study addresses a persistent limitation in educational reform: the fragmentation between pedagogical innovation, student development, and socio-economic contexts. In settings marked by inequality, such disconnection often constrains meaningful and sustainable change. This research aims to develop an integrated model of educational transformation that connects teacher practices, student learning, and local opportunity structures. Drawing on a participatory action research (PAR) program across 22 municipal educational institutions, the study synthesizes evidence from four interconnected subprojects: teacher transformation, life- and career-oriented learning, local entrepreneurial ecosystem development, and metaverse-enabled learning. Data were generated through multi-stakeholder engagement, including workshops, classroom interventions, and reflective analysis. Findings identify four key mechanisms. First, teacher transformation serves as the entry point for systemic change by enabling learner-centered and design-oriented pedagogy. Second, learning becomes meaningful when connected to students' lived experiences, including life planning, income generation, and well-being. Third, entrepreneurial competencies require alignment with local opportunity structures, such as market access and institutional support. Fourth, technology expands spaces for participation and value creation when grounded in sound pedagogy. The study proposes an ecosystem-based model in which educational transformation emerges through the integration of pedagogy, learner life systems, local ecosystems, and enabling technologies. This model contributes to advancing research on competency-based and entrepreneurial education while offering practical implications for designing equitable and sustainable education systems.

Keywords: educational transformation, competency-based education, entrepreneurial learning, learner agency

1. Introduction

Contemporary educational reform has increasingly emphasized the need to equip learners with competencies that extend beyond academic knowledge, including critical thinking, collaboration, adaptability, and the capacity to create value in complex and uncertain contexts (OECD, 2019; World Economic Forum, 2020). However, despite widespread recognition of these goals, many education systems continue to rely on traditional, content-driven pedagogies that are insufficient for preparing students to navigate real-life challenges, particularly in contexts marked by social and economic inequality (Darling-Hammond et al., 2020; Schleicher, 2018). As a result, a persistent gap remains between what students learn in classrooms and the competencies required for living, working, and thriving in contemporary society.

A growing body of research has attempted to address this gap through innovations in competency-based education, student-centered pedagogies, and experiential learning approaches (Barron & Darling-Hammond, 2008; Fullan & Langworthy, 2014). These approaches emphasize learner agency, authentic problem-solving, and the application of knowledge in real-world contexts. At the same time, scholarship on entrepreneurial education has highlighted the importance of fostering value creation, opportunity recognition, and initiative among learners, positioning education as a process that connects learning with economic and social participation (Neck & Greene, 2011; Lackéus, 2015; Cheeranawanith et al., 2026). Parallel to this, research on student well-being and holistic development underscores that

meaningful learning must be grounded in learners' lived experiences, identities, and socio-emotional conditions (Noddings, 2013; OECD, 2018).

Despite these advances, existing studies often remain fragmented. Pedagogical innovation, entrepreneurial learning, and student well-being are frequently examined in isolation, without sufficient attention to how these dimensions interact within broader socio-economic and institutional contexts. In particular, there is limited research that systematically integrates classroom transformation with local opportunity structures, such as community resources, labor markets, and support networks, which are critical for enabling learners to translate competencies into tangible life outcomes (Bronfenbrenner, 1979; Spigel, 2017). This limitation is especially pronounced in contexts of inequality, where students' access to opportunities is uneven and cannot be addressed through classroom reform alone.

Recent work on educational ecosystems and system-level change suggests that sustainable transformation requires alignment across multiple levels, including teachers, learners, institutions, and communities (Fullan, 2016; Hannon et al., 2017). From this perspective, teachers play a pivotal role as designers of learning experiences, while local ecosystems provide the enabling conditions through which learning can be connected to real-world value creation. In addition, emerging technologies—such as immersive and virtual environments—have been identified as potential enablers of expanded participation and new forms of learning, although their effectiveness depends on pedagogical integration rather than technological novelty alone (Radianti et al., 2020; Jeerapattanatorn et al., 2026).

Building on these strands of literature, this study argues that meaningful educational transformation in contexts of inequality cannot be achieved through isolated interventions. Instead, it requires the integration of teacher transformation, learner-centered and life-connected pedagogies, entrepreneurial value creation, and local opportunity ecosystems into a coherent and participatory system. To advance this argument, the study draws on a participatory action research (PAR) program implemented across 22 municipal educational institutions, synthesizing insights from four interconnected subprojects that collectively address these dimensions.

The purpose of this study is therefore twofold: (1) to examine how integrated interventions across teacher development, learning processes, and local ecosystems contribute to educational transformation, and (2) to develop a systemic, ecosystem-based model that explains how learning can be translated into meaningful life outcomes, including value creation and improved well-being. By doing so, the study contributes to the literature on competency-based education, entrepreneurial learning, and system change by proposing a holistic framework that bridges the gap between classroom innovation and real-world impact.

2. Method

2.1 Research Design

This study employed a participatory action research (PAR) design to investigate and synthesize processes of educational transformation across multiple institutional and community contexts. PAR is particularly suited to complex educational change as it integrates inquiry with iterative cycles of action, reflection, and co-construction of knowledge among stakeholders (Kemmis et al., 2014). In this study, PAR enabled the examination of how educational innovations emerged, evolved, and interacted across interconnected domains, including teacher practices, student learning, and local socio-economic environments. Rather than evaluating a single intervention, the study adopted a program-level qualitative synthesis approach, integrating evidence from four interrelated subprojects implemented under a unified research and development initiative. The unit of analysis was defined as the transformation mechanisms emerging across these subprojects, with particular attention to how changes at different levels (teacher, classroom, learner, and local ecosystem) interacted to support broader educational improvement within the municipal context.

2.2 Research Context and Participants

The study was conducted across 22 municipal educational institutions under the Nakhon Pathom Municipality in Thailand. These institutions included schools serving diverse student populations, many of whom were situated in contexts of socio-economic vulnerability and educational inequality. Participants were purposively engaged as part of the participatory action research process and comprised a diverse group of stakeholders, including school administrators, teachers across subject areas, students at multiple grade levels, parents and family members, local government representatives, as well as community stakeholders and local entrepreneurs. This multi-stakeholder configuration was essential for capturing the complexity of educational transformation beyond the classroom and for examining how local opportunity structures shape learning and development.

2.3 Program Structure: Four Interconnected Subprojects

The research program consisted of four interrelated subprojects, each addressing a key dimension of educational transformation:

- (1) *Teacher Transformation and Learning Design*, which focused on developing teachers' capacity to design competency-based, learner-centered instruction using design thinking, active learning, and experiential approaches.
- (2) *Life-, Career-, and Well-Being-Oriented Learning*, which aimed to connect classroom learning with students' lived experiences, including financial literacy, income generation, life planning, and well-being.
- (3) *Local Entrepreneurial Ecosystem Development*, which sought to establish support structures linking schools with local markets, networks, and institutional actors to enable sustainable career pathways and value creation.
- (4) *Metaverse-Enabled Learning Innovation*, which explored the use of immersive digital environments to expand opportunities for participation, creativity, and experiential learning.

These subprojects were implemented concurrently and iteratively, allowing for cross-fertilization of ideas and the emergence of integrated practices.

These subprojects were implemented concurrently and iteratively, allowing for cross-fertilization of ideas and the emergence of integrated practices. To facilitate integration across the four subprojects, regular cross-project meetings were conducted among researchers, teachers, school administrators, and municipal stakeholders. These meetings were used to align objectives, share emerging findings, coordinate implementation activities, and identify opportunities for connecting project outcomes across different domains. This collaborative process supported the development of a coherent educational improvement framework while allowing each subproject to address its specific focus.

Tensions occasionally emerged regarding resource allocation, scheduling, and differing stakeholder priorities. These issues were addressed through collaborative reflection, joint planning sessions, and consensus-based decision-making processes. Such mechanisms helped maintain coherence across subprojects while preserving the unique contributions of each initiative.

2.4 Data Collection

Data were generated through multiple qualitative methods aligned with the iterative cycles of participatory action research (PAR), including workshops and co-design sessions with teachers and stakeholders focusing on problem identification, instructional design, and innovation development; classroom interventions and observations documenting changes in teaching practices and student engagement; focus group discussions with students, teachers, and community members to capture experiences, perceptions, and outcomes; reflective records and field notes produced by researchers and participants during implementation cycles; and artifacts and outputs, such as lesson plans, student projects, and records of learning activities (e.g., student market initiatives). This multi-source data collection approach enabled triangulation and provided rich insights into both the processes and outcomes of the interventions.

2.5 Data Analysis

Data were analyzed using a thematic and interpretive approach that combined inductive and deductive strategies. The analysis proceeded in three interconnected stages. First, within-subproject analysis was conducted, in which data from each subproject were coded to identify key processes, practices, and outcomes, with particular attention to changes in teacher behavior, student engagement, and learning experiences. Second, a cross-subproject synthesis was undertaken, whereby codes and themes were compared and integrated across the four subprojects to identify recurring patterns, relationships, and underlying mechanisms. Third, higher-order themes were synthesized into a conceptual model representing systemic pathways of educational transformation, with emphasis on how changes at different levels—teacher, learner, and ecosystem—interacted to produce meaningful outcomes. Throughout the analysis, constant comparison techniques were employed to refine categories and ensure coherence across data sources.

2.6 Trustworthiness and Rigor

To enhance the credibility and rigor of the study, several strategies were employed, including triangulation across data sources, participant groups, and methods; member checking, whereby preliminary interpretations were shared with participants for validation and refinement; prolonged engagement in the field through iterative participatory action research (PAR) cycles; thick description to provide contextualized accounts of practices and outcomes; and collaborative analysis among researchers to reduce individual bias and strengthen interpretive validity. These strategies align with established criteria for qualitative rigor, including credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985).

To strengthen the connection between trustworthiness procedures and the reported findings, themes were validated through triangulation across classroom observations, focus group discussions, reflective field notes, and project artifacts. Preliminary interpretations were shared with participating teachers and stakeholders through member-checking sessions, allowing clarification and refinement of emerging themes. Prolonged engagement across multiple PAR cycles enabled the research team to observe changes over time and develop a deeper understanding of the educational context. Thick

description was used to present contextualized accounts of the transformation processes, while collaborative analysis among researchers helped ensure consistency and reduce interpretive bias. Only themes consistently supported across multiple data sources and stakeholder validation were retained in the final synthesis.

2.7 Ethical Considerations

The study adhered to ethical standards for research involving human participants. Participation was voluntary, and informed consent was obtained from all participants, including assent from students and consent from their guardians where applicable. Confidentiality and anonymity were maintained in data collection, analysis, and reporting. Given the participatory nature of the research, particular care was taken to ensure that all stakeholders were engaged respectfully and that their perspectives were represented accurately.

3. Results

3.1 Overview of Findings

The findings indicate that educational transformation in this study emerged not from isolated interventions but from the interaction of multiple, interconnected mechanisms operating across teacher practices, student learning processes, and local socio-economic contexts. Across the four subprojects, five major themes were identified: (1) teacher transformation as the entry point of change, (2) the development of meaningful learning through life-connected experiences, (3) the role of local ecosystems in enabling entrepreneurial value creation, (4) the enabling function of technology in expanding participation and creativity, and (5) the integration of these elements into a systemic pathway linking learning, living, and earning.

3.2 Teacher Transformation as the Entry Point of Educational Change

Findings from the first subproject indicate that teacher transformation functioned as a critical entry point for broader educational change. Prior to the intervention, teaching practices were largely characterized by content-driven and textbook-based instruction, which limited student engagement and participation. Through iterative workshops and co-design processes grounded in design thinking and experiential learning, teachers gradually shifted their roles from knowledge transmitters to learning designers and facilitators. This transformation was reflected in classroom practices, which became increasingly learner-centered and interactive. Teachers incorporated problem-based tasks, collaborative activities, and reflective processes, creating opportunities for students to actively engage in learning. As a result, students demonstrated greater participation, including asking questions, expressing opinions, and engaging in peer learning. Importantly, this transformation extended beyond instructional techniques to encompass shifts in teacher mindset. Teachers reported increased openness to experimentation, responsiveness to student needs, and a stronger orientation toward designing meaningful and contextually relevant learning experiences.

3.3 Making Learning Meaningful Through Life-, Career-, and Well-Being Connections

The second subproject highlights the importance of connecting learning to students' lived experiences. Students were found to face multiple, interrelated challenges across economic, social, cognitive, and well-being dimensions, which constrained both academic engagement and broader developmental outcomes. Table 1 presents the baseline challenges and corresponding development needs identified among students.

Table 1. Student Challenges and Development Needs

Dimension	Key Challenges	Development Needs
Economic/financial life	Poor financial literacy, family economic hardship, desire for money without work, weak money planning	Financial discipline, meaningful life, future orientation, practical life skills
Family/social conditions	Family conflict, lack of parental care, domestic violence, risky behavior exposure	Empathy, public-mindedness, resilience, self-management
Learning behavior	Low academic engagement, lack of goals, lateness, gaming, weak self-management, weak communication and collaboration	Readiness to learn, communication, confidence, collaboration, problem-solving
Health and well-being	Poor nutrition, health problems, mental health issues, emotional dysregulation	Good health, age-appropriate development, happiness, moral development
Thinking and identity	Weak analytical thinking, harmful mindsets, poor self-direction	Analytical thinking, creativity, positive mindset, self-development

As shown in Table 1, students experienced multidimensional challenges that extended beyond academic performance. In response, learning activities were redesigned to integrate three interconnected pathways: income generation, life planning, and well-being. Students engaged in financial planning, small-scale entrepreneurial activities, and community-based learning tasks, enabling them to apply knowledge in authentic contexts. These interventions contributed to increased motivation, improved self-management, and a stronger sense of purpose. Students developed

practical competencies, including financial discipline, communication skills, and problem-solving abilities, while also gaining greater awareness of their life trajectories. Learning became meaningful when it was directly connected to students' present realities and future aspirations. Figure 1 illustrates the alignment between identified student challenges and the targeted competency development.

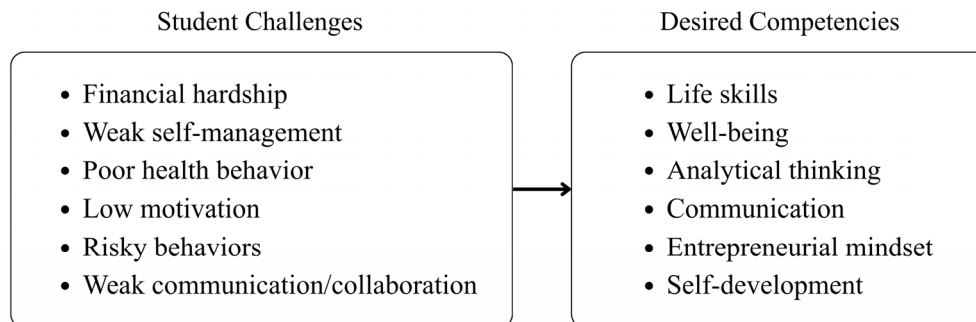


Figure 1. Mapping of student challenges to desired competencies across key dimensions

3.4 From Entrepreneurial Skills to Entrepreneurial Ecosystems

Findings from the third subproject indicate that the development of entrepreneurial competencies alone is insufficient to produce sustainable outcomes. While students demonstrated the ability to generate ideas and engage in value-creating activities, the continuity and scalability of these efforts depended on the availability of local opportunity structures. The project therefore emphasized the establishment of linkages between schools and local ecosystems, including markets, community networks, and municipal support mechanisms. These linkages enabled students to access resources, test their ideas in real-world contexts, and extend their activities beyond the classroom. As a result, student engagement became more sustained, and learning outcomes were increasingly translated into tangible forms of value creation. These findings underscore that entrepreneurial learning must be supported by enabling ecosystems that connect educational processes with real socio-economic opportunities.

3.5 Technology as an Enabler of Participation and Value Creation

The fourth subproject examined the role of metaverse-enabled learning environments in expanding opportunities for participation and creativity. Teachers were supported in designing immersive learning experiences that allowed students to explore, create, and present their work in virtual spaces. The findings indicate that technology functioned as an enabling condition rather than a primary driver of transformation. When aligned with well-designed pedagogical approaches, metaverse environments enhanced student engagement, particularly among learners who were less active in traditional classroom settings. Students demonstrated increased creativity, confidence, and diverse forms of expression. However, the effectiveness of technology was contingent upon its integration with pedagogical and contextual elements. In the absence of meaningful learning design, technological tools alone did not lead to substantial changes in learning outcomes.

3.6 From Learning to Living to Earning: A Systemic Pathway

The most significant finding of this study is the emergence of a systemic pathway linking learning, life, and value creation. The four subprojects interacted to form a coherent ecosystem of educational transformation rather than functioning as independent interventions. Figure 2 presents the systemic pathway of educational transformation.

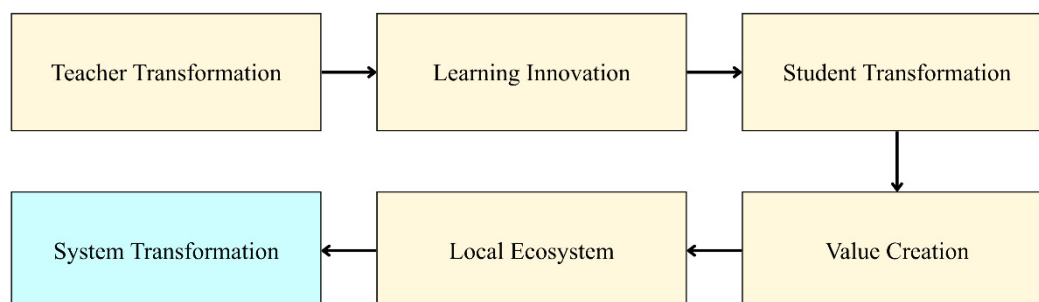


Figure 2. Systemic pathway of educational transformation

As illustrated in Figure 2, teacher transformation enabled innovative learning design, which in turn facilitated life-connected learning experiences. These experiences became meaningful through their connection to students' lived realities, while local ecosystems provided the necessary structures for application and value creation. Technology further expanded opportunities for participation and expression within this system. To further clarify the multi-level nature of this transformation, Table 2 summarizes the observed changes across different levels.

Table 2. Multi-Level Educational Transformation Model

Level of Change	Evidence from the Report	Interpretation
Teacher level	Teachers shifted from textbook-based instruction to problem-based, active, and reflective learning design	Teacher transformation is the entry point for broader educational change
Classroom level	Students asked more questions, exchanged ideas, and worked collaboratively	Pedagogical redesign increased learner participation and agency
Student level	Students developed life skills, entrepreneurial thinking, income-generating capacity, and well-being	Learning became meaningful when linked to real-life contexts
Community/local level	Local actors, municipality, and community partners supported market access and learning opportunities	Entrepreneurial development requires local opportunity structures
System level	Integration across teacher development, life-based learning, ecosystem support, and technology produced a scalable model	Educational improvement appears to be strengthened when pedagogical, personal, and ecosystem factors are aligned.

As shown in Table 2, transformation occurred across multiple levels, from teacher practices and classroom interactions to student competencies, community engagement, and system-level integration. These findings indicate that sustainable educational change requires alignment across pedagogical, personal, and structural dimensions.

3.7 Cross-Project Synthesis

To provide a consolidated overview, Table 3 presents the four interconnected subprojects and their respective contributions to the overall transformation.

Table 3. Overview of the Four Interconnected Subprojects

Subproject	Core Focus	Main Process	Key Innovation	Main Outcomes
1. Teacher development and learning management	Developing teachers' competency-based and meaningful learning design	Needs analysis, Design Thinking workshops, co-design, classroom trials, reflection	Design Thinking, Active/Experiential Learning, teacher as learning designer and mentor	Teacher mindset shift; more active classrooms; improved student participation
2. Learning for life, career, and well-being	Connecting learning with income generation, life planning, and well-being	Analysis of student life problems, community-linked activities, student market, follow-up	"Three Pathways to Life": Income Path, Life Path, Well-being Path	Student income generation, financial discipline, life skills, improved well-being
3. Local entrepreneurial ecosystem development	Creating support structures for sustainable career development	Joint curriculum design, incubation, market linkage, network building	Entrepreneurial ecosystem linking learning, market, capital, and networks	Real career extension, stronger market access, local support structures
4. Metaverse-based learning innovation	Expanding learning participation through immersive technology	Teacher training, metaverse lesson design, classroom implementation, evaluation	Metaverse-Based Instruction (MBI), learner as creator, immersive learning	Higher engagement, creativity, diverse forms of expression

Table 3 highlights how each subproject contributed distinct yet complementary mechanisms. Rather than operating in isolation, these subprojects interacted dynamically, reinforcing one another and enabling the emergence of an integrated educational ecosystem. Figure 3 further illustrates the integration of the four subprojects into a unified model of educational change.

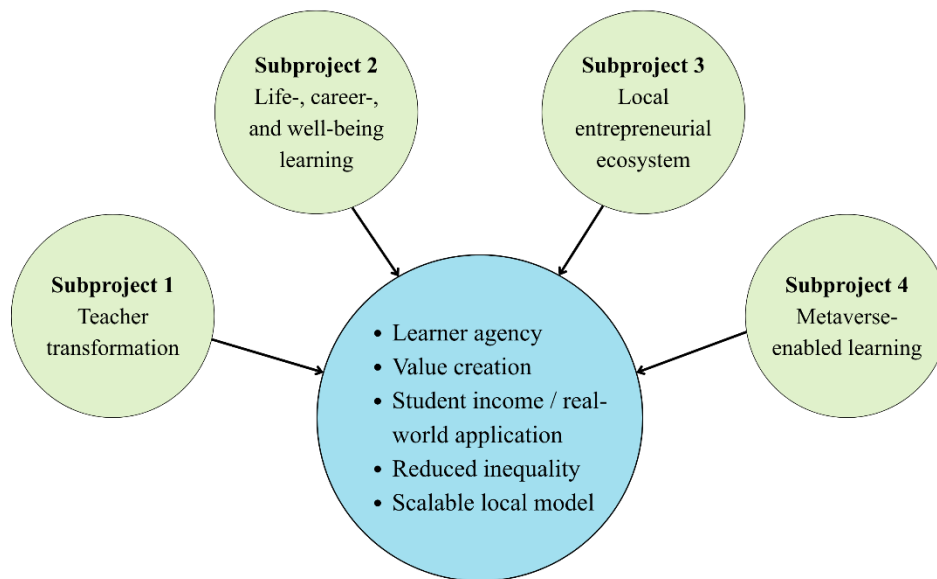


Figure 3. Integration of the four subprojects into a unified ecosystem model of educational change

4. Discussion

This study contributes to the growing body of research on educational transformation by demonstrating that meaningful and sustainable change cannot be achieved through isolated pedagogical innovations alone. Instead, the findings suggest that educational transformation emerges through the integration of teacher development, learner-centered and life-connected pedagogies, local opportunity structures, and enabling technologies into a coherent ecosystem. This section discusses these findings in relation to existing literature and highlights their theoretical and practical implications.

4.1 Educational Transformation as an Ecosystem Rather Than an Intervention

A central contribution of this study is the reconceptualization of educational transformation as an ecosystemic process rather than a discrete intervention. While prior research has emphasized the importance of competency-based education and student-centered learning (OECD, 2019; Darling-Hammond et al., 2020), such approaches are often implemented at the classroom level without sufficient attention to the broader socio-economic and institutional contexts in which learning occurs. The findings of this study extend this perspective by showing that pedagogical innovation alone is insufficient to produce meaningful outcomes, particularly in contexts characterized by inequality. Instead, transformation requires alignment across multiple levels, including teacher practices, student life conditions, and local opportunity structures. This aligns with ecological perspectives on human development (Bronfenbrenner, 1979) and recent work on educational ecosystems (Hannon et al., 2017), which emphasize the interdependence of actors and contexts in shaping learning outcomes. Importantly, this study provides empirical evidence of how such an ecosystem can be enacted in practice through participatory processes. By integrating multiple subprojects within a single program, the research demonstrates how changes at different levels can reinforce one another, resulting in system-level transformation.

4.2 Teacher Transformation as the Entry Point for Systemic Change

Consistent with prior research highlighting the central role of teachers in educational reform (Fullan, 2016), this study identifies teacher transformation as the primary entry point for broader change. However, the findings extend existing literature by showing that teacher development is most effective when it moves beyond skill acquisition toward a deeper shift in professional identity and mindset. Through design-oriented and experiential approaches, teachers in this study transitioned from content deliverers to designers of meaningful learning experiences. This shift enabled the implementation of learner-centered pedagogies and created conditions for increased student engagement and agency. These findings resonate with research on deep learning and new pedagogies (Fullan & Langworthy, 2014), which emphasize the role of teachers as facilitators of complex, real-world learning. At the same time, the study suggests that teacher transformation alone is insufficient if not connected to broader changes in learning design and context. This highlights the need to position teacher development within a larger ecosystem of change rather than treating it as an isolated intervention.

4.3 From Meaningful Learning to Value Creation

A key insight from this study is that learning becomes meaningful when it is connected to students' lived experiences, including their economic realities, life trajectories, and well-being. This finding reinforces existing work on experiential and authentic learning (Barron & Darling-Hammond, 2008), as well as research on student agency and purpose (OECD, 2019). However, this study advances the literature by introducing value creation as a central mechanism linking learning and life outcomes. Rather than viewing learning solely as knowledge acquisition or skill development, the findings suggest that meaningful learning enables students to create tangible value—economic, social, or personal—in their own lives and communities. This perspective aligns with emerging scholarship on entrepreneurial education (Lackéus, 2015) but extends it by situating value creation within a broader educational and socio-economic context. In this sense, value creation functions as a bridge between learning and real-world impact, transforming education from a preparatory process into an active and ongoing engagement with life.

4.4 The Critical Role of Local Opportunity Structures

One of the most significant contributions of this study is its emphasis on the role of local ecosystems in enabling educational outcomes. While prior research on entrepreneurial learning has focused primarily on individual competencies (Neck & Greene, 2011), the findings here demonstrate that such competencies cannot be effectively enacted without access to opportunity structures, including markets, networks, and institutional support. This finding aligns with research on entrepreneurial ecosystems (Spigel, 2017), which highlights the importance of relational and structural factors in enabling entrepreneurial activity. By extending this perspective to the field of education, the study suggests that schools must be understood as embedded within broader socio-economic systems, and that educational innovation must engage with these systems in order to be effective. In contexts of inequality, this insight is particularly important. Students from disadvantaged backgrounds often face structural constraints that limit their ability to translate learning into opportunity. By connecting schools with local ecosystems, the program addressed these constraints and created pathways for more equitable outcomes.

4.5 Technology as an Enabling, Not Determining, Factor

The findings also contribute to ongoing debates about the role of technology in education. While digital and immersive technologies are often presented as transformative in themselves, this study supports a more nuanced view: technology functions as an enabler of educational transformation rather than its primary driver. Consistent with prior research (Radianti et al., 2020), the effectiveness of metaverse-based learning in this study depended on its integration with pedagogical design and contextual relevance. When used as part of a coherent learning ecosystem, technology expanded opportunities for participation, creativity, and expression. However, in the absence of meaningful pedagogy, technological tools alone did not produce significant change. This finding reinforces the importance of pedagogical intentionality and cautions against technology-driven approaches that overlook the broader conditions necessary for meaningful learning.

4.6 Toward a Systemic Pathway: From Learning to Living to Earning

Taken together, the findings support the development of a systemic model of educational transformation that connects learning, life, and value creation. This model conceptualizes education as a pathway through which learners develop competencies, apply them in real-world contexts, and generate value that contributes to both personal well-being and socio-economic participation. This perspective extends existing frameworks of competency-based education by emphasizing not only what learners know and can do, but also how they are able to translate these competencies into meaningful life outcomes. It also contributes to the literature on system change by illustrating how alignment across multiple levels—teacher, classroom, learner, and ecosystem—can produce sustainable transformation (Fullan, 2016). Importantly, the model proposed in this study is grounded in participatory processes, highlighting the role of collaboration among educators, students, communities, and local institutions. This suggests that educational transformation is not merely a technical process but a social and relational one.

4.7 Implications for Research and Practice

The findings of this study have several implications for future research and practice. First, they highlight the need for more integrative research designs that move beyond isolated interventions to examine how multiple components of educational systems interact. Second, they suggest that educational policy and practice should place greater emphasis on building connections between schools and local ecosystems, particularly in contexts of inequality. Third, they underscore the importance of supporting teachers not only as implementers of innovation but as designers of meaningful learning experiences within complex systems. Finally, the study points to the potential of participatory and ecosystem-based approaches to create more equitable and sustainable forms of educational transformation. By aligning pedagogy, learner experience, and opportunity structures, education can move beyond the classroom to become a powerful driver of individual and societal change.

5. Conclusion

This study set out to examine how educational transformation can be achieved in contexts characterized by social and economic inequality. Drawing on a participatory action research program across 22 municipal educational institutions, the findings demonstrate that meaningful and sustainable change does not arise from isolated interventions but from the integration of multiple, interdependent elements within an educational ecosystem. The study makes three key contributions. First, it advances a conceptual understanding of educational transformation as an ecosystemic process that aligns teacher development, learner-centered and life-connected pedagogies, local opportunity structures, and enabling technologies. Second, it identifies value creation as a critical mechanism linking learning to real-life outcomes, thereby extending existing perspectives on competency-based and entrepreneurial education. Third, it provides empirical insights into how participatory, multi-stakeholder approaches may support educational improvement by connecting classrooms with broader socio-economic contexts. These findings have important implications for both policy and practice. For educational reform to be effective and equitable, it must move beyond classroom-level innovation and engage with the structural conditions that shape learners' opportunities. This includes strengthening connections between schools and local ecosystems, supporting teachers as designers of meaningful learning, and ensuring that learning is grounded in students' lived experiences. In this regard, municipalities and local stakeholders play a critical role in enabling sustainable pathways from learning to living and earning. Despite its contributions, this study has several limitations. The findings are based on qualitative data generated within a specific municipal context, which may limit generalizability to other settings. Future research could extend this work by employing mixed-methods designs, longitudinal approaches, or comparative studies across different contexts to further validate and refine the proposed model.

In conclusion, this study suggests that education has the potential to contribute to addressing educational inequality and supporting sustainable development when it is designed as an integrated ecosystem. By bridging the gap between learning and life, education can move beyond knowledge transmission to enable learners not only to understand the world, but also to actively shape it.

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Author contributions

Dr. PE served as the project leader and was responsible for the conceptualization and research design. Dr. WS was responsible for data collection, data analysis, and writing the manuscript, and served as the corresponding author. Dr. PJ contributed to data analysis and drafting the manuscript. Dr. UK and Dr. CU reviewed and revised the manuscript. All authors read and approved the final manuscript.

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Competing interests

The authors declare no competing interests.

Informed consent

Obtained.

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The Publication Ethics Committee of the Redfame Publishing.

The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

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Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

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